



# दिल्ली प्रौद्योगिकी विश्वविद्यालय DELHI TECHNOLOGICAL UNIVERSITY

*(Formerly Delhi College of Engineering)*

(Estd. By Govt. of NCT of Delhi vide Act 6 of 2009)



## ACADEMIC PROGRAMMES ORDINANCE & REGULATIONS

**2022**

# ACADEMIC PROGRAMMES, ORDINANCE & REGULATIONS

**2022**



**DELHI TECHNOLOGICAL UNIVERSITY**

(Estd. by Govt. of NCT of Delhi vide Act 6 of 2009)

Shahbad Daulatpur, Bawana Road, Delhi-110042

[www.dtu.ac.in](http://www.dtu.ac.in)



# CONTENTS

## About University

|                                  |    |
|----------------------------------|----|
| • Delhi Technological University | 03 |
| • Vision                         | 03 |
| • Mission                        | 03 |
| • Core values                    | 04 |
| • Quality Policy                 | 04 |
| • Programs offered               | 04 |
| • Ranking and Rewards            | 04 |
| • Campus and Infrastructure      | 05 |
| • Events and Festivals           | 06 |
| • Placements                     | 07 |
| • Distinguished Alumni           | 07 |
| • Our Glorious Past              | 08 |

## Ordinance & Regulations (ORDINANCE 1-B)

|               |    |
|---------------|----|
| • Ordinance   | 09 |
| • Regulations | 11 |

## Annexure 1A- Scheme of Teaching & Examination of B.Tech. Program

|  |     |
|--|-----|
| • Preamble and Broad Structure   | 35  |
| • Chemical Engineering   | 44  |
| • Mathematics & Computing  | 51  |
| • Engineering Physics  | 57  |
| • Bio-Technology   | 63  |
| • Civil Engineering  | 70  |
| • Computer Science & Engineering   | 77  |
| • Electrical Engineering   | 84  |
| • Electronics & Communication Engineering  | 91  |
| • Environmental Engineering  | 99  |
| • Information Technology   | 105 |
| • Mechanical Engineering   | 112 |
| • Mechanical Engineering with Specialization in Automotive Engineering                 | 119 |
| • Production and Industrial Engineering  | 126 |
| • Software Engineering   | 133 |
| • The Minors offered by various academic departments                                   | 144 |
| • Guidelines for Implementation of Minors  | 168 |
| • Procedure for Conduct and Evaluation of DEC Mini Project                             | 168 |
| • Procedure for Conduct and Evaluation of DEC Undergraduate Research Project           | 170 |
| • Procedure for Conduct and Evaluation of DEC Entrepreneurship and Venture Development | 173 |
| • Guidelines for Evaluation of Industrial/Field Training                               | 175 |
| • Procedure for Conduct and Evaluation of B. Tech. Project                             | 175 |



|   |     |
|---|-----|
| • Syllabus of common courses of B.Tech. Program   | 177 |
| • Syllabus for Foundation Elective Courses  | 190 |
| <b>Annexure 1B- Scheme of Teaching &amp; Examinations of B.Tech. Under Continuing Education</b> |     |
| • Preamble and Broad Structure  | 234 |
| • Civil Engineering   | 238 |
| • Electrical Engineering  | 243 |
| • Electronics & Communication Engineering   | 249 |
| • Mechanical Engineering  | 255 |
| <b>Academic Departments</b>   |     |
| • Department of Applied Chemistry   | 262 |
| • Department of Applied Mathematics   | 263 |
| • Department of Applied Physics   | 263 |
| • Department of Bio-Technology  | 265 |
| • Department of Civil Engineering   | 266 |
| • Department of Computer Science and Engineering  | 267 |
| • Department of Electrical Engineering  | 269 |
| • Department of Electronics & Communication Engineering   | 270 |
| • Department of Environmental Engineering   | 271 |
| • Department of Humanities  | 272 |
| • Department of Information Technology  | 273 |
| • Department of Mechanical Engineering  | 274 |
| • Delhi School of Management  | 275 |
| • Department of Software Engineering  | 277 |
| • University School of Management and Entrepreneurship  | 277 |
| • Department of Design  | 278 |
| • Department of Training and Placement  | 279 |
| <b>Infrastructure &amp; Facilities</b>  |     |
| • Estate  | 281 |
| • NSS   | 282 |
| • Computer Centre   | 283 |
| • Library   | 284 |
| • Hostels   | 287 |
| • Canteen & Shopping Plaza  | 290 |
| • Health Centre   | 290 |
| <b>Annexure</b>   |     |
| • Fee Structure   | 292 |
| • Academic Calendar 2022-23   | 304 |
| • Fee concession for Students belonging to economically weaker sections                         | 309 |
| • Financial Support to Students   | 310 |
| • Rules for change of name of student in academic records                                       | 311 |
| • Ordinance Relating to Maintenance of Discipline   | 312 |
| • DTU Administration and Faculty  | 318 |
| • Forms and Formats   | 324 |

**Initially established with the name “Delhi Polytechnic”  
in the year 1941 at Kashmiri Gate Campus**

**In the year 1965, renamed as  
Delhi College of Engineering  
Reconstituted as  
Delhi Technological University in the year 2009**

**Vide Govt. of NCT of Delhi Act 6 of 2009**

**-A non-affiliating  
Technological University**

**“Committed to  
Foster Engineering Excellence  
and  
Scientism Together”**



## About Delhi Technological University

Delhi Technological University (DTU) is a non-affiliating, teaching and research University at Delhi to achieve excellence in science, engineering, technology, management and allied areas and matters connected therewith or incidental thereto. The University enables students to face the wide-ranging changes taking place in the fields of science, technology, environment and management. This includes innovation, design, development, construction, and production, managerial and entrepreneurial activities. The University lays great emphasis on assisting students in the development of national character, self-confidence, leadership and fostering an ecosystem for creativity and imagination.

Delhi Technological University was upgraded from Delhi College of Engineering by the Government of NCT of Delhi in 2009. The University has an illustrious history spanning over 78 years. This university was initially established with the name of Delhi Polytechnic in the year 1941 to cater to the needs of Indian industries for trained technical manpower with practical experience and sound theoretical knowledge. From academic year 2017-18, the East campus of DTU is also functional which offers courses like Bachelor of Business Administration (BBA), Bachelor of Arts, (Honours) in Economics, and Master of Business Administration (MBA).

This premier institution is globally well-known for its outstanding education, research, and innovations. The University currently offers various inter-disciplinary and industry relevant-programs in science, technology, management, and allied areas at both the undergraduate and postgraduate level. The University has established a strong academia-industry interface and has collaborations with reputed research organizations, industries, and premier institutions.

The university has taken several initiatives in recent past to engage the students and faculty in research and innovation like provision of funding for students' innovative projects, financial assistance to students for attending internship overseas, introduction of three different tracks in elective courses in B.Tech. Curriculum namely (a) research (b) product development and (c) entrepreneurship, research project grant to faculty members etc.

### **Vision & Mission of the University**

#### **Vision:**

“To be a world class university through education, innovation, and research for the service of humanity”

#### **Mission:**

1. To establish centres of excellence in emerging areas of science, engineering, technology, management, and allied areas.
2. To foster an ecosystem for incubation, product development, transfer of technology, and entrepreneurship.
3. To create environment of collaboration, experimentation, imagination, and creativity.
4. To develop human potential with analytical abilities, ethics, and integrity.
5. To provide environment friendly, reasonable and sustainable solutions for local and global needs.

## **Core Values of the University**

**Integrity** We do what we say through trust, transparency and honesty.

**Compassion** We foster civilized mindset for kindness, consideration and benevolence.

**Commitment** We dedicate ourselves completely to all our endeavours.

**Creativity** We nurture innovation, imagination and ideation.

**Collaboration** We promote team work through togetherness, harmony and acknowledgement.

**Inclusion** We embrace diversity with respect, acceptance and affirmation.

## **Quality Policy**

The university is committed to achieving global standards of excellence in the field of Science, Technology, Management and allied areas by disseminating knowledge through cutting-edge research, education and innovation. We adopt best practices to maintain high standards in the core and allied functions through continuous evaluation and improvement of our processes.

## **Programs Offered**

The university offers 14 undergraduate engineering programs, 25 post graduate engineering programs, 5 MBA programs, an M.Des and 4 M.Sc. programs. Besides this the university offers other 3 other bachelor programs namely B.Des., BBA and BA (Honours) Economics. The engineering programs include disciplines of mechanical engineering, civil engineering, electrical engineering, electronics and communication engineering, computer engineering, environmental engineering, information technology, software engineering, mathematics and computing, automobile engineering and chemical engineering.

The post graduate engineering programs cover VLSI design and embedded systems, software engineering, computer engineering, microwave and optical communication, polymer technology, power systems, signal processing and digital design, geotechnical engineering, structural engineering, nanoscience technology, and bioinformatics.

The UG and PG programs of DTU offer most modern curricula, based on the Choice Based Credit System (CBCS), having rich mix of courses from science, engineering, management, social sciences, humanities, fine arts, liberal arts, classical music, sports, etc. The course curricula have been developed with a view to integrate advancements in science and engineering, while also incorporating industry relevant technologies. To provide further flexibility there is provision for credit transfer and earning credits through massive online courses (MOOCs) from different platforms such as NPTEL, SWAYAM, Coursera and Edx etc. The Curriculum is regularly updated keeping in view the new technologies and changes in industries and society.

## **Ranking and Rewards**

The university is accredited with 'A' grade by NAAC (National Assessment and Accreditation Council) and has been accorded 12-B status by the University Grants Commission (UGC). Several of its UG engineering programs are also accredited by the National Board of Accreditation (NBA). The university has also been consistently ranked among the best 10 engineering institutions as per the various - independent Surveys on Best Engineering Institutions of the country. The university has got 1st position as per Times Engineering Ranking 2021 The University has been ranked 5th by India Today's best Technical University ranking in 2021. The 2021 NIRF rankings placed DTU at the 36<sup>th</sup> position among

the engineering institutions and at 42<sup>nd</sup> in the categories of universities. The university has also been featured in Times Higher Education World University Rankings in 2020.

The university has been granted with the Technical Education Quality Improvement Program (TEQIP) project. The TEQIP-III Project started in DTU in July 2017. The project provides funds to faculty and students to organize and attend various faculty development programs, seminars, and conferences.

Based on the idea to recognize the achievements of faculty and students at DTU, the Research Excellence Awards were constituted in 2017. The purpose of these awards is to encourage and promote research culture in all the disciplines of the university and to celebrate the individual's excellence in research. The university offers three categories of awards annually, namely: *Outstanding Research Awards*, *Premier Research Awards*, and *Commendable Research Awards*. The awards are open to all the researchers of DTU. The university has also constituted Awards for Teaching Excellence for the faculty members of DTU.

### **Campus and Infrastructure**

DTU has 164 acres of a lush green, tech-savvy main campus, with 150,000 sq. mtr. of built up area, 14 academic departments, research centres, and residences for students, faculty, and staff. The university has around 12,000 students in its undergraduate, postgraduate, and PhD programmes. The library is a central place for academic and research activities. It has a well-equipped conference hall, reading rooms, and a rich collection of relevant books and journals. DTU has an EDUSAT Studio utilized for recording of lectures, events, and talks. Also, DTU has a wireless network connecting the computer centre, the academic wings, the administrative block, and the hostels on a common platform. The students have access to high speed internet services.

The university has established the DTU Innovation and Incubation Foundation, pursuant to sub-section (2) of section 7 of the Companies Act, 2013 and rule 8 of the Companies (Incorporation) Rules, 2014. Currently, 14 teams are working in the Centre. The aim of the DTU Innovation and Incubation Foundation is to create a culture of entrepreneurship, startups, and Intellectual Property Creation that leads to value creation, jobs, and employment, and does social and economic good by creating a robust ecosystem. The centre offers incubation infrastructure, including space, computing resources, connectivity, common tools; and environment for co-working, collaboration, and innovation.

The university has also established centers like Centre of Outreach & Extension Activities and Centre of Human Resource Development (HRDC). The Centre of Outreach & Extension Activities aims to organize a variety of activities for promoting public awareness. The Outreach and Extension Center annually organizes an awareness program on engineering for class X/XI/XII students of private and government schools. The HRDC centre aims to upgrade and enhance the skills and knowledge of faculty at DTU. The center recently organized a faculty development program "Game Changer" for the newly recruited assistant professors in the university.

The university has a well-equipped centralized computer centre to cater to the needs of highly creative intellectual students and faculty community. The centre possesses HP and Dell high performance servers, along with Intel core i5 computer systems in its labs. The centre is fully networked through high-end intelligent Aruba/Avaya switch/controllers and possesses round-the-clock two leased lines of 10 Gbps (NKN) & 200Mbps (Airtel) for WiFi and LAN connectivity in the entire campus.

The students of DTU are provided with excellent facilities for indoor and outdoor games. DTU has 4x400 mtr. racing track, fields for football, hockey, cricket, courts for volleyball, basketball, tennis, badminton,



along with facilities for indoor games. A well-equipped gymnasium is also available in the campus in addition to gym facilities in each hostel. The university has appointed coaches in almost all the games to coach the students and prepare university teams. Students are encouraged to participate in various sporting events and tournaments, held in and around NCR of Delhi. From academic year 2018-19, as per the revised curriculum, the university offers foundation electives to the students of first year and second year and in this sports have big share of electives. In 2018-19, approximately 475 students opted for sports in first and 500 in second semester. The number is expected to double this year.

The University has 9 Boys and 6 Girls hostels to accommodate 1289 male and 334 female students. Every hostel has its own common room and gymnasium. The hostels are connected to the campus via the campus-wide WiFi network, enabling the residents to browse the Internet and access online library resources for their academic and research-related tasks. DTU has a full-fledged health centre where services of five medical practitioners and round the clock nursing facilities are available.

Two new academic blocks and three hostel blocks are under construction. It will provide the academic infrastructure for 3000 students. Further, the increase in hostel capacity will accommodate an additional 660 girls and 330 boys.

A multipurpose hall named Raj Soin Hall is under construction which will provide facility for organizing various programs for 3000 people. It can also be used for indoor sports. It will have food court and other facilities for the students. For this alumnus of the university Sh. Raj Soin has made a major contribution of Rs. Five Crores.

## **Events and Festivals**

The university annually organizes cultural, literary, sports and technical festivals. These festivals not just provide an opportunity to the students to connect with the professional world, but also display their creative and technical skills in several interesting events and activities organized during the fests. The Engifest is annual cultural extravaganza of the university and offers a good mix of literary, cultural, and entertainment events. Further, there are a series of professional societies including IEEE, IETE, CSI, SSE and others. The Invictus is annual technical festival of the university where all technical societies of the university host various technical activities and competition. Some of major events include Troika, the festival by IEEE-DTU students chapter; Radix, a popular event on robotics where digitally-operated and mechanically-controlled robots participate in contests. In Junkyard, participants are required to create something interesting out of scrap. Brainwave is a hardware conceptualization contest aiming to showcase the latest among hardware designs, their synthesis and enhancement. Envision is a software development competition that sees participants coming up with path-breaking concepts. Innova is the jointly conducted techno-management fest of the Department of Mechanical and Production Engineering and the Department of Civil and Environmental Engineering. The Clay Play event in Innova is a design challenge where participants sketch their dream car and make a clay-model of it, which is adjudged on the basis of its aesthetic appeal and aerodynamic features. Ventura is another event where teams present their business plans to a panel of judges. The sports festival ARENA is organized annually. The festival witnesses large participation of boys and girls in various sports which include athletics, cricket, tennis, basketball, volleyball, badminton, table tennis, carrom, chess etc.

University regularly organizes conferences, faculty development programs and workshops for learning through networking and academic growth of faculty and students.

In academic session 2019-20 a total of 4 international conferences were organized one each by the Applied Mathematics, Electronics and Communication Engineering, Electrical Engineering and Mechanical Engineering departments.

The university also organizes **GIAN Courses** by inviting internationally-renowned faculty to deliver short-term courses with an aim to boost higher education in the campus. The lectures have been delivered by International faculty including Prof. Subhash C. Sarin, Virginia Tech, USA; Dr. Sanjay Kumar Shukla, Edith Cowan University, Australia; Prof. Saifur Rahman, Virginia Tech, USA; Dr. Mohamad Sawan, Polytechnique Montreal, Canada; Prof. Elias Strangas, College of Engineering, Michigan State University, USA; Prof. Miguel Angel Sotelo, University of Alcalá, Spain, and many others.

## **Placements**

The university students are placed in reputed companies offering a promising and high profile career. Some of the companies that have recruited students during the campus placements include Flipkart, Amazon, Microsoft, Google, Goldman Sachs, Texas Instruments, Synopsys, SanDisk, Nvidia, Indian Oil, Maruti, Yahoo, Oracle, Samsung, Deloitte, McKinsey, Adobe, and L&T. The highest annual salary package has gone up to Rs. 1.25 crore per annum. A major highlight of placements at DTU is that the leading companies not only make job offers to the final year students, but they also offer paid internships to third year students. This enhances the industry interface further, preparing them for the technological challenges of the industries and in turn assure better pre-placement jobs offers for the students.

Students who have graduated from DTU are studying in various prestigious national and international institutes such as IIMs, IITs, Carnegie Mellon University, Columbia University, Duke University, Purdue University, University of Texas and University of California.

Overall, the university has all the possible academic, cultural and social infrastructure and environment to develop industry relevant and socially sensitive human resource for India and Globe.

## **Distinguished Alumni**

DTU has provided the nation, as well as the world at large, with some of the best and finest engineering and technology professionals. They have, with distinction, led great enterprises and corporate houses in India and abroad, bringing immense glory to their alma-mater, all the while enhancing the pride of the engineering profession by their distinguished services performed with utmost sincerity and commitment.

The long list of distinguished alumni of this great institution includes Vinod Dham, 1971 EC, The Designer of Pentium Chip; Raj Soin, 1969 Mech, Chairman, Soin International, Ohio, USA; K.L. Chugh, 1960 Mech, former CMD, ITC; Ajay Choudhury, 1958 Architecture, Eminent Architect; Dr. Durga Das Agrawal, 1967 Mech, President and CEO, Piping Technology and Products, Houston, USA; Prof. Bhuvnesh Goswami, 1959 Textile, Distinguished Alumni Professor, University of Clemson, USA; Prof. Yogi Goswami, 1969 Mech, Distinguished Professor of Solar Energy Technologies, University of Florida, USA; Yogesh Sud, 1969 Mech, NASA Gold Medalist Scientist; Surya Kant, Vice President and Head TCS America USA; A.K. Puri, 1975 Mech, Former CMD, BHEL; A.K. Baweja, Former CMD, Hindustan Aeronautics Ltd.; Sanjeev Ahuja, Former Chairman, Orange SA; Ashwani Kumar, CMD, Bharat Electronics Ltd.; Anil Sardana, Managing Director, Tata Power Ltd.; A.K. Purwaha, CMD, Engineers India Ltd.; S.K. Vij, former Member Railway Board and President, Indian Building Congress; Karnail Singh, IPS; Arun Goyal, IAS, Minister of Commerce and Industry, Indian Embassy, Tokyo, Japan; Vijay Shekhar Sharma, Founder, PayTM; Group Captain (Late) R.S Bhola, Olympic Winner, Ajay Dixit, CEO

Cairn Oil & Gas, Vedanta Ltd., Archana Bhardwaj Executive Director IOCL, P.R Sheshadri, CEO and MD, Karur Vysya Bank Limited, Jayant Khosla CEO and MD VLCC, Sanjay Brahmawar, CEO, Software AG, and many more.

## **Our Glorious Past**

“76 years of Tradition of excellence in Engineering & Technology Education, Research and Innovations” Delhi College of Engineering, (initially established with the name – Delhi Polytechnic) came into existence in the year 1941 to cater the needs of Indian industries for trained technical manpower with practical experience and sound theoretical knowledge. The institution started its functioning at the historic Kashmiri Gate campus as a follow up of the Wood and Abott Committee of 1938. It comprised of a multi disciplinary and multi level institution offering wide range of programs in engineering, technology, art and sculpture, architecture, pharmacy and commerce. The national diploma awarded by the institution was recognized as equivalent to degree level for the purpose of employment. In 1952, the college was affiliated with University of Delhi and started formal Degree level programs. The department of Architecture later became the School of Planning and Architecture, now a Deemed University and Institution of National importance. The department of Arts and Sculpture became College of Arts and the departments of Chemical Technology and Textile Technology were shifted out en-block to mark beginning of the IIT Delhi at its new campus at Hauz Khas. The department of commerce was later abolished and the faculty of management studies of the University of Delhi was established by Prof. A Das Gupta, of DCE. Delhi College of Engineering is thus the mother institution of a number of national projects including IITD, SPA, College of Arts and even the famous FMS.

Till 1962, the college was under the direct control of Ministry of Education, Government of India. In 1963, the administration of the college was handed over to Delhi Administration. Delhi College of Engineering was under the administrative control of Department of Training & Technical Education, Govt. of NCT of Delhi. For academic purpose, the college was affiliated to University of Delhi since 1952. From July 2009, the DCE has become Delhi Technological University vide Delhi Act 6 of 2009.

The erstwhile DCE has functioned from its historic Kashmiri Gate Campus for almost 55 years and has shifted in 1996 to its lush green sprawling campus of 164 Acres at Bawana Road, adjoining Sector-17, Rohini, Delhi. Its shifting to new campus has added the dimension of research and caused innovations in plenty, which has received high national and international acclaim. As Delhi Technological University, it has the desired autonomy to excel and shape itself as a world class Technological University.

# Delhi Technological University

## Ordinance (1-B)

### Ordinance for the Undergraduate and Post Graduate degree programs of Delhi Technological University

*(For batches 2018-19 and onwards)*

#### Preamble

Delhi Technological University (DTU) is a non affiliating, teaching and research University at Delhi to achieve excellence in science, engineering, technology, management and allied areas and matters connected therewith or incidental thereto. It enables students to face the wide-ranging changes taking place in the fields of technology, environment and management with confidence. This includes undertaking design, development, construction, production, managerial and entrepreneurial activities, and higher studies in their chosen or allied interdisciplinary fields of study. The University lays great emphasis on assisting students in the development of National character, self-confidence, leadership and entrepreneurial skills.

#### 1. Short title and Commencement:

- i This ordinance shall be called the Ordinance 1 (B) 2018 meant for the undergraduate and post graduate degree programs of Delhi Technological University for batches 2018-19 onwards.
- ii This ordinance shall come into force with effect from the date of Board of management approval.

#### 2. Definitions: (a) In this ordinance, unless the contents otherwise require-

- i. **“AC” and “Council”** shall mean the Academic Council of the Delhi Technological University.
- ii. **“BoM”** shall mean the Board of Management of the University.
- iii. **BoS** shall mean Board of Studies of the Department/ School
- iv. **“CGPA”** shall mean the Cumulative Grade Point Average.
- v. **Department** shall means a department of studies of the university.
- vi. **School** shall mean a school of studies of the university.
- vii. **“SGPA”** shall mean the Semester Grade Point Average.
- viii. **“Student”** shall mean a student registered for undergraduate or post graduate program.
- ix. **“University”** shall mean the Delhi Technological University.
- x. **“UTTC”** shall mean University Time Table Committee.
- (b) Words and expressions used but not defined in this ordinance and defined in the Act and Statutes, shall have the same meaning as assigned to them in the Act or Statute.

**Note :** ‘He’, ‘Him’ and ‘His’ implies ‘he/she’, ‘Him / Her’ and ‘his/her’, respectively.

### **3. Ordinance:**

- i. The University shall offer UG and PG programs as approved by the BoM on the recommendation of the AC either on its own or on the initiative of a Department/ School, and/or on the direction of the BoM.
- ii. The minimum entry qualifications and the policy and procedure of admission to the programs shall be such as may be approved by the AC.
- iii. A student of a program shall be required to earn a minimum number of credits through various curricular components like lectures/tutorials/laboratory/studio courses, seminar, industrial training, project etc. at the University or at such other institutions/industry as may be specified in the Regulations.
- iv. A student shall be required to complete all the requirements for the award of the Bachelor or Master degree within such period as may be specified in the Regulations.
- v. A student shall be required normally to attend every lecture, tutorial, studio and laboratory class. However, for late registration, sickness or other such exigencies, absence may be allowed as provided for in the Regulations.
- vi. A student may be granted such scholarship/ studentship/ assistantship/ stipend, etc. and awarded such prizes and medals as may be specified in the Regulations in accordance with the directions of the Government of India/Government of NCT of Delhi and/or the decision of the AC/BoM.
- vii. The procedure for the withdrawal from a program, rejoining the program, and all such matters as may be connected with the running of a program shall be such as may be specified in the Regulations.
- viii. The procedure of conduct of examination, evaluation, the award of grades and the SGPA/CGPA, secrecy, and declaration of result shall be such as may be specified in the Regulations.
- ix. The award of the Bachelor or Master degree to an eligible student shall be made in accordance with the procedure laid down in the Regulations.
- x. The procedure for temporarily suspending or phasing out of a program, shall be such, as may be laid down in the Regulations.
- xi. Notwithstanding anything contained in the above Ordinance, no Regulations shall be made in contravention of the decision of the AC/BoM in regard to the duration of the program, the number of studentships, the procedure of admission, the percentage of students of various categories. The Regulations for the undergraduate and post graduate degree programs can be prepared/ modified / amended from time to time and the same shall be approved by the AC.
- xii. Subject to the provisions of the Act and Statutes and these Ordinances, the issues not covered in these Ordinances or in the event of differences of interpretation, the Vice Chancellor may take a decision, after obtaining the opinion of a Committee consisting of any or all the Deans of the University. The decision of the Vice Chancellor shall be final.
- xiii. In special circumstances, the Vice Chancellor may, on behalf of the BoM, approve amendment, modification, insertion or deletion of an ordinance(s), which in his opinion is necessary or expedient for the smooth running of a program, provided that all such changes shall be reported to the BoM in its next meeting for ratification.

# Regulations for the Undergraduate and Post Graduate degree programs

## Delhi Technological University

(To be read alongwith the Ordinance 1(B), 2018 meant for the undergraduate and post graduate degree programs of Delhi Technological University for batches 2018-19 onwards)

*(For batches 2018-19 and onwards)*

### Preamble

Delhi Technological University (DTU) is a non affiliating, teaching and research University at Delhi to achieve excellence in science, engineering, technology, management and allied areas and matters connected therewith or incidental thereto. The University enables students to face the wide-ranging changes taking place in the fields of science, technology, environment and management. This includes innovation, design, development, construction, production, managerial and entrepreneurial activities. The University lays great emphasis on assisting students in the development of national character, self-confidence, leadership and fostering an ecosystem for creativity and imagination.

#### R. 1(B).1. Short title and Commencement:

- i. These Regulations are meant for the undergraduate and post graduate degree programs of Delhi Technological University for batches 2018-19 onwards and to be read with Ordinance 1(B), 2018 meant for the undergraduate and post graduate degree programs of Delhi Technological University for batches 2018-19 onwards.
- ii. These Regulations shall come into force with effect from 1.08.2018.

#### R. 1(B).2. Definitions:

- i. **“Applicant”** shall mean an individual who applies for admission to undergraduate/post graduate degree programs
- ii. **“AC” and “Council”** shall mean the Academic Council of the Delhi Technological University.
- iii. **“Academic Program”** shall include a program of courses or any other component leading to undergraduate or post graduate degree.
- iv. **“BoM”** shall mean the Board of Management of the University.
- v. **“BoS”** shall mean Board of Studies of the Department.
- vi. **“CGPA”** shall mean the Cumulative Grade Point Average.
- vii. **“Coordination Committee”** shall mean the committee of the faculty members involved in a course.
- viii. **“COE”** shall mean Controller of Examinations of the University.
- ix. **“Course”** shall mean a curriculum component of the academic program identified by a designated code number, a title and specific credit assigned to it.
- x. **“Course Coordinator”** shall mean a faculty member who shall have full responsibility for the course; coordinating the work of faculty member(s) involved in that course, including examinations and the award of grades.



- xi. **“CWS”** shall mean Class Work Sessional.
- xii. **“Dean (UG)”** shall mean the Dean Academic (UG).
- xiii. **“Dean (PG)”** shall mean the Dean Academic (PG).
- xiv. **“Degree”** shall mean the Bachelor or Master degree of the University as may be approved by the BoM from time to time.
- xv. **“Department”** shall mean a department of studies of the University
- xvi. **“DSW”** shall mean the Dean of Students Welfare.
- xvii. **“ETE”** shall mean End-Term Examinations
- xviii. **“HOD”** shall mean Head of the Department/School
- xix. **“Faculty Advisor”** shall mean a teacher nominated by the Department to advise a student on the courses to be taken by him/her and other matters related to the academic program.
- xx. **“Grade Moderation Committee”** shall mean the committee appointed by the Board of Studies to moderate grades awarded by the Course Coordinators in different courses in a semester at a given level of a curriculum.
- xxi. **“MTE”** shall mean Mid-Term Examinations
- xxii. **“NRI NRI/PIO/FN category Student”** shall mean the student who is admitted against NRI/PIO/FN category.
- xxiii. **“OBC”** shall mean the other backward classes as notified by the Government of India/Government of NCT of Delhi from time to time.
- xxiv. **“PD”** shall mean the persons with disability as specified by the Government of India from time to time.
- xxv. **“PG”** shall mean the Post Graduate.
- xxvi. **“PRE”** shall mean Practical Examinations
- xxvii. **“PRS”** shall mean Practical Sessional
- xxviii. **“Registration”** shall mean registration for course or semester at the start of the semester of any program of the University.
- xxix. **“SC/ST”** shall mean the Scheduled Castes and Scheduled Tribes as notified by the Government of India/Government of NCT of Delhi from time to time.
- xxx. **“Scheme of Teaching and Examination”** shall mean the scheme of teaching and examination as approved by the Academic council from time to time.
- xxxi. **“School”** shall mean a school of studies of the University.
- xxxii. **“SGPA”** shall mean the Semester Grade Point Average.
- xxxiii. **“Student”** shall mean a student registered for undergraduate or post graduate program.

xxxiv. “**UG**” shall mean the Under Graduate.

xxxv. “**University**” shall mean the Delhi Technological University.

xxxvi. “**UTTC**” shall mean University Time Table Committee.

**Note:** ‘He’, ‘Him’ and ‘His’ implies ‘he/she’, ‘Him / Her’ and ‘his/her’, respectively.

#### **R. 1(B).3 Board of Studies (BoS):**

The Board of Studies (BoS) shall be a sub-committee of the AC, which shall consider all the academic matters related with the Department/School. It shall also consider and recommend to the AC the broad framework and policies related to the UG and PG degree programs offered by the University. The composition of BoS of the Department(s)/School(s) shall be as follows: Head of the Department/School (Chairperson), all Professors of the Department/School (Members), two Experts appointed by the Vice Chancellor (Members) and two Associate Professors of the Department/School by rotation (Members) for a period of two years. In the absence of adequate faculty in the Department/School, Vice Chancellor can constitute the BoS with faculty from other relevant disciplines.

#### **R. 1(B).4 Undergraduate and Post Graduate Programs:**

- i. The University offers Undergraduate and Post graduate programs of different durations in different disciplines as given in **Table 1**. The scheme of teaching and examination of these programs is given in **Annexure 1A-1J** respectively. The scheme of teaching and examination of a program may be amended/ modified in accordance with the approval of the AC.

**Table 1: Broad Structure of UG and PG Programs**

| S. No | Program                            | Annexure    |
|-------|------------------------------------|-------------|
| 1.    | B. Tech.                           | Annexure 1A |
| 2.    | B.Tech. under Continuing Education | Annexure 1B |
| 3.    | BBA                                | Annexure 1C |
| 4.    | BA/B.Sc.                           | Annexure 1D |
| 5.    | B. Des.                            | Annexure 1E |
| 6.    | M. Tech                            | Annexure 1F |
| 7.    | M. Tech (Part Time)                | Annexure 1G |
| 8.    | MBA                                | Annexure 1H |
| 9.    | EMBA                               | Annexure 1I |
| 10.   | MA/ M.Sc.                          | Annexure 1J |

- ii. The normal and maximum duration of the UG and PG programs is given in **Table 2**. The maximum duration for all the programs shall be counted from the date of initial registration. The maximum duration of the program shall include the period of withdrawal, absence and different kinds of leaves permissible to a student, but it shall exclude the period of

rustication. The duration for these programs may be altered in accordance with the decision of the AC/ BoM.

**Table 2: Duration of UG and PG Programs**

| S. No | Program                            | Normal Duration<br>(2021-2022) | Maximum Duration<br>(2021-2022) |
|-------|------------------------------------|--------------------------------|---------------------------------|
| 1.    | B. Tech.                           | 4                              | 7                               |
| 2.    | B.Tech. under Continuing Education | 4                              | 7                               |
| 3.    | B.Tech. (Lateral Entry)            | 3                              | 5                               |
| 4.    | BBA                                | 3                              | 5                               |
| 5.    | BA/B.Sc.                           | 3                              | 5                               |
| 6.    | B. Des.                            | 4                              | 7                               |
| 7.    | M. Tech.                           | 2                              | 4                               |
| 8.    | M. Tech. (Part Time)               | 3                              | 5                               |
| 9.    | MBA                                | 2                              | 4                               |
| 10.   | EMBA                               | 2                              | 4                               |
| 11.   | MA / M.Sc.                         | 2                              | 4                               |

**R. 1(B).5 Admissions:**

- i. The policy of admissions, the eligibility thereof, admission criteria and other issues pertaining to admission shall be such as may be approved by AC from time to time.
- ii. NRI/PIO/Foreign national either residing in India or abroad may be admitted to the UG and PG programs in accordance with the policy guidelines laid down by the AC from time to time.

**R. 1(B).6 Starting a New Program:**

The University may start a new UG or PG program as approved by the BoM on the recommendation of the AC either on its own or on the initiative of a Department/School, and/or on the direction of the BoM.

**R. 1(B).7 Semester System:**

- i. The academic programs in the University shall be based on semester system; Odd and Even semesters in a year with winter and summer vacations.
- ii. A number of courses shall be offered in each semester. Each course shall have a certain number of credits assigned to it depending upon the academic load of the course assessed on the basis of weekly/semester contact hours of lecture, tutorial, studio and laboratory classes, assignments or field study or self-study.

- iii. The courses offered in a semester shall be continuously assessed and evaluated to judge the performance of a student.

**R. 1(B).8 Course Code:**

Each course offered by the University shall be identified by a course code, normally consisting of a string of five alpha-numeric characters followed by a course title. The first two characters in a course code shall be capital letters identifying the responsible Academic Department/School offering the course. The next three characters are numerical digits: the first one normally specified the year of study and the last two digits specify the course number and the semester in which the course shall be offered. Normally odd number in the course code will indicate that the course will be offered in the odd-semester and the even number will indicate that the course will be offered in the even-semester of the year.

**R. 1(B).9 Course Credits:**

Each course shall have an integer number of credits, which reflects its weight. The number of credits of a course in a semester shall ordinarily be calculated as under:

- i. **Lectures/Tutorial:** One lecture hour per week shall normally be assigned one credit. One hour of tutorial per week shall be assigned as one credit. However, the credits may be adjusted further by taking into consideration the quantum of work required to be put in by a student for learning the course having two/three hours of contact every alternate week shall have one credit only.
- ii. **Practical and Design Studio:** One laboratory or Design Studio hour per week shall normally be assigned half a credit. The courses having two/three hours of contact every alternate week shall have one credit only.

**R. 1(B).10 Academic Registration:**

- i Every student shall be required to register in each semester on the scheduled date as per academic calendar of the University till the completion of the degree. If the student does not register on scheduled date he/she has to pay late registration fee notified from time to time upto a maximum of 10 working days. Registration in absentia may be permitted by the Dean (UG)/ Dean (PG). In absentia registration may be allowed only in rare cases such as illness or any other contingencies, at the discretion of the Dean (UG)/ Dean (PG).
- ii In case, a student is proceeding on industrial training/internship, late registration may be allowed only up to a maximum of 10 working days after the scheduled registration date without late registration fee by the Dean (UG)/ Dean (PG).

**R. 1(B).11 Course Registration:**

- i Every student shall be required to register for the courses that he/she wants to study for earning credits and his/her name will appear in the roll list of each of these courses. No credit shall be given if a student attended a course of which he or she has not registered. The performance of a student in all the courses, for which he/she has registered, shall be included in his/her grade card(s).

- ii. Student should first register for the courses in which he/she has been declared failed in the previous year/semester and then register for the remaining courses of the semester to make up the total required credits for that semester. However, a student of a program of more than 2 years duration shall not be allowed to register for the courses offered to students of third year, if he/she has not cleared all the courses of first year and a student of a program of more than 3 years duration shall not be allowed to register for the courses offered to students of fourth year, if he/she has not cleared all the courses of second year.
- iii. All students of UG/PG program shall complete the registration procedure on a specified registration date as per academic calendar/ schedule notified from time to time.
- iv. A student is advised to register the courses as specified in the scheme of teaching and examination of the program in each semester. In case the student is not allowed to register the courses of current semester due to backlog of course(s) of previous year(s), he/she may register for credits less than minimum credits depending on number of backlog of course(s) of previous year(s). However a student can register for a minimum and a maximum of credits as given in **Table 3**.

**Table 3: Minimum and Maximum Permissible Credits**

| S. No | Program                            | Minimum Credits | Maximum Credits |
|-------|------------------------------------|-----------------|-----------------|
| 1.    | B. Tech.                           | 16              | 32              |
| 2.    | B.Tech. under Continuing Education | 12              | 24              |
| 3.    | BBA                                | 16              | 32              |
| 4.    | BA                                 | 16              | 32              |
| 5.    | B. Des.                            | 16              | 32              |
| 6.    | M. Tech.                           | 12              | 24              |
| 7.    | M. Tech. (Part Time)               | *               | *               |
| 8.    | MBA                                | 16              | 32              |
| 9.    | EMBA                               | 16              | 32              |
| 10.   | MA/M.Sc.                           | 16              | 32              |

\* Refer scheme of teaching and examinations of M.Tech. Program.

- v. A student shall have the option to add or delete courses from his/her registration during the first ten days of the semester as per Academic Calendar.
- vi. A student shall have the option to obtain a Minor in a specific discipline. A Minor shall be awarded to a student along with his/her major discipline if he/she has earned requisite credits (courses) from the prescribed basket of Courses for that Minor.
  - a. A student who wishes to pursue a Minor from other discipline shall earn 24 credits (out of the total 48 credits to be earned from elective courses) from the basket prescribed for that

particular Minor. The remaining 24 credits shall be earned from the departmental elective courses of the discipline to which the student is pursuing his/her UG degree.

- b. A student who wishes to pursue a Minor from the own discipline shall earn 20 credits (out of the total 48 credits to be earned from elective courses) from the basket prescribed for a particular Minor. The remaining 28 credits shall be earned from the departmental elective/ general elective courses.
  - c. A student not keen to pursue a Minor shall earn at least 24 to 28 credits (out of the total 48 credits to be earned from elective courses) from the departmental elective courses of the discipline in which the student is pursuing his/her UG degree. The remaining credits (24 or 20) shall be opted from the departmental elective/ general elective courses.
- vii. A student shall have the option to do course work and/or project work for one semester at any University that is ranked in first 500 by Times Higher Education or QS ranking in last five years, under Semester away Program. The other Universities may also be considered where DTU has signed a Memorandum of understanding under the student exchange program. The detailed guidelines of Semester away Program are given in Annexure -1.

**R. 1(B).12 Minimum Number of Students Required For An Elective Course:**

An elective course in the department/school shall run if a minimum of 20 numbers of students register for it in a semester. However, the minimum number of students shall be decided as per guidelines laid by BoS for programs where the strength of batch of students is below 30.

**R. 1(B).13 Program Advisor:**

A Program Advisor shall be appointed by the Head of the Department who shall advise the students for registration.

**R. 1(B).14 Course Coordinator:**

Every course offered by a Department/School shall be coordinated by a Course Coordinator appointed by the Head of the Department/School. The Course Coordinator shall have full responsibility for the course. He/she shall coordinate the work of other faculty members involved in that course in respect of their participation in various activities related to the course including continuous evaluation of the students through tests, quizzes, assignments, mid-term and end-term examination and the award of the grades.

**R. 1(B).15 Course Evaluation:**

- i. A student shall be evaluated for his/her academic performance in a course through tutorials, practicals, design studio work, homework, assignments, term papers, field work/industrial training, seminars, quizzes as CWS, PRS/ STS /CMS , MTE, ETE/ EME and PRE/ STE/as specified in the Scheme of teaching and examination. The distribution of weightage/marks among various components of continuous evaluation is given in Annexure -2.



- ii. The distribution of weights for each component shall be announced by the course Coordinator at the beginning of the course, subject to such stipulations as are given in the Scheme of Teaching and Examination for a given program.
- iii. The courses offered in a semester shall be continuously assessed and evaluated to judge the performance of a student.
- iv. The criteria for continuous evaluation of any subject shall be declared in the very first week of commencement of the classes.
- v. Answer sheets of the test(s) and examination(s) cannot be written in pencil.
- vi. Evaluation of Answer sheet(s) should not be in pencil.
- vii. A student can see his/her answer sheet(s) of MTE and the ETE and point out any discrepancy in its evaluation on a day fixed by the Course Coordinator/Chairman, Grade Moderation Committee. Objections will be entertained right then, and not even on the next day.
- viii. The answer sheets be disposed off by the Examination Branch after preserving them for six months only, except those which have some pending matter.
- ix. The answer sheets of the End-Term Examination shall not be shown to a student after finalization of the grades by the Grade Moderation Committee.
- x. The industrial/field training shall normally be evaluated through the quality of work carried out, the report submission and presentation(s) as specified by the Department/School from time to time. The project shall be evaluated normally by Mid-Term seminar(s), quality of work carried out, project report submitted and the viva-voce examination.

**R. 1(B).16 Conduction of Examination:**

- i. The examinations of various programs shall be conducted in a manner as prescribed and approved by AC.
- ii. Mid-Term Examination will be conducted by course coordinator and the faculty members concern during the slot notified by the COE.
- iii. While the paper is set, the Mid-Term Examination papers will not have any alternative, however 20-30% alternatives may be admissible in the End-Term Examination paper.
- iv. The End-Term Examination will be conducted by the COE.
- v. Evaluation process should be concluded within specified days from the end of the schedule of examination:  
  
Mid-Term Examination – One week  
  
End-Term Examination – Two weeks
- vi. A notification of slot/date/venue be issued by concerned faculty member under intimation to COE for showing answer sheets to the students. Both Mid-Term & End-Term answer sheets should be shown to the students by the concerned faculty member(s)/Evaluator(s).

- vii. Policy adopted by individual faculty member/ evaluator for evaluation of answer sheets should be uniform and consistent, and in case any moderation is done for the marks the same should uniformly be applied under intimation to COE.

#### R. 1(B).17 Grading System:

- i. The academic performance of a student shall be graded on a 10-point scale. For the award of grades in a course, all component-wise evaluation shall be done in marks. The marks of different components shall be reduced to relative weights of each component as per scheme of teaching and examination and shall be added. Marks so obtained shall be out of 100 and the same shall be converted to grades.
- ii. The mean ( $\bar{x}$ ) and the standard deviation ( $\sigma$ ) of marks obtained of all the students in a course shall be calculated and used to convert the marks obtained ( $m$ ) by a student into grades. The structure of grading will be as given in **Table 4**.

**Table 4: Structure for Grading of Academic Performance**

| Letter grade         | Numerical grade | Formula  | Computation of grade cut off   |
|----------------------|-----------------|--|--|
| O<br>(Outstanding)   | 10              | $m \geq \bar{x} + 1.5 \sigma$                        | The value of $\bar{x} + 1.5\sigma$ to be taken into account for grade computation. The grade cut off will be $\bar{x} + 1.5\sigma$ or 91% whichever is lower |
| A+<br>(Excellent)    | 9               | $\bar{x} + 1.0 \sigma \leq m < \bar{x} + 1.5 \sigma$ | The value of $\bar{x} + 1.0\sigma$ to be taken into account for grade computation. The grade cut off will be $\bar{x} + 1.0\sigma$ or 82% whichever is lower |
| A<br>(Very Good)     | 8               | $\bar{x} + 0.5 \sigma \leq m < \bar{x} + 1.0 \sigma$ | The value of $\bar{x} + 0.5\sigma$ to be taken into account for grade computation. The grade cut off will be $\bar{x} + 0.5\sigma$ or 73% whichever is lower |
| B+<br>(Good)         | 7               | $\bar{x} + 0.0 \sigma \leq m < \bar{x} + 0.5 \sigma$ | The value of $\bar{x} + 0.0\sigma$ to be taken into account for grade computation. The grade cut off will be $\bar{x} + 0.0\sigma$ or 64% whichever is lower |
| B<br>(Above average) | 6               | $\bar{x} - 0.5 \sigma \leq m < \bar{x} + 0.0 \sigma$ | The value of $\bar{x} - 0.5\sigma$ to be taken into account for grade computation. The grade cut off will be $\bar{x} - 0.5\sigma$ or 55% whichever is lower |
| C<br>(Average)       | 5               | $\bar{x} - 1.0 \sigma \leq m < \bar{x} - 0.5 \sigma$ | The value of $\bar{x} - 1.0\sigma$ to be taken into account for grade computation. The grade cut off will be $\bar{x} - 1.0\sigma$ or 46% whichever is lower |
| P<br>(Pass)          | 4               | $35 \leq m < \bar{x} - 1.0 \sigma$                   | The lower grade cut off will be 35%  |
| F<br>(Fail)          | 0               | $m < 35$   | Less than 35%  |

In those subjects, where the total number of students is upto 30, the results in Grades shall be prepared on the basis of the actual performance of the student in the percentage scale and not on the basis of the formula approved for computation of grades.

- iii. The following are the general guidelines for the award of grades:
- a) All evaluations of different components of a course shall be done in marks for each student. The marks of various components shall be reduced to appropriate weights as given in Scheme of teaching and examination and added up to get total marks secured on a 100-Point scale. The rounding off shall be done only once and on the higher side.

- b) The method suggested in Table 4 shall be used for the award of grades with or without marginal adjustment for natural cut- offs.
- c) The provisional grades shall be awarded by the Coordination Committee of the course consisting of all the teachers involved in that course. The course coordinator shall have full responsibility for this purpose. The grades so awarded shall be moderated by grade moderation committee of the respective Department/School.
- d) For a student to get passing grade, he / she will have to appear in End-Term Examination.

iv. The award of 'F' Grade

- a) The 'F' grades denote poor performance, i.e. failing course. 'F' grade is also awarded in case of poor attendance (see attendance Rules). 'F' grade secured in any course stays permanently on the grade card. The weight of 'F' grade is not counted in the calculation of the CGPA however, it is counted in the calculation of the SGPA.
- b) In case a student is awarded 'F' Grade in a Core paper, the student has to repeat the course either in the summer semester or in subsequent semester, when it is offered.

The students having 'F' grade in a subject in either or both odd and even semesters, at the end of current Academic Year shall be allowed to register for summer semester. This provision shall also be applicable to those students who have been detained from appearing in final examinations due to shortage of attendance/ whose results have not been declared due to their involvement in use of unfair means during the examinations. The detailed guidelines for summer semester are given in Annexure -3

- c) In case a student is awarded 'F' grade in an Elective paper, the student may take the same course or any other course from the same category in the subsequent semester.
- d) In case a student is awarded a failing grade in the major / minor project, he/she shall have to repeat the course in the form of a new project. Such a student will have to work full time on the project for a minimum period of four months.

v. The award of 'I' grade

This refers to an 'incomplete' grade which is required to be converted into a regular letter grade. The guidelines for the award of 'I' grade is as follows:

- a) If a student is absent during End-Term Examination of a course due to medical reasons or other special circumstances, he / she may apply for the award of 'I' grade to the COE through the Course Coordinator, provided that he / she has not been disqualified due to shortage of attendance. The concerned course coordinator shall have to be convinced about the extraordinary circumstances and shall have to certify the attendance record before this rarely used option to award 'I' grade is recommended.
- b) The 'I' grade so awarded shall be notified by the COE.

- c) The 'I' grade shall be converted into a proper letter grade and shall be sent to the COE after make-up examination is over and the requirements of the course are completed by the student.
  - d) In extra ordinary circumstances, the period of conversation of 'I' grade mabe be extended to next semester, with the approval of the Dean (UG)/Dean (PG) on his own or on the recommendation of the Course Coordinator and the Head of the Department(s)/School(s).
  - e) In extra-ordinary circumstances, on the recommendation of the Dean (UG)/Dean (PG), the Vice-Chancellor may order the award of 'I' grade to a student/class or a batch of students taking a particular course. The conversion of 'I' grade into a regular grade or any other action shall be as per the approval of the Vice-Chancellor.
- vi The letter grades awarded to a student in all the courses shall be converted into a semester and cumulative performance index called the Semester Grade Point Average (SGPA) and cumulative Grade Point Average (CGPA), to be calculated as given below:

$$S. G. P. A = \frac{\sum_{i=1}^n C_i \times P_i}{\sum_{i=1}^n C_i}$$

where,

$C_i$  = Number of Credits of the  $i^{th}$  course of a semester for which SGPA is to be calculated

$P_i$  = Grade Point obtained in  $i^{th}$  course.

$i=1, \dots, n$ , represent the number of courses in which a student is registered in the concerned semester.

$$C. G. P. A = \frac{\sum_{i=1}^m C_i \times P_i}{\sum_{i=1}^m C_i}$$

where,  $C_i$  = Number of Credits of the  $i^{th}$  course of a semester.

$P_i$  = Grade Point obtained in  $i^{th}$  course. A grade lower than 'P' (i.e. grade point < 4) in a course shall not be taken into account.

$i=1, \dots, m$ , represent the number of courses in which a student was registered and obtained a grade not lower than 'P' upto that semester for which CGPA is to be calculated.

- vii. At the end of the program, a student with CGPA of 8.0 and above shall be awarded 'First Division with Distinction' and a student with CGPA between 6.0 and 8.0 shall be awarded "First Division".
- viii. All the passing out students of a class shall be given ranks as **"Rank XXX in a class of YYY Students"**.

**R. 1(B).18 Grade Moderation Committee:**

The BoS of academic department(s)/School(s) will constitute the Grade Moderation Committee for all the Academic Courses under its purview. The Head of the Department/School shall be the Chairman of the committee, and other members shall consist of two Professors, two Associate Professors and two Assistant Professors of the department. This committee shall be responsible for adherence to the guidelines for the award of grades and shall include all the concerned Course Coordinators. The Chairman, Grade Moderation Committee shall be responsible for the display of grades in the department and for forwarding the final grades to the COE. The Chairman, Grade Moderation Committees shall also send the record-copies of the marks and the grades along with the statistical parameters for all the courses moderated to the COE. One copy of distribution of marks shall be sent to the COE along with grades by the Chairman, Grade Moderation Committee. The general guidelines for the moderation of grades are as follows:

- a) The date of moderation shall be made a part of the Academic Calendar of the University.
- b) Two-tier moderation be adopted, both for the subject and for the Semester (SGPA, CGPA), Minor adjustment shall be possible during moderation, particularly in the marginal cases. The Chairman, Grade moderation committee shall invariably retain a copy of the grades sent to Examination Section so that CGPAs may be calculated without having to make a reference to the Examination Section for this purpose.
- c) All concerned faculty members should invariably be present for the moderation committee meeting. In case a faculty member is going out on University duty, he/she shall hand over his/her inputs for moderation with a colleague, who shall present it, in the meeting.

**R. 1(B).19 Scrutiny of Grades, Tabulation and Declaration of Results:**

- i. A student may apply for scrutiny of grades to the Head of the Department/School, within three days from the date of display of grades. The Grade Moderation Committee and the Course Coordinator may check the entry of the weights from different components of evaluation and their addition. The results of scrutiny may lead to either a change in grade due to mistake(s) in any of the aspects scrutinized by the committee or the grade may remain unchanged. The results will be intimated to the COE within three days from the date of receiving the application in the department/school as per academic calendar.
- ii. In exceptional circumstances the grade(s) of a student or a number of students may be scrutinized by a committee constituted by the VC.
- iii. The COE shall organize the tabulation of grades and declaration of results. COE shall be the custodian of records related to examinations and results.

**R. 1(B).20 Earned Minimum Credits and Minimum CGPA for the Degree:**

The credits for the courses in which a student has obtained 'P' (minimum passing grade for a course) grade or higher shall be counted as Credit Earned by him/her. A student, who has earned the required number of credits as specified in the curriculum he/she is registered for, is eligible for the award of the respective degree.

#### **R. 1(B).21 Unfair Means**

In case a student is found adopting or suspected of adopting unfair means before, during or after the examination, or lifting or copying of work(s) of someone else and inserting it in his class work submissions, Project, Dissertation etc. without proper acknowledgement, credit and reference, such penal action shall be taken by the University against the student as may be necessary and adequate to uphold the sanctity and integrity of the examination system and the credibility of the University. The general guidelines for a penal action for use of unfair means shall be prescribed at **Annexure-4**.

All the cases regarding use of unfair means practices in the examinations shall be reported and Placed before the “Unfair Means Scrutiny Committee”. The composition of the Unfair Means Scrutiny Committee shall be as follows: Dean (UG) (Chairperson), Dean (PG), DSW, Head of the concerned Department/School, Associate Dean/DR Academic (UG), Associate Dean/DR Academic (PG) (Members) and COE (Convener)

The COE shall convene the meeting of Unfair Means Scrutiny Committee from time to time as per requirement.

#### **R. 1(B).22 Attendance, Absence, Leave and Withdrawals:**

- i. All the students of UG/ PG programs are expected to attend every lecture, tutorial, practical or design studio class scheduled for them.
- ii. The students of UG/ PG program must have a minimum attendance of 75% of the total number of classes including lectures, tutorials and practicals, held in a subject in order to be eligible to appear at the End-Term Examination for that subject.
- iii. The Dean (UG)/ Dean (PG), authorized by the Vice Chancellor for this purpose may relax the minimum attendance upto 10% for reasons to be recorded. This relaxation may be granted on production of documents showing that the student was either busy in the authorized activities or suffering from any disease. The student should submit these documents to the Dean (UG)/ Dean (PG) through Chairman, BoS within seven days of resuming the studies.
- iv. Under exceptional circumstances, the Vice Chancellor may further relax the minimum attendance upto 5%.
- v. Attendance of the students shall be monitored and displayed during a semester as per the guidelines issued by the Dean (UG)/ Dean (PG).

#### **R. 1(B).23 Make-up Examinations on Medical / Extra Ordinary Ground:**

Students who have missed the Mid-Term Examinations and/or End-Term Examinations of a course(s) due to medical reasons or other special circumstance may be considered for a Make-up Examinations on the clear cut recommendations of HOD considering the merit of the case. In case of End-Term Examinations, Make-up Examinations will be allowed only if a student has not been disqualified earlier, due to shortage of attendance. The student shall make an application to the HOD, within ten working days from the date of the examination missed, explaining the reasons for his/her absence. Applications received after this period will not be entertained. The HOD shall forward all applications with his/her recommendations to COE who in turn shall seek approval from Dean (UG)/ Dean (PG). Further, there will be no make-up of the Make-up Examinations.



**R. 1(B).24      Withdrawal**

**i.              Withdrawal from Course**

A student who wants to withdraw from a course shall apply through the HOD to the COE within one week from the end of the Mid-Term Examination under the advice of his/her Program Advisor. If his/her request for withdrawal is granted, it will be recorded in the registration record of the student and the concerned Course Coordinator will be informed about it. The student will be awarded a withdrawal grade at the end of the semester.

**ii.             Semester Withdrawal:**

In case a student is unable to attend classes for more than four weeks in a semester he/she may apply to the COE through HOD, for withdrawal from the semester, which shall mean withdrawal from all the registered courses in the semester. However, such application shall be made under the advice of the Program Advisor, as early as possible and latest before the start of the End-Term Examination. Partial withdrawal from the semester shall not be allowed.

**R. 1(B).25      Termination of Enrolment:**

**i.              Due to Absence:**

If a student registered in the first year of the program is continuously absent from the classes for more than four weeks without informing the Course Coordinators, the Coordinator shall immediately bring it to the notice of HOD of the concerned department/school for informing the COE. The names of such students shall be removed from the University rolls and such absence during first year will render the student ineligible for re-admission.

**ii.             On Academic Grounds:**

- a)    The enrolment of a student in a program shall stand terminated if he/she fails to earn 30% of prescribed credits in first year, as specified in the Scheme of teaching and examinations, at the end of first year.
- b)    The enrolment of a student shall stand cancelled on completion of maximum duration from the date of initial registration in the program.
- c)    A student whose enrolment has been terminated may appeal to the Vice Chancellor for reconsideration within fifteen days from the date of issuance of the communication of termination. If the appeal is allowed, his/her registration and enrolment shall be restored.

**R. 1(B).26      Scholarship, Prizes, Medals and Merit Certificate:**

i.        The University shall award the merit-cum-means (MCM) scholarships, University free studentship, SC/ST category University scholarship and other scholarships, award and prizes to the student of UG programs as may be approved by the AC/BoM. Other scholarships may be awarded by the University from the grant from individuals, trusts, organizations and the Governments with a view to provide financial assistance to needy students under the terms and conditions specified by the University. Announcements on these scholarships stating eligibility and the value of scholarships etc. shall be made by the University while inviting applications from time to time.

ii.       Those students, who have been punished for unfair means during MTE or ETE or in Seminars/ project/ etc. or for serious act of indiscipline shall not be awarded Merit-cum-Means

Scholarship and other trust scholarship or Medals, Prizes and awards for that academic session only.

- iii. Student may draw scholarships from outside sources only if permitted by Dean (UG)/ Dean (PG).

**R. 1(B).27 Phasing out of a Program:**

The phasing out of a program may be considered by the AC on the recommendation of the BoS. Also, a program may be phased out by the AC if, consecutively for three years, the number of students registering for the program is less than 40% of the sanctioned intake of the students.

**R. 1(B).28 Interpretation of Regulations:**

In case of any dispute, difference of opinion in interpretation of these Regulations or any other matter not covered in these Regulations, the decision of the Chairman, AC shall be final and binding.

**R. 1(B).29 Emergent Cases:**

Notwithstanding anything contained in the above Regulations, the Chairman of the AC may, in emergent situation, take such action including insertion, suspension or modification of any Regulation(s) on behalf of the AC as he/she deems appropriate and report it to the next meeting of the AC for its approval.

## Guidelines for semester away program for course work/project work involving mobility of DTU students (UG/PG/PhD).

### Program wise Eligibility:

|                                |  |
|--------------------------------|--|
| UG programs of 4 Year duration | (i) Complete 4 Semester stay at DTU<br>(ii) CGPA $\geq 7.0$ (At the time of application) without any backlog<br>(iii) No Disciplinary Action initiated OR should not be within the Disciplinary Action period. |
| UG programs of 3 Year duration | (i) Complete 2 Semester stay at DTU<br>(ii) CGPA $\geq 7.0$ (At the time of application) without any backlog<br>(iii) No Disciplinary Action initiated OR should not be within the Disciplinary Action period. |
| PG programs of 2 Year duration | (i) Complete 2 Semester stay at DTU<br>(ii) CGPA $\geq 7.0$ (At the time of application) without any backlog<br>(iii) No Disciplinary Action initiated OR should not be within the Disciplinary Action period. |

### Selection of Host Institution:

Dean International Affairs (IA) DTU will be the nodal officer for selection of the host institution with the approval of Vice Chancellor.

### Subject Selection:

- i. Students shall be allowed to register equivalent credits ranging over 8 – 20 (upper and lower limits)
- ii. Student shall prepare a table showing subjects to be registered in the host institution and their equivalent subjects at Delhi Technological University. Subjects at host institution can be selected against elective courses (DEC/GEC/OEC). The above Table must also list the remaining subjects of the curriculum, belonging to the semester planned under the program, along with a timeline plan for completing these remaining subjects.
- iii. Students shall register the courses in semester away program against the quota of courses from Department Electives, General Electives and Open Electives. All the core courses should be completed within their prescribed schedule at Delhi Technological University.
- iv. The equivalent subjects may be chosen from the subject list belonging to the semester planned for mobility under the program as well as to the subsequent semester of the Academic Curriculum being followed at Delhi Technological University, without violating the prerequisite condition.

### Financial Support:

DTU shall not provide any financial support for the Program. Student shall have to obtain a letter of Financial Support for the Program from Parents/Funding Agency.

**Procedure:** A Student shall submit the application to the office of Dean International Affairs (IA) in the prescribed format available on Delhi Technological University website along with all the attachments.

- i. Application Deadline: 31<sup>st</sup> July for *Even* Semester and 31<sup>st</sup> January for *Odd* Semester.
- ii. Further details of the procedure may be
- iii. Dean IA will send the application to respective HoD of the departments to evaluate the courses, their equivalence and other parts of the application. The HoD may appoint a faculty coordinator for this purpose.
- iv. Dean IA will call the meeting of the Equivalence Committee to consider the applications and make recommendation.

The Equivalence Committee shall consist of

- (a) Pro VC or Dean nominated by the Vice Chancellor
- (b) Dean (IA) Member Secretary
- (c) Dean UG
- (d) Dean PG
- (e) HoD of the concerned Department

The Equivalence committee shall also decide the credit which shall be credited to students on successful completion of semester abroad.

- v. Office of International Affairs will extend the support to:
  - (a) Help student in formal application process.
  - (b) Help in identifying a mentor in the Host Institution
  - (c) Communicate and finalize the process of grade submission by the Host Institution and
  - (d) May issue "No Objection Certificate (NOC)" for Visa Application.
- vi. On acceptance by the Host institution, student will formally informed by the Office of International Affairs about the exact date of the commencement of the program.
- vii. Dean IA will report the cases to the academic council.
- viii. While at the Host institution, the student will inform the Dean IA of any deviation from the approved subject list, and get the changes approved by Dean IA. Dean IA may refer the matter to Equivalence Committee, if needed.
- ix. Remain in touch with the Mentor at the Host institution.
- x. Adhere to the approved schedule for reporting back to DTU.

For doing project/research work at a Host institution the onus of finding a guide rests with the student. It also needs the concurrence of the project guide at DTU if they wish to submit their work done abroad towards their degree and get credits for it.

## Miscellaneous

|                            |   |
|----------------------------|---|
| Special Selection Criteria | In the cases where MoU between DTU and the Host Institution limits the number of applications, the decision will be based on the CGPA. i.e the applicant with a higher CGPA will be given preference.   |
| Tuition Fee                | <p>a) The student has to pay Full Fee here at DTU only if she/he is travelling to a Host Institution with which DTU has a MoU, under which the tuition fee is waived/subsidized at the Host Institution.</p> <p>b) The student has to pay 50% of the tuition fee (for that semester) in addition to other components of fees here at DTU if the student pays Tuition Fee at the MoU/Non-MoU Host Institution. A payment certificate from the Host Institution will be needed for the purpose of claiming the reimbursement of the said 50% tuition fee.</p> |
| Hostel and Mess Fee at DTU | <p>a) The student need to pay Hotel Charges for the period of absence from DTU provided he/she is allowed to retain the hostel room.</p> <p>b) The student need not pay Mess Charges for the period of absence from DTU.</p>  |

### For M.Tech students with AICTE/other fellowship(s):

The student may continue to draw AICTE/other fellowship if the stay is not fully funded by the Host Institute/Funding Agency.

## Scheme of Evaluation for the courses of all Programmes

| S. No. | Course Credits | Course Type   |   |      | Examination |       | Relative Weights |             |     |         |         |
|--------|----------------|---|---|------|-------------|-------|------------------|-------------|-----|---------|---------|
|        |                | L   | T | P/ST | TH          | PR/ST | CWS              | PRS/STS/CMS | MTE | ETE/EME | PRE/STE |
| 1.     | 2              | 2   | 0 | 0    | Yes         | No    | 25               | --          | 25  | 50      | --      |
| 2.     | 3              | 3   | 0 | 0    |             |       |                  |             |     |         |         |
| 3.     | 3              | 2   | 1 | 0    |             |       |                  |             |     |         |         |
| 4.     | 4              | 4   | 0 | 0    |             |       |                  |             |     |         |         |
| 5.     | 4              | 3   | 1 | 0    |             |       |                  |             |     |         |         |
| 6.     | 6              | 5   | 1 | 0    |             |       |                  |             |     |         |         |
| 7.     | 2              | 1   | 0 | 2    | Yes         | No    | 15               | 25          | 20  | 40      | --      |
| 8.     | 4              | 3   | 0 | 2    |             |       |                  |             |     |         |         |
| 9.     | 4              | 2   | 1 | 2    |             |       |                  |             |     |         |         |
| 10.    | 4              | 2   | 0 | 4    |             |       |                  |             |     |         |         |
| 11.    | 4              | 1   | 0 | 6    |             |       |                  |             |     |         |         |
| 12.    | 4              | 0   | 1 | 6    |             |       |                  |             |     |         |         |
| 13.    | 2              | 0   | 0 | 3    | No          | Yes   | --               | 50          | --  | --      | 50      |
| 14.    | 2              | 0   | 0 | 4    |             |       |                  |             |     |         |         |
| 15.    | 3              | 1   | 0 | 4    |             |       |                  |             |     |         |         |
| 16.    | 3              | 0   | 0 | 6    |             |       |                  |             |     |         |         |
| 17.    | 4              | 0   | 1 | 6    |             |       |                  |             |     |         |         |
| 18.    | 2              | 1   | 1 | 0    | Yes         | No    | --               | 50          | --  | 50      | --      |
| 19.    | 2              | 1   | 0 | 2    |             |       |                  |             |     |         |         |
| 20.    | 2/4/6/8/16     | Minor Project/ Major Project/ Design Project/ Thesis/ Dissertation  |   |      | No          | Yes   | --               | 40          | --  | --      | 60      |
| 21.    | 2/3/4/5        | Summer Internship/ Industrial Training/ Seminar / Comprehensive Viva/ Term Project/ Design Degree Show/ Skill Workshop/ Capstone Project/ Action Learning |   |      |             |       |                  |             |     |         |         |
| 22.    | 4              | 0   | 1 | 6    |             |       |                  |             |     |         |         |
|        |                | Jury  |   |      |             |       |                  |             |     |         |         |

### Guidelines for the Summer Semester Courses

1. A student will be allowed to register a maximum of 16 credits inclusive of odd and even semester courses.
2. Only common courses (First year), departmental core courses (DCC) and allied engineering courses (AEC) will be offered in summer semester.
3. The duration of the summer semester will be 45 days. Each course will be given contact hours (LTP) as prescribed in syllabus for that course.
4. Regular class room teaching will be conducted only for those courses where minimum number of registered students is 5% of approved intake or 15 whichever is less.
5. Examinations will be conducted as per summer semester calendar.
6. A student will be allowed to appear in the end semester examinations of summer semester, for the course(s) registered, only if s/he fulfils the attendance criterion for appearing in examination as per regulation R.1(B).22 sufficient percentage of attendance.
7. Registration cum examination fee will be Rs. (5000/- + 500/-) per course. Students will be allowed to register for courses only after depositing the requisite fee.
8. Registration in summer semester course(s) will be offered only w.e.f AY 2020-21 batches and **the provision of supplementary exam will be dropped.**
9. Power to remove difficulties: If any difficulty arises in giving effect to the provisions of these guidelines, the Vice Chancellor may, make such provisions, not inconsistent with the provisions in these guidelines, as appear to be necessary or expedient for removing the difficulty

### Instruction for Penalty for Use of Unfair Means

1. The main instruction for the conduct of a student in the examination hall shall be printed on the cover page of the answer sheets. Any contravention of these instructions and the use of unfair means will render the student liable for punishment.
2. As soon as a student is suspected by the invigilator of having resorted to unfair means, his/her answer-book shall be seized. The paper etc. duly signed by the invigilator found in possession of the student shall be attached with answer-book in his/her presence. The student shall then be asked to complete Part II of the prescribed form and sign it. This form shall then be endorsed by the Invigilator.
3. After completing all the above formalities, a fresh answer-book shall be given to the student for completing the examination.
4. After a particular examination is over, these answer-books (duly marked I, II) shall be delivered separately to the COE together with the report form duly completed in all respects.
5. All the cases reported in the category of unfair means shall be forwarded to the unfair means scrutiny committee which will inquire into them and submit its recommendation after laying down clearly the nature of the offence listed below to the Vice-Chancellor for consideration and necessary orders.



6. The action as given in table may be taken for different categories of offense under these Regulations.

### Penalty for use of Unfair Means

| CATEGORY | NATURE OF ACT  | PUNISHMENT TO BE IMPOSED  |
|----------|--|---|
| I        | <ul style="list-style-type: none"> <li>Found talking to another student during the examination hours.</li> <li>Found talking to a person outside the examination hall.</li> <li>Changing seat in the examination hall without permission.</li> <li>Committing any breach of any direction given to the student.</li> <li>Attempt to influence the examiner by an appeal in the answer-book.</li> <li>Writing either the questions or solutions thereof on the question paper.</li> </ul>   | Warning with undertaking by the Student that S/he will not repeat such act during entire duration of the programme.   |
| II       | <ul style="list-style-type: none"> <li>Possession of cell phone or any other item of such type of communication in examination hall.</li> <li>Intentionally tearing off the answer Book/a part thereof or a continuation sheet.</li> <li>Misbehaving with the Superintendent / Invigilator/staff on duty or with any other candidate in or around the Examination Centre before, during or after the examination.</li> <li>Leaving the examination room without the permission or without handing over the answer book or without signing the attendance sheet.</li> <li>Found in possession of any written or Xerox notes or any printed materials or notes written on any part of the body/clothing or instruments or electronic device etc. or having notes written on University Furniture or drawing board or cover of the calculator etc which could be helpful to him/her in answering the paper or could be helpful to another candidate in that Examination Hall.</li> <li>Using abusive or obscene language in the answer book.</li> <li>Copying or copied from any paper, book or note written on any part of his/her clothing or body or Furniture or instruments or Mobile phone or any other Electronic gadgets etc.</li> <li>Consulting notes or books while being outside the examination hall during examination hours.</li> <li>Allowed any other candidate to copy from his/her answer-book.</li> </ul> | <p><b>Mid Term Examination</b></p> <p>The Examination of the concerned paper to be cancelled and to be awarded ZERO marks in the concerned paper.</p> <p><b>End Term Examination</b></p> <p>The Examination of the concerned paper to be cancelled and to be awarded 'F' grade.</p> <p>The student shall be allowed to reregister for the cancelled paper in next academic year only.</p> |

|     |  |   |
|-----|--|---|
| III | <ul style="list-style-type: none"> <li>• Smuggling in an answer-book or part of it, taking out or arranging to send out an answer-book or part of it.</li> <li>• Communicating or attempting to communicate directly or through someone else with the examiner or anybody connected with the University examination for influencing them regarding the award of marks.</li> <li>• Replacing his / her answer book or any page or continuation sheet with any other unauthorized book, page or continuation sheet during the course of examination.</li> <li>• Found in possession of an answer- book of some other student</li> </ul>            | <p><b>Mid Term Examination</b></p> <p>All the papers of the Mid Term Exam to be cancelled and to be awarded ZERO marks in all the papers.</p>   |
|     | <ul style="list-style-type: none"> <li>• On being challenged /searched by the Superintendent, Invigilator or a staff on duty, swallows a note/ paper or runs with it or is guilty of causing disappearance or destroying any such material possessed by him/her.</li> <li>• Guilty of Writing deliberately another students' roll no. in his/her answer book.</li> </ul>   | <p><b>End Term Examination</b></p> <p>All the papers of the End Term Exam to be cancelled and to be awarded 'F' grade in all the papers &amp; shall re-register for all papers in next academic year only.</p>  |
| IV  | <ul style="list-style-type: none"> <li>• Gross misbehavior i.e. threatening with physical force to Superintendent, the Invigilator/ staff on duty working at the Examination Centre with any other candidate in or around the Examination Centre, before, during or after the Examination.</li> <li>• Disturbs the examination or attempts to do so</li> <li>• Impersonating for any other candidate in any examinations</li> <li>• Student is accused of Impersonation i.e. he /she managed to send somebody else in his / her place to take the examination.</li> <li>• Found guilty of serious misconduct in the examination hall.</li> </ul> | <p>All examinations of that Semester to be cancelled.</p> <p>The Student is not allowed to register in the immediate succeeding semester.</p> <p>The student shall register for the cancelled semester in the next academic year only.</p> <p>e.g. if a student is booked for UFM in 3rd semester</p> <ul style="list-style-type: none"> <li>• All papers of 3rd semester to be cancelled.</li> <li>• S/he can not register for 4th semester.</li> <li>• S/he shall re-register for 3rd semester in the next academic year only.</li> </ul> |
| V   | <ul style="list-style-type: none"> <li>• Cases not covered under Category I to Category IV.</li> </ul>   | <p>To be decided by the Vice Chancellor on the recommendation of UFMSC</p>  |

**Note:**

- (a) These Rules shall be applicable w.e.f. the date of notification to all the students of the University irrespective of the year of admission to which he/she belongs.
- (b) In these Regulations the year means the academic year
- (c) In case of extenuating circumstances, the above punishment may be reduced by the Vice Chancellor depending upon the merits of the case.
- (d) If student repeats any of the act as prescribed in various categories the act, the level of punishment may be raised to next level.

## **Annexure 1A**

### **Scheme of Teaching and Examination (B.Tech. Program)**

## Preamble

The University offers following B.Tech. Programs (**Table-1**) leading to Bachelor of Technology degree in different disciplines. The Academic Departments offer courses to the students of various disciplines. Academic curricula are so devised that a student of one discipline can take some courses of other disciplines offering choice based credit system (CBCS). Such flexibility helps a student to develop his core competence together with the interdisciplinary skills in the area of his/her interest.

### Structure of four year B. Tech. program

The four year B. Tech. program comprises of courses divided in six distinct areas, namely: Departmental Core (DCC), Departmental Elective (DEC), Allied Engineering (AEC), Applied Sciences and Mathematics (ASC), Humanities, Social Sciences and Management (HMC), Foundation Electives (FEC) and Open Electives(OEC). Credits assigned to various components of the B. Tech curriculum are given in **Table-2** and the broad structure of the program is given in **Table -3**.

**Table-1. B.Tech. Programs**

| S. No. | Department                              | Academic Program  | Code |
|--------|---|---|------|
| 1.     | Biotechnology                           | B. Tech. (Biotechnology)  | BT   |
| 2.     | Civil Engineering                       | B. Tech. (Civil Engineering)  | CE   |
| 3.     | Computer Science & Engineering          | B. Tech. (Computer Engineering)   | CO   |
| 4.     | Electrical Engineering                  | B. Tech. (Electrical Engineering)   | EE   |
| 5.     | Electronics & Communication Engineering | B. Tech. (Electronics & Communication Engineering)                              | EC   |
| 6.     | Environmental Engineering               | B. Tech. (Environmental Engineering)  | EN   |
| 7.     | Applied Physics                         | B. Tech. (Engineering Physics)  | EP   |
| 8.     | Information Technology                  | B. Tech. (Information Technology)   | IT   |
| 9.     | Mechanical Engineering                  | B. Tech. (Mechanical Engineering)   | ME   |
| 10.    | Mechanical Engineering                  | B. Tech. (Production and Industrial Engineering)                                | PE   |
| 11.    | Applied Mathematics                     | B. Tech. (Mathematics and Computing)  | MC   |
| 12.    | Mechanical Engineering                  | B. Tech. (Mechanical Engineering with specialization in Automotive Engineering) | AE   |
| 13.    | Applied Chemistry                       | B. Tech. (Chemical Engineering)   | CH   |
| 14.    | Software Engineering                    | B. Tech. (Software Engineering)   | SE   |

**Table-2 Credits of Different Curricular Components**

| <b>CURRICULAR COMPONENTS</b>   |  | <b>Credits</b> |
|--|--|----------------|
| <b>(a) Foundation Course (Common Courses)</b>  |  |                |
| i.   | Applied Sciences and Mathematics (ASC)   | 20             |
| ii.  | Allied Engineering (AEC)   | 16             |
| iii.   | Foundation Electives (Humanities, Social Sciences, Allied Engineering and Management etc.) | 08             |
|  | <b>Total</b>   | <b>44</b>      |
| <b>(b) Departmental Core Courses (DCC)</b>   |  |                |
| i.   | Core Courses   | 48             |
| ii.  | Engineering Analysis and Design  | 04             |
| iii.   | B. Tech. Project   | 12             |
| iv.  | Industrial Training  | 02             |
|  | <b>Total</b>   | <b>66</b>      |
| <b>(c) Humanities, Social Sciences and Management Courses (HMC) (other than first year &amp; second year Common Courses)</b> |  |                |
| i.   | Humanities and Social Sciences   | 03             |
| ii.  | Management Studies   | 03             |
|  | <b>Total</b>   | <b>06</b>      |
| <b>(d) Allied Engineering Courses (AEC)</b>  |  | <b>08</b>      |
| <b>(e) Departmental Elective Courses (DEC)/ Generic Elective Courses (GEC)</b>   |  | <b>48</b>      |
| <b>Grand Total (a+b+c+d+e)</b>   |  | <b>172</b>     |

**Table-3.Course Structure for B. Tech. Program**

## FIRST YEAR

| First Semester  |   |           |          |
|-----------------|---|-----------|----------|
| S.No.           | Subject   | Credits   | Category |
| 1.              | Mathematics-I   | 4         | ASC      |
| 2.              | Physics-I   | 4         | ASC      |
| 3.              | Chemistry / Basic Electrical Engineering                | 4         | ASC/AEC  |
| 4.              | Basic Mechanical Engineering / Programming fundamentals | 4         | AEC      |
| 5.              | Workshop Practice / Engineering Graphics                | 2         | AEC      |
| 6               | Foundation Elective                                     | 2         | FEC      |
|                 | <b>Total</b>  | <b>20</b> |          |
| Second Semester |   |           |          |
| S.No.           | Subject   | Credits   | Category |
| 1.              | Mathematics-II  | 4         | ASC      |
| 2.              | Physics-II  | 4         | ASC      |
| 3.              | Basic Electrical Engineering / Chemistry                | 4         | AEC/ASC  |
| 4.              | Programming fundamental / Basic mechanical Engineering  | 4         | AEC      |
| 5.              | Engineering Graphics / Workshop Practice                | 2         | AEC      |
| 6               | Foundation Elective                                     | 2         | FEC      |
|                 | <b>Total</b>  | <b>20</b> |          |

## SECOND YEAR

| Third Semester |                                 |           |          |
|----------------|---------------------------------|-----------|----------|
| S.No.          | Subject                         | Credits   | Category |
| 1.             | Allied Engineering Course-1     | 4         | AEC      |
| 2.             | Department Core Course-1        | 4         | DCC      |
| 3.             | Department Core Course-2        | 4         | DCC      |
| 4.             | Department Core Course-3        | 4         | DCC      |
| 5.             | Engineering Analysis and Design | 4         | DCC      |
| 6.             | Foundation Elective             | 2         | FEC      |
|                | <b>Total</b>                    | <b>22</b> |          |



| Fourth Semester |                             |           |          |
|-----------------|-----------------------------|-----------|----------|
| S.No.           | Subject                     | Credits   | Category |
| 1.              | Allied Engineering Course-2 | 4         | AEC      |
| 2.              | Department Core Course-4    | 4         | DCC      |
| 3.              | Department Core Course-5    | 4         | DCC      |
| 4.              | Department Core Course-6    | 4         | DCC      |
| 5.              | Department Core Course-7    | 4         | DCC      |
| 6               | Foundation Elective         | 2         | FEC      |
|                 | <b>Total</b>                | <b>22</b> |          |

## THIRD YEAR

| Fifth Semester |                                |           |          |
|----------------|--------------------------------|-----------|----------|
| S.No.          | Subject                        | Credits   | Category |
| 1.             | Department Core Course – 8     | 4         | DCC      |
| 2.             | Department Core Course – 9     | 4         | DCC      |
| 3.             | Department Elective Course – 1 | 4         | DEC/GEC  |
| 4.             | Department Elective Course – 2 | 4         | DEC/ GEC |
| 5.             | Department Elective Course – 3 | 4         | DEC/ GEC |
| 6.             | Fundamentals of management     | 3         | HMC      |
|                | <b>Total</b>                   | <b>23</b> |          |

| Sixth Semester |                                |         |          |
|----------------|--------------------------------|---------|----------|
| S.No.          | Subject                        | Credits | Category |
| 1.             | Department Core Course – 10    | 4       | DCC      |
| 2.             | Department Core Course – 11    | 4       | DCC      |
| 3.             | Department Core Course – 12    | 4       | DCC      |
| 4.             | Department Elective Course - 4 | 4       | DEC/ GEC |
| 5.             | Department Elective Course – 5 | 4       | DEC/ GEC |

|    |                       |           |     |
|----|-----------------------|-----------|-----|
| 6. | Engineering Economics | 3         | HMC |
|    | <b>Total</b>          | <b>23</b> |     |

## FOURTH YEAR

| Seventh Semester |   |           |          |
|------------------|---|-----------|----------|
| S.No.            | Subject   | Credits   | Category |
| 1.               | B.Tech. Project - I                             | 4         | DCC      |
| 2.               | Training Seminar                                | 2         | DCC      |
| 3.               | Department Elective Course – 6                  | 4         | DEC/ GEC |
| 4.               | Department Elective Course -7                   | 4         | DEC/ GEC |
| 5.               | Department Elective Course – 8                  | 4         | DEC/ GEC |
| 6.               | Department Elective Course – 9                  | 4         | DEC/ GEC |
|                  | <b>Total</b>                                    | <b>22</b> |          |
| Eighth Semester  |   |           |          |
| S.No.            | Subject   | Credits   | Category |
| 1.               | B.Tech. Project - II (Contd. From VII semester) | 8         | DCC      |
| 2.               | Department Elective Course – 10                 | 4         | DEC/ GEC |
| 3.               | Department Elective Course - 11                 | 4         | DEC/ GEC |
| 4.               | Department Elective Course – 12                 | 4         | DEC/ GEC |
|                  | <b>Total</b>                                    | <b>20</b> |          |

Total 172 Credits as describe above an additional 02 credits (Total 174) are to be earned from mendatory community engagement course to fullfill be requirement of award of the B.Tech. Degree

## Common Courses

The courses offered to the first Year B. Tech. programs are grouped under this category. All the students need to complete these common courses in First year. These courses have been divided into two groups namely Group-A and Group-B. Different departments have participated in design of these courses so as to cater to the requirement of their program(s) with the parent departments. These courses are planned to give the students a firm base in the areas of Applied Science, Applied Mathematics, Humanities and Allied Engineering disciplines. These courses are presented in Table-4.

**Table-4 Common Courses for B. Tech. Programs**

### First Year

### 1st Semester

| S. No.  | Course Title                 | Subject Area | Credits | Contact Hrs/Week |   |         |          |
|---------|------------------------------|--------------|---------|------------------|---|---------|----------|
|         |                              |              |         | L                | T | P       | Total    |
| Group A |                              |              |         |                  |   |         |          |
| 1.      | Mathematics – I              | ASC          | 4       | 3                | 1 | 0       | 4        |
| 2.      | Physics – I                  | ASC          | 4       | 3                | 0 | 2       | 5        |
| 3.      | Chemistry                    | ASC          | 4       | 3                | 0 | 2       | 5        |
| 4.      | Basic Mechanical Engineering | AEC          | 4       | 4                | 0 | 0       | 4        |
| 5.      | Workshop Practice            | AEC          | 2       | 0                | 0 | 3       | 3        |
| 6.      | Foundation Elective 1        | FEC          | 2       | 2/1/0            | 0 | 0/2/4   | 2/3/4    |
|         | Total                        |              | 20      | 15/14/13         | 1 | 7/9/11  | 23/24/25 |
| Group B |                              |              |         |                  |   |         |          |
| 1.      | Mathematics – I              | ASC          | 4       | 3                | 1 | 0       | 4        |
| 2.      | Physics – I                  | ASC          | 4       | 3                | 0 | 2       | 5        |
| 3.      | Basic Electrical Engineering | AEC          | 4       | 3                | 0 | 2       | 5        |
| 4.      | Programming Fundamentals     | AEC          | 4       | 3                | 0 | 2       | 5        |
| 5.      | Engineering Graphics         | AEC          | 2       | 0                | 0 | 3       | 3        |
| 6.      | Foundation Elective 1        | FEC          | 2       | 2/1/0            | 0 | 0/2/4   | 2/3/4    |
|         | Total                        |              | 20      | 14/13/12         | 1 | 9/11/13 | 24/25/26 |

**First Year****2nd Semester**

| S. No.  | Course Title                 | Subject Area | Credit | Contact Hours/Week |   |         |          |
|---------|------------------------------|--------------|--------|--------------------|---|---------|----------|
|         |                              |              |        | L                  | T | P       | Total    |
| Group A |                              |              |        |                    |   |         |          |
| 1.      | Mathematics – II             | ASC          | 4      | 3                  | 1 | 0       | 4        |
| 2.      | Physics – II                 | ASC          | 4      | 3                  | 0 | 2       | 5        |
| 3.      | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2       | 5        |
| 4.      | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2       | 5        |
| 5.      | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3       | 3        |
| 6.      | Foundation Elective 2        | FEC          | FEC    | 2/1/0              | 0 | 0/2/4   | 2/3/4    |
|         | Total                        |              | 20     | 14/13/12           | 1 | 9/11/13 | 24/25/26 |
| Group B |                              |              |        |                    |   |         |          |
| 1.      | Mathematics –II              | ASC          | 4      | 3                  | 1 | 0       | 4        |
| 2.      | Physics – II                 | ASC          | 4      | 3                  | 0 | 2       | 5        |
| 3.      | Chemistry                    | ASC          | 4      | 3                  | 0 | 2       | 5        |
| 4.      | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0       | 4        |
| 5.      | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3       | 3        |
| 6.      | Foundation Elective 2        | FEC          | 2      | 2/1/0              | 0 | 0/2/4   | 2/3/4    |
|         | Total                        |              | 20     | 15/14/13           | 1 | 7/9/11  | 23/24/25 |

**Departmental Core Courses (DCC)**

The departmental core consists of mandatory courses considered essential for a chosen engineering/science discipline including, engineering design, seminar, industrial training and project. The industrial training of duration 6-10 weeks shall be undertaken by every student in the summer vacation after sixth semester.

**Elective Courses**

The students are required to complete a specific number of elective courses. Every department offers a wide variety of elective courses to students providing them opportunity to discover their academic interest and enhance their engagement in learning process. The elective courses are categorized as Foundation Elective courses (FEC), Departmental Elective Courses (DEC), Generic Elective Courses (GEC), and Open Elective Courses (OEC). A student will be allowed to take **upto two courses (8 credits) in DEC/GEC/OEC category in online/offline mode** from any other Institute/University with prior approval of BOS of the respective Department.

### **Foundation Elective courses (FEC)**

Foundation electives are value-based courses and are aimed at man-making education. The FECs are of 2 credits each. Every student shall complete four FECs one each in first four semesters.

### **Open Elective Courses (OEC)**

The Open Electives are the 3 credit courses offered by different academic departments to the students of all disciplines.

### **Departmental Elective Courses (DEC)**

A wide range of elective courses is available with each program. When a student opts elective courses offered in his/her program it will be termed as DEC.

### **Generic Elective Courses (GEC)**

When student of a particular branch opts for a DEC/DCCs being offered by other departments this elective will be termed as Generic elective (GEC) for him/her.

To promote research, innovation and entrepreneurship among the undergraduate students three different tracks in elective courses are also offered namely (a) Research Project (b) Mini Project (c) Entrepreneurship and venture development.

### **Research Project (Elective)**

A Student may register for the Research Project Elective Course of 04 credits in Fifth Semester against a DEC/GEC. The idea of this course is to develop analytical skills and critical thinking among the students. The outcome of the research would be considered for the award of credits based upon published work in journals as listed in details Guidelines. On successful completion of Research Project (Elective) a student shall be eligible for direct admission to PhD program after obtaining B.Tech degree provided he/she fulfils all the conditions outlined in notification no.F...105/Acad-PG/Admission/2020-21IRD/2818(A) regarding direct admission to PhD program for DTU full time B.Tech students.

### **Mini Project (Elective)**

The aim of the mini project is to enable the students to apply knowledge to address real-world situations problems and find their solution. A student may register for a mini project elective in the fifth semester against DEC/ GEC courses. The students will be required to produce and present a working prototype at the end of the course.

### **Entrepreneurship and venture development (Elective)**

The aim of the entrepreneurship and venture development track is to help students to build-up entrepreneurial skill and encourage the startup culture in the University. A student may register for this elective in fifth semester against a DEC/GEC.

### **Humanities, Social Sciences and Management Courses (HMC)**

The Humanities, Social Sciences and Management Courses consist of courses considered essential for a B.Tech. program to inculcate the essence of technical writing, communication skills, economics and analysis, management and professional ethics & human values.

## **Applied Sciences and Mathematics Courses (ASC)**

The Applied Sciences and Mathematics Courses consist of courses considered essential for a B.Tech. program to build the foundation for learning of engineering core courses.

## **Allied Engineering Courses (AEC)**

The students are required to complete a minimum number of number of Allied engineering courses (majority of them taught as common courses) offered by engineering departments other than his/her parent department. These courses expose the student with wide spectrum knowledge of allied engineering domain connected to the main engineering stream of the course of study of the students of concerned departments.

## **Major and Minor**

A major is the discipline to which a student is admitted to obtain his/her degree which is his/her primary field of study. The Minor is a secondary area of study opted by a student which may be either from his/her own discipline or any other discipline. A student who is keen to broaden his/her knowledge in a specific discipline can choose elective courses to fulfil the requirements of the Minor offered in that opted discipline. Alternately, a student may opt a Minor offered by his/her own discipline of study to gain in-depth knowledge in any emerging area of that discipline.

## **Course Coding**

A course is identified by a course code designated by a string of alpha-numeric characters and a course title. In a course code, first two letters of the string indicate the Academic Department/Program code offering the course and the last three numbers designate particular course.

## **Course Number**

For all the courses, the first digit corresponds to the level (year) at which a course is normally offered. The last two digits denote the number of the course, which will usually be odd for courses offered in the Odd Semester and even for courses in the Even Semester. For example, the course, "Network Analysis and Synthesis", offered to Electrical Engineering students in second year 'Odd Semester' is numbered as EE201.

## **Abbreviations and Notations**

### **Credits: Cr**

### **Teaching Engagements**

Every course maintains a teaching schedule for which weekly contact hours are decided for delivering lectures (L), engaging tutorials (T) and/or performing practicals(P) to make learning in a course more effective. In the syllabi, the information regarding number of course credits and contact hours per week is denoted as: **Credits (L – T – P); 4 (3 – 1–0)**

# BACHELOR OF TECHNOLOGY

## Chemical Engineering

### I Year: First Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |        | Exam Duration (h) |           | Relative Weights (%) |          |          |          |         |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|--------|-------------------|-----------|----------------------|----------|----------|----------|---------|
| S.No.           | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P      | Theory            | Practical | CWS                  | PRS      | MTE      | ETE      | PRE     |
| Group A         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | AC101        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 5.              | ME103        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |
| Group B         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |



## I Year: Second Semester

| Teaching Scheme |              |                              |              |           | Contact Hours/Week |   |           | Exam Duration |           | Relative Weights (%) |             |             |                 |            |
|-----------------|--------------|------------------------------|--------------|-----------|--------------------|---|-----------|---------------|-----------|----------------------|-------------|-------------|-----------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit    | L                  | T | P         | Theory        | Practical | CWS                  | PRS         | MTE         | ETE             | PRE        |
| <b>Group A</b>  |              |                              |              |           |                    |   |           |               |           |                      |             |             |                 |            |
| 1.              | MA102        | Mathematics-II               | ASC          | 4         | 3                  | 1 | 0         | 3             | 0         | 25                   | -           | 25          | 50              | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4         | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40              | -          |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4         | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40              | -          |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4         | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40              | -          |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2         | 0                  | 0 | 3         | 0             | 3         | -                    | 50          | -           | -               | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0     | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/<br>0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |               |           |                      |             |             |                 |            |
| <b>Group B</b>  |              |                              |              |           |                    |   |           |               |           |                      |             |             |                 |            |
| 1.              | MA102        | Mathematics-II               | ASC          | 4         | 3                  | 1 | 0         | 3             | 0         | 25                   | -           | 25          | 50              | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4         | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40              | -          |
| 3.              | AC102        | Chemistry                    | ASC          | 4         | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40              | -          |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4         | 4                  | 0 | 0         | 3             | 0         | 25                   | -           | 25          | 50              | -          |
| 5.              | ME106        | Workshop Practice            | AEC          | 2         | 0                  | 0 | 3         | 0             | 3         | -                    | 50          | -           | -               | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0     | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/<br>0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |               |           |                      |             |             |                 |            |

## II Year: Third Semester

| S.No. | Code  | Title                                     | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|-------|-------|---|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.    | PE251 | Engineering Materials and Metallurgy      | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.    | CH201 | Chemical Engineering Process Calculations | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | 00          | 25          | 50          | -          |
| 3.    | CH203 | Transport Phenomena                       | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | 00          | 25          | 50          | -          |
| 4.    | CH205 | Chemical Engineering Thermodynamics       | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.    | CH207 | Engineering Design and Analysis           | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 6.    | FEC   | Foundation Elective                       | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|       |       | <b>Total</b>                              |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S.No | Code  | Title                               | Area | Cr        | L         | T | P         | TH        | PH        | CWS             | PRS             | MTE             | ETE             | PRE        |
|------|-------|-------------------------------------|------|-----------|-----------|---|-----------|-----------|-----------|-----------------|-----------------|-----------------|-----------------|------------|
| 1.   | EE272 | Instrumentation and Process Control | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15              | 25              | 20              | 40              | -          |
| 2.   | CH202 | Fluid Mechanics                     | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15              | 25              | 20              | 40              | -          |
| 3.   | CH204 | Chemical Reaction Engineering -1    | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15              | 25              | 20              | 40              | -          |
| 4.   | CH206 | Mechanical Operations               | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15              | 25              | 20              | 40              | -          |
| 5.   | CH208 | Heat Transfer                       | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15              | 25              | 20              | 40              | -          |
| 6.   | FEC   | Foundation Elective                 | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/<br>0 | 0/2<br>5<br>/50 | 25/<br>20/<br>0 | 50/<br>40/<br>0 | 0/0<br>/50 |
|      |       | <b>Total</b>                        |      | <b>22</b> |           |   |           |           |           |                 |                 |                 |                 |            |

### III Year: Fifth Semester

| S.No. | Code  | Title                           | Area     | Cr        | L | T    | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|-------|-------|---------------------------------|----------|-----------|---|------|-----|----|----|--------|------|--------|--------|-----|
| 1.    | CH301 | Polymeric Materials             | DCC      | 4         | 3 | 0    | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 2.    | CH303 | Mass Transfer-1                 | DCC      | 4         | 3 | 0    | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 3.    | CH3XX | Departmental Elective course-1  | DEC/G EC | 4         | 3 | 0/ 1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | -   |
| 4     | CH3XX | Departmental Elective Course--2 | DEC/G EC | 4         | 3 | 0/ 1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | -   |
| 5.    | CH3XX | Departmental Elective Course-3  | DEC/G EC | 4         | 3 | 0/ 1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | -   |
| 6.    | MG301 | Fundamentals of Management      | HMC      | 3         | 3 | 0    | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|       |       | <b>Total</b>                    |          | <b>23</b> |   |      |     |    |    |        |      |        |        |     |

### III Year: Sixth Semester

| S.No. | Code  | Title                            | Area     | Cr        | L | T    | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|-------|-------|----------------------------------|----------|-----------|---|------|-----|----|----|--------|------|--------|--------|-----|
| 1.    | CH302 | Chemical Reaction Engineering-II | DCC      | 4         | 3 | 0    | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 2.    | CH304 | Mass Transfer-II                 | DCC      | 4         | 3 | 0    | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 3.    | CH306 | Chemical Process Technology      | DCC      | 4         | 3 | 0    | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 4.    | CH3XX | Departmental Elective Course - 4 | DEC/ GEC | 4         | 3 | 0/ 1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | -   |
| 5.    | CH3XX | Departmental Elective Course - 5 | DEC/ GEC | 4         | 3 | 0/ 1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 |     |
| 6.    | HU302 | Engineering Economics            | HMC      | 3         | 3 | 0    | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|       |       | <b>Total</b>                     |          | <b>23</b> |   |      |     |    |    |        |      |        |        |     |

### IV Year: Seventh Semester

| S.No. | Code  | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|-------|-------|---------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.    | CH401 | B. Tech Project-I               | DCC      | 4         |   |     |     |    |    |       |      |       |       |     |
| 2.    | CH403 | Training Seminar                | DCC      | 2         |   |     |     |    |    |       |      |       |       |     |
| 3.    | CH4XX | Departmental Elective Course -6 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 4.    | CH4XX | Departmental Elective Course -7 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.    | CH4XX | Departmental Elective Course -8 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 6.    | CH4XX | Departmental Elective Course -9 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
|       |       | <b>Total</b>                    |          | <b>22</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Eighth Semester

| S.No. | Code  | Title                            | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|-------|-------|----------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.    | CH402 | B.Tech Project- II               | DCC      | 8         |   |     |     |    |    |       |      |       |       |     |
| 2.    | CH4XX | Departmental Elective Course-10  | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 3.    | CH4XX | Departmental Elective Course -11 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 4.    | CH4XX | Departmental Elective Course -12 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
|       |       | <b>Total</b>                     |          | <b>20</b> |   |     |     |    |    |       |      |       |       |     |

### List of Departmental Electives Courses

| S. No. | Course Code | Course Title                              | Elective No.      |
|--------|-------------|---|-------------------|
| 1.     | CH305       | Characterization of Materials             | DEC/GEC– 1,2,3    |
| 2.     | CH307       | Petroleum Refining Engineering            |                   |
| 3.     | CH309       | Chemical Process and Simulations          |                   |
| 4.     | CH311       | Rheology                                  |                   |
| 5.     | CH313       | Corrosion Engineering                     |                   |
| 6.     | CH315       | Plastic Technology                        |                   |
| 7.     | CH317       | Resin Technology                          |                   |
| 8.     | CH319       | Rubber Technology                         |                   |
| 9.     | CH321       | Numerical Methods in Chemical Engineering |                   |
| 10.    | CH323       | Biomaterials                              |                   |
| 11.    | CH308       | Food Technology                           | DEC/GEC – 4,5     |
| 12.    | CH310       | Paint Technology                          |                   |
| 13.    | CH312       | Polymer Processing Techniques             |                   |
| 14.    | CH314       | Fertilizer Technology                     |                   |
| 15.    | CH316       | Coatings and Adhesives                    |                   |
| 16.    | CH318       | Petrochemical Engineering                 |                   |
| 17.    | CH320       | Packaging Technology                      |                   |
| 18.    | CH322       | Tyre Technology                           |                   |
| 19.    | CH324       | Heat Exchangers                           |                   |
| 20.    | CH405       | Fiber Technology                          | DEC/GEC – 6,7,8,9 |
| 21.    | CH407       | Polymer Blends and Composites             |                   |
| 22.    | CH409       | Plant Engineering and Process Economics   |                   |
| 23.    | CH411       | Advance Mass Transfer Operations          |                   |
| 24.    | CH413       | Bio-Chemical Engineering                  |                   |
| 25.    | CH415       | Rocket Propulsion and Explosives          |                   |

|     |       |   |                      |
|-----|-------|---|----------------------|
| 26. | CH417 | Polymer Waste Management                  |                      |
| 27. | CH419 | Computational Fluid Dynamics              |                      |
| 28. | CH421 | Polymer Reaction Engineering              |                      |
| 29. | CH423 | Optimization Techniques                   |                      |
| 30. | CH425 | Application of Polymers in Biomedical     |                      |
| 31. | CH427 | Combustion Engineering                    |                      |
| 32. | CH429 | Energy Resources                          |                      |
| 33. | CH431 | Membrane Technology                       |                      |
| 34. | CH404 | Fuel Cell Technology                      | DEC/GEC–<br>10,11,12 |
| 35. | CH406 | Catalysis                                 |                      |
| 36. | CH408 | Specialty Polymers                        |                      |
| 37. | CH410 | Process Engineering and Design            |                      |
| 38. | CH412 | Thermoplastic Elastomers                  |                      |
| 39. | CH414 | Non-woven Technology                      |                      |
| 40. | CH416 | Industrial Waste Management               |                      |
| 41. | CH418 | Application of Nanotechnology in Polymers |                      |
| 42. | CH420 | Inorganic Polymers                        |                      |
| 43. | CH422 | Pharmaceutical Technology                 |                      |
| 44. | CH424 | Safety & Hazards in Chemical Industries   |                      |
| 45. | CH426 | Biofuel Engineering                       |                      |
| 46. | CH428 | Energy Conservation and Recycling         |                      |

# BACHELOR OF TECHNOLOGY

## Mathematics & Computing

### I Year: First Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |             |             |             |            |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|-----------|-------------------|-----------|----------------------|-------------|-------------|-------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P         | Theory            | Practical | CWS                  | PRS         | MTE         | ETE         | PRE        |
| Group A         |              |                              |              |        |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | AC101        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 5.              | ME103        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |             |             |             |            |
| Group B         |              |                              |              |        |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |             |             |             |            |



## I Year: Second Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |           | Exam Duration |           | Relative Weights (%) |             |             |             |            |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|-----------|---------------|-----------|----------------------|-------------|-------------|-------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P         | Theory        | Practical | CWS                  | PRS         | MTE         | ETE         | PRE        |
| Group A         |              |                              |              |        |                    |   |           |               |           |                      |             |             |             |            |
| 1.              | MA102        | Mathematics- II              | ASC          | 4      | 3                  | 1 | 0         | 3             | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40          | -          |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3         | 0             | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0     | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |               |           |                      |             |             |             |            |
| Group B         |              |                              |              |        |                    |   |           |               |           |                      |             |             |             |            |
| 1.              | MA102        | Mathematics- II              | ASC          | 4      | 3                  | 1 | 0         | 3             | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | AC102        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0         | 3             | 0         | 25                   | -           | 25          | 50          | -          |
| 5.              | ME106        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3         | 0             | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0     | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |               |           |                      |             |             |             |            |

## II Year: Third Semester

| S.No. | Code  | Title   | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|-------|-------|---|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.    | CS251 | Data Structure  | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.    | MC201 | Discrete Mathematics  | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 3.    | MC203 | Mathematics-III   | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.    | MC205 | Probability & Statistics  | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.    | MC207 | Engineering Analysis and Design (Differential Equations and Applications) | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
|       | FEC   | Foundation Elective 3   | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|       |       | <b>Total</b>  |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S.No. | Code  | Title                                | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|-------|-------|--------------------------------------|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.    | CS262 | Algorithm Design & Analysis          | AEC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 2.    | MC202 | Real Analysis                        | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 3.    | MC204 | Scientific Computing                 | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.    | MC206 | Computer Organization & Architecture | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 5.    | MC208 | Linear Algebra                       | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 6.    | FEC   | Foundation Elective 4                | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|       |       | <b>Total</b>                         |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

### III Year: Fifth Semester

| S. No.       | Code  | Title                            | Area    | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------------|-------|----------------------------------|---------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.           | MC301 | Operating System                 | DCC     | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 2.           | MC303 | Stochastic Processes             | DCC     | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 3.           | MC3xx | Departmental Elective Course - 1 | DEC/GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.           | MC3xx | Departmental Elective Course - 2 | DEC/GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.           | MC3xx | Departmental Elective Course - 3 | DEC/GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 6.           | MG301 | Fundamentals of Management       | HMC     | 3         | 3 | 0   | 0   | 3  | 0  | 25    | -    | 25    | 50    | -   |
| <b>Total</b> |       |                                  |         | <b>23</b> |   |     |     |    |    |       |      |       |       |     |

### III Year: Sixth Semester

| S. No.       | Code  | Title                           | Area    | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------------|-------|---------------------------------|---------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.           | MC302 | Data Base Management System     | DCC     | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 2.           | MC304 | Theory of Computation           | DCC     | 4         | 3 | 1   | 0   | 3  | 0  | 25    | -    | 25    | 50    | -   |
| 3.           | MC306 | Financial Engineering           | DCC     | 4         | 3 | 1   | 0   | 3  | 0  | 25    | -    | 25    | 50    | -   |
| 4.           | MC3xx | Departmental Elective Course -4 | DEC/GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.           | MC3xx | Departmental Elective Course -5 | DEC/GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 6.           | HU302 | Engineering Economics           | HMC     | 3         | 3 | 0   | 0   | 3  | 0  | 25    | -    | 25    | 50    | -   |
| <b>Total</b> |       |                                 |         | <b>23</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Seventh Semester

| S. No. | Code  | Title                           | Area         | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|---------------------------------|--------------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | MC401 | B.Tech. Project-I               | DCC          | 4         |   |     |     |    |    |       |      |       |       |     |
| 2.     | MC403 | Training Seminar                | DCC          | 2         |   |     |     |    |    |       |      |       |       |     |
| 3.     | MC4xx | Departmental Elective Course -6 | DEC/ GEC     | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | MC4xx | Departmental Elective Course -7 | DEC/ GEC     | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.     | MC4xx | Departmental Elective Course -8 | DEC/ GEC     | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 6.     | MC4xx | Departmental Elective Course -9 | DEC/ GEC     | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
|        |       | <b>Total</b>                    | <b>Total</b> | <b>22</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Eighth Semester

| S. No. | Code  | Title                           | Area         | Cr        | I | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|---------------------------------|--------------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | MC402 | B.Tech. Project-II              | DCC          | 8         |   |     |     |    |    |       |      |       |       |     |
| 2.     | MC4xx | Departmental Elective Course-10 | DEC/ GEC     | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 3.     | MC4xx | Departmental Elective Course-11 | DEC/ GEC     | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | MC4xx | Departmental Elective Course-12 | DEC/ GEC     | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
|        |       | <b>Total</b>                    | <b>Total</b> | <b>20</b> |   |     |     |    |    |       |      |       |       |     |

## List of Departmental Electives Courses

| S. No. | Course Code | Course Title                      | Elective No.  |
|--------|-------------|-----------------------------------|---------------|
| 1.     | MC305       | Operations Research               | DEC– 1,2,3    |
| 2.     | MC307       | Object Oriented programming       |               |
| 3.     | MC309       | Number Theory                     |               |
| 4.     | MC315       | Modern Algebra                    |               |
| 5.     | MC317       | Numerical methods for ODE         |               |
| 6.     | MC319       | Complex Analysis                  |               |
| 7.     | MC308       | Computer Networks                 | DEC – 4,5     |
| 8.     | MC310       | Software Engineering              |               |
| 9.     | MC312       | Artificial Intelligence           |               |
| 10.    | MC318       | Computer Graphics                 |               |
| 11.    | MC320       | Web Technology                    |               |
| 12.    | MC322       | Cluster & Grid Computing          |               |
| 13.    | MC324       | Big Data Analytics                | DEC – 6,7,8,9 |
| 14.    | MC411       | Data Warehousing & Data Mining    |               |
| 15.    | MC413       | Compiler Design                   |               |
| 16.    | MC415       | Wireless & Mobile Computing       |               |
| 17.    | MC417       | Multimedia System Design          |               |
| 18.    | MC419       | Machine Learning                  | DEC– 10,11,12 |
| 18.    | MC404       | Matrix Computation                |               |
| 19.    | MC406       | Partial Differential Equations    |               |
| 20.    | MC408       | Quality Control & Decision Making |               |
| 21.    | MC410       | Topology                          |               |
| 22.    | MC412       | Functional Analysis               |               |
| 23.    | MC418       | Optimization Techniques.          |               |
| 24.    | MC420       | Information Theory & Coding       |               |
| 25.    | MC422       | Finite element methods            |               |
| 26.    | MC424       | Game Theory                       |               |
| 27.    | MC426       | Differential Geometry             |               |
| 28.    | MC432       | Fuzzy set & Fuzzy logic           |               |
| 29.    | MC434       | Numerical Methods for PDE         |               |
| 30.    | MC436       | Petrinet Theory & Application     |               |
| 31.    | MC438       | Tensor Calculus                   |               |
| 32.    | MC440       | Statistical Inference             |               |

# BACHELOR OF TECHNOLOGY

## Engineering Physics

### I Year: First Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |             |                 |                 |            |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|-----------|-------------------|-----------|----------------------|-------------|-----------------|-----------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P         | Theory            | Practical | CWS                  | PRS         | MTE             | ETE             | PRE        |
| Group A         |              |                              |              |        |                    |   |           |                   |           |                      |             |                 |                 |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25              | 50              | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40              | -          |
| 3.              | AC101        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40              | -          |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0         | 3                 | 0         | 25                   | -           | 25              | 50              | -          |
| 5.              | ME103        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -               | -               | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/<br>0      | 0/25<br>/50 | 25/<br>20/<br>0 | 50/<br>40/<br>0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |             |                 |                 |            |
| Group B         |              |                              |              |        |                    |   |           |                   |           |                      |             |                 |                 |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25              | 50              | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40              | -          |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40              | -          |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40              | -          |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -               | -               | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/<br>0      | 0/25<br>/50 | 25/<br>20/<br>0 | 50/<br>40/<br>0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |             |                 |                 |            |

## I Year: Second Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |           | Exam Duration |           | Relative Weights (%) |             |             |             |            |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|-----------|---------------|-----------|----------------------|-------------|-------------|-------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P         | Theory        | Practical | CWS                  | PRS         | MTE         | ETE         | PRE        |
| Group A         |              |                              |              |        |                    |   |           |               |           |                      |             |             |             |            |
| 1.              | MA102        | Mathematics- II              | ASC          | 4      | 3                  | 1 | 0         | 3             | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40          | -          |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3         | 0             | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0     | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |               |           |                      |             |             |             |            |
| Group B         |              |                              |              |        |                    |   |           |               |           |                      |             |             |             |            |
| 1.              | MA102        | Mathematics – II             | ASC          | 4      | 3                  | 1 | 0         | 3             | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | AC102        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2         | 3             | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0         | 3             | 0         | 25                   | -           | 25          | 50          | -          |
| 5.              | ME106        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3         | 0             | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0     | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |               |           |                      |             |             |             |            |

## II Year: Third Semester

| S. No. | Code  | Title   | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|---|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | ME251 | Engineering Mechanics                                 | AEC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | 0           | 25          | 50          | -          |
| 2.     | EP201 | Introduction to Computing                             | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | EP203 | Mathematical Physics                                  | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | 0           | 25          | 50          | -          |
| 4.     | EP205 | Classical and Quantum Mechanics                       | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | 0           | 25          | 50          | -          |
| 5.     | EP207 | Digital Electronics (Engineering Analysis and Design) | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 6      | FEC   | Foundation Elective 3                                 | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>  |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S. No. | Code  | Title                          | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|--------------------------------|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | EC272 | Communication System           | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.     | EP202 | Condensed Matter Physics       | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | EP204 | Optics                         | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | EP206 | Microprocessor and Interfacing | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | EP208 | Computational Methods          | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | 0           | 25          | 50          | -          |
| 6.     | FEC   | Foundation Elective 4          | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                   |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |



### III Year: Fifth Semester

| S. No. | Code  | Title  | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|--|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | EP301 | Semiconductor Devices                            | DCC      | 4         | 3 | 1   | -   | 3  | 0  | 25    | -    | 25    | 50    | -   |
| 2.     | EP303 | Electromagnetic Theory, antennas and Propagation | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 3.     | EP3xx | Departmental Elective Course-1                   | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 4.     | EP3xx | Departmental Elective Course-2                   | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 5.     | EP3xx | Departmental Elective Course-3                   | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 6.     | MG301 | Fundamentals of Management                       | HMC      | 3         | 3 | 0   | 0   | 3  | 0  | 25    | -    | 25    | 50    | -   |
|        |       | <b>Total</b>                                     |          | <b>23</b> |   |     |     |    |    |       |      |       |       |     |

### III Year: Sixth Semester

| S. No. | Code  | Title   | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|---|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | EP302 | Fiber Optics and Optical Communication        | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 2.     | EP304 | Fabrication and Characterization of Materials | DCC      | 4         | 3 | 1   | 0   | 3  | 0  | 25    | -    | 25    | 50    | -   |
| 3.     | EP306 | Microwave Engineering                         | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 4.     | EP3xx | Departmental Elective Course-4                | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 5.     | EP3xx | Departmental Elective Course-5                | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 6.     | HU302 | Engineering Economics                         | HMC      | 3         | 3 | 0   | 0   | 3  | 0  | 25    | -    | 25    | 50    | -   |
|        |       | <b>Total</b>                                  |          | <b>23</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Seventh Semester

| S. No. | Code  | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|---------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | EP401 | B.Tech. Project-I               | DCC      | 4         |   |     |     |    |    |       |      |       |       |     |
| 2.     | EP403 | Training Seminar                | DCC      | 2         |   |     |     |    |    |       |      |       |       |     |
| 3.     | EP4XX | Departmental Elective Course -6 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | EP4XX | Departmental Elective Course -7 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.     | EP4xx | Departmental Elective Course -8 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 6.     | EP4xx | Departmental Elective Course-9  | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
|        |       | <b>Total</b>                    |          | <b>22</b> |   |     |     |    |    |       |      |       |       |     |

### V Year: Eighth Semester

| S. No. | Code  | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|---------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | EP402 | B.Tech. Project-II              | DCC      | 8         |   |     |     |    |    |       |      |       |       |     |
| 2.     | EP4xx | Departmental Elective Course-10 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 3.     | EP4xx | Departmental Elective Course-11 | DEC/ GEC | 4         | 3 | 1   | 0   | 3  | 0  | 25    | 0    | 25    | 50    | -   |
| 4.     | EP4xx | Departmental Elective Course-12 | DEC/ GEC | 4         | 3 | 1   | 0   | 3  | 0  | 25    | 0    | 25    | 50    | -   |
|        |       | <b>Total</b>                    |          | <b>20</b> |   |     |     |    |    |       |      |       |       |     |

## List of Departmental Electives

| S.No. | Course Code | Course Title  | Elective no.   |
|-------|-------------|---|----------------|
| 1.    | EP-305      | Atomic and Molecular Physics                              | DEC-1,2,3      |
| 2.    | EP-307      | Biophysics  |                |
| 3.    | EP-309      | Quantum Information and Computing                         |                |
| 4.    | EP-311      | Computer Networking                                       |                |
| 5.    | EP-313      | Thermodynamics of Materials                               |                |
| 6.    | EP-315      | Advanced Characterization Techniques in Material Sciences |                |
| 7.    | EP-351      | Physics of Engineering Materials                          |                |
| 8.    | EP-308      | Laser System and Instrumentation                          | DEC-4,5        |
| 9.    | EP-310      | Medical Physics and Physiological measurements            |                |
| 10.   | EP-312      | Fourier optics and holography                             |                |
| 11.   | EP-314      | Instrumentation and Control                               |                |
| 12.   | EP-316      | Cosmology and Astrophysics                                |                |
| 13.   | EP-318      | Science and Technology of Thin Films                      |                |
| 14.   | EP-320      | Computational Material Science                            |                |
| 15.   | EP-322      | Mechanical and Electrical Behavior of Thin Films          | DEC-6, 7,8,9   |
| 16.   | EP405       | VLSI and FPGA design                                      |                |
| 17.   | EP407       | Mobile and Satellite communication                        |                |
| 18.   | EP-409      | Information theory and coding                             |                |
| 19.   | EP-411      | Advanced Simulation Techniques in Physics                 |                |
| 20.   | EP-413      | Continuum Mechanics                                       |                |
| 21.   | EP-415      | Nano Science and Technology                               |                |
| 22.   | EP- 417     | Optical Electronics                                       |                |
| 23.   | EP-419      | Introduction to Automation and Motion Control             |                |
| 24.   | EP-421      | Principles of Nuclear Engineering                         |                |
| 25.   | EP-423      | Space and Atmospheric Science-I                           |                |
| 26.   | EP-425      | Plasma Science and Technology-I                           | DEC-10, 11, 12 |
| 27.   | EP-427      | Thermodynamics of Materials                               |                |
| 28.   | EP404       | Alternative Energy Storage and Conversion Devices         |                |
| 29.   | EP-406      | Introduction to Spintronic                                |                |
| 30.   | EP-408      | Integrated Optics   |                |
| 31.   | EP-410      | Robotic Engineering                                       |                |
| 32.   | EP-412      | Nuclear Materials for Engineering Applications            |                |
| 33.   | EP-414      | Space and Atmospheric Science-II                          |                |
| 34.   | EP-416      | Plasma Science and Technology-II                          |                |
| 35.   | EP-418      | Digital Signal Processing                                 |                |
| 36.   | EP-420      | Fuzzy Logic and Neural Networks                           |                |
| 37.   | EP-422      | Embedded Systems Design                                   |                |

# BACHELOR OF TECHNOLOGY

## Biotechnology

### I Year: First Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |             |                 |                 |            |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|-----------|-------------------|-----------|----------------------|-------------|-----------------|-----------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P         | Theory            | Practical | CWS                  | PRS         | MTE             | ETE             | PRE        |
| Group A         |              |                              |              |        |                    |   |           |                   |           |                      |             |                 |                 |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25              | 50              | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 15          | 30              | 40              | -          |
| 3.              | AC101        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 15          | 30              | 40              | -          |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0         | 3                 | 0         | 25                   | -           | 25              | 50              | -          |
| 5.              | ME103        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -               | -               | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/<br>0      | 0/25<br>/50 | 25/<br>20/<br>0 | 50/<br>40/<br>0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |             |                 |                 |            |
| Group B         |              |                              |              |        |                    |   |           |                   |           |                      |             |                 |                 |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25              | 50              | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40              | -          |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40              | -          |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40              | -          |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -               | -               | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/<br>0      | 0/25<br>/50 | 25/<br>20/<br>0 | 50/<br>40/<br>0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |             |                 |                 |            |

## I Year: Second Semester

| Teaching Scheme |              |                              |              |           | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |             |             |             |            |
|-----------------|--------------|------------------------------|--------------|-----------|--------------------|---|-----------|-------------------|-----------|----------------------|-------------|-------------|-------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit    | L                  | T | P         | Theory            | Practical | CWS                  | PRS         | MTE         | ETE         | PRE        |
| <b>Group A</b>  |              |                              |              |           |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA102        | Mathematics -II              | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |             |             |             |            |
| <b>Group B</b>  |              |                              |              |           |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA102        | Mathematics- II              | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | AC102        | Chemistry                    | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4         | 4                  | 0 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 5.              | ME106        | Workshop Practice            | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |             |             |             |            |

## II Year: Third Semester

| S. No. | Code  | Title                                | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|--------------------------------------|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | MC251 | Applied Mathematics                  | AEC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 2.     | BT201 | Introduction to Biotechnology        | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 3.     | BT203 | Biochemistry                         | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | BT205 | Genetics                             | DCC  | 4         | 3         | 0 | 2         | 0         | 3         | 15          | 25          | 20          | 40          | -          |
| 5.     | BT207 | Fundamental of Computational Biology | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 6.     | FEC   | Foundation Elective 3                | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                         |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S. No. | Code  | Title                             | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|-----------------------------------|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | CO252 | Data Structure and Algorithm      | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 2.     | BT202 | Molecular Biology                 | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | BT204 | Drug Design and Delivery          | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 4.     | BT206 | Microbiology                      | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | BT208 | Advances in Computational Biology | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 6.     | FEC   | Foundation Elective 4             | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                      |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

### III Year: Fifth Semester

| S. No. | Code   | Title                            | Area    | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|--------|----------------------------------|---------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | BT 301 | Immunology and Immuno-Technology | DCC     | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 2.     | BT 303 | Genetic Engineering              | DCC     | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 3.     | BT 3xx | Departmental Elective Course-1   | DEC/GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | BT3xx  | Departmental Elective Course-2   | DEC/GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.     | BT3xx  | Departmental Elective Course-3   | DEC/GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 6.     | HU301  | Engineering Economics            | HMC     | 3         | 3 | 0   | 0   | 3  | 0  | 25    | -    | 25    | 50    | -   |
|        |        | <b>Total</b>                     |         | <b>23</b> |   |     |     |    |    |       |      |       |       |     |

### III Year: Sixth Semester

| S. No. | Code  | Title                          | Area    | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|--------------------------------|---------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | BT302 | Plant Biotechnology            | DCC     | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 2.     | BT304 | Animal Biotechnology           | DCC     | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 3.     | BT306 | Genomics and Proteomics        | DCC     | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 4.     | BT3xx | Departmental Elective Course-4 | DEC/GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.     | BT3xx | Departmental Elective Course-5 | DEC/GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 6.     | MG302 | Fundamentals of Management     | HMC     | 3         | 3 | 0   | 0   | 3  | 0  | 25    | -    | 25    | 50    | -   |
|        |       | <b>Total</b>                   |         | <b>23</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Seventh Semester

| S. No. | Code   | Title                          | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|--------|--------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | BT 401 | B.Tech Project-I               | DCC      | 4         |   |     |     |    |    |       |      |       |       |     |
| 2.     | BT 403 | Training Seminar               | DCC      | 2         |   |     |     |    |    |       |      |       |       |     |
| 3.     | BT 4xx | Departmental Elective Course-6 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | BT 4xx | Departmental Elective Course-7 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.     | BT4xx  | Departmental Elective Course-8 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 6.     | BT4xx  | Departmental Elective Course-9 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
|        |        | <b>Total</b>                   |          | <b>22</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Eighth Semester

| S. No. | Code  | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|---------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | BT402 | B.Tech Project-II               | DCC      | 8         |   |     |     |    |    |       |      |       |       |     |
| 2.     | BT404 | Departmental Elective Course-10 | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 3.     | BT4xx | Departmental Elective Course-11 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | BT4xx | Departmental Elective Course-12 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
|        |       | <b>Total</b>                    |          | <b>20</b> |   |     |     |    |    |       |      |       |       |     |



## List of Departmental Elective Courses

| S. No. | Course Code | Course Title   | Elective no.   |
|--------|-------------|--|----------------|
| 1.     | BT305       | Instrumentation in Biotechnology                             | DEC 1, 2, 3    |
| 2.     | BT307       | Food Biotechnology   |                |
| 3.     | BT309       | Object oriented Programming                                  |                |
| 4.     | BT311       | Introduction to Biomedical Engineering                       |                |
| 5.     | BT313       | Thermodynamics of Biological System                          |                |
| 6.     | BT315       | Current topics in Biotechnology                              |                |
| 7.     | BT317       | Enzymology and Enzyme Technology                             |                |
| 8.     | BT319       | Drug Design and Delivery                                     |                |
| 9.     | BT321       | Bioprocess Plant Design                                      |                |
| 10.    | BT323       | Population Genetics  |                |
| 11.    | BT325       | Cell Biology   |                |
| 12.    | BT327       | Minor Project ( <b>Only for students who opt for Minor</b> ) |                |
| 13.    | BT308       | Stem Cells and Regenerative Medicine                         | DEC 4 & 5      |
| 14.    | BT310       | Biopolymers  |                |
| 15.    | BT312       | Metabolic Engineering  |                |
| 16.    | BT314       | Ecology and Evolution  |                |
| 17.    | BT316       | Transgenic Technology  |                |
| 18.    | BT318       | Bioenergy and Biofuels                                       |                |
| 19.    | BT320       | Genomics in Medicine   |                |
| 20.    | BT322       | Protein Engineering  |                |
| 21.    | BT324       | Biodiversity and Bio resource Planning                       |                |
| 22.    | BT326       | Medical Microbiology   |                |
| 23.    | BT328       | Bioinformatics approaches in Complex disorders               |                |
| 24.    | BT405       | Fundamentals of Computational Biology                        | DEC 6, 7, 8, 9 |
| 25.    | BT407       | Bioprocess Tech & Downstream Process                         |                |
| 26.    | BT409       | Concepts in Neurobiology                                     |                |
| 27.    | BT411       | Industrial Biotechnology                                     |                |
| 28.    | BT413       | Nano biotechnology   |                |
| 29.    | BT415       | Medical Physics  |                |
| 30.    | BT417       | Plant Bioinformatics   |                |
| 31.    | BT419       | Cancer Biology   |                |
| 32.    | BT421       | Pharmacogenomics and Personalized Medicine                   |                |
| 33.    | BT423       | Technological Application in Food Technology                 |                |
| 34.    | BT425       | Biomaterials   |                |
| 35.    | BT427       | Pharmaceutical Sciences                                      |                |
| 36.    | BT429       | Nano-Biotechnology and Nano biomedicine                      |                |
| 37.    | BT431       | Biomaterials and clinical devices                            |                |

|     |       |  |                |
|-----|-------|--|----------------|
| 38. | BT433 | Basic Epidemiology                                   |                |
| 39. | BT435 | Principle of imaging processing in medicine          |                |
| 40. | BT437 | Biomedical Instrumentation, biosensor and transducer |                |
| 41. | BT439 | Principles and practice in Public Health             |                |
| 42. | BT441 | Rehabilitation Engineering                           |                |
| 43. | BT404 | Advances in Computational Biology                    | DEC 10, 11, 12 |
| 44. | BT406 | Agriculture Microbiology                             |                |
| 45. | BT408 | Bioethics and Intellectual Property Rights           |                |
| 46. | BT410 | System Biology                                       |                |
| 47. | BT412 | Advanced Bioanalytical Techniques                    |                |
| 48. | BT414 | Clinical Biotechnology                               |                |
| 49. | BT416 | Plant Metabolic Engineering                          |                |
| 50. | BT418 | Crop protection and Pest management                  |                |
| 51. | BT420 | Biosensor  |                |
| 52. | BT422 | Green Energy Technology                              |                |
| 53. | BT424 | Neutraceuticals                                      |                |
| 54. | BT426 | Environmental Biotechnology                          |                |
| 55. | BT428 | Food Engineering & Biotechnology                     |                |
| 56. | BT430 | Waste water treatment                                |                |
| 57. | BT432 | Bioprocess Plant Designing                           |                |
| 58. | BT434 | Biostatistics  |                |
| 59. | BT436 | Tissue Engineering and Artificial Organs             |                |

# BACHELOR OF TECHNOLOGY

## Civil Engineering

### I Year: First Semester

| Teaching Scheme |              |                              |              |           | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |             |             |             |            |
|-----------------|--------------|------------------------------|--------------|-----------|--------------------|---|-----------|-------------------|-----------|----------------------|-------------|-------------|-------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit    | L                  | T | P         | Theory            | Practical | CWS                  | PRS         | MTE         | ETE         | PRE        |
| <b>Group A</b>  |              |                              |              |           |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 15          | 30          | 40          | -          |
| 3.              | AC101        | Chemistry                    | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 15          | 30          | 40          | -          |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4         | 4                  | 0 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 5.              | ME103        | Workshop Practice            | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |             |             |             |            |
| <b>Group B</b>  |              |                              |              |           |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 15          | 30          | 40          | -          |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 15          | 30          | 40          | -          |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 15          | 30          | 40          | -          |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |             |             |             |            |

## I Year: Second Semester

| Teaching Scheme |              |                              |              |           | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |             |             |             |             |
|-----------------|--------------|------------------------------|--------------|-----------|--------------------|---|-----------|-------------------|-----------|----------------------|-------------|-------------|-------------|-------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit    | L                  | T | P         | Theory            | Practical | CWS                  | PRS         | MTE         | ETE         | PRE         |
| <b>Group A</b>  |              |                              |              |           |                    |   |           |                   |           |                      |             |             |             |             |
| 1.              | MA102        | Mathematics - II             | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -           |
| 2.              | AP102        | Physics – II                 | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 15          | 30          | 40          | -           |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 15          | 30          | 40          | -           |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 15          | 30          | 40          | -           |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50          |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/15<br>/50 | 25/<br>30/0 | 50/<br>40/0 | 0/0<br>/ 50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |             |             |             |             |
| <b>Group B</b>  |              |                              |              |           |                    |   |           |                   |           |                      |             |             |             |             |
| 1.              | MA102        | Mathematics- II              | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -           |
| 2.              | AP102        | Physics – II                 | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 15          | 30          | 40          | -           |
| 3.              | AC102        | Chemistry                    | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 15          | 30          | 40          | -           |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4         | 4                  | 0 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -           |
| 5.              | ME106        | Workshop Practice            | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50          |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50  |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |             |             |             |             |

## II Year: Third Semester

| S. No. | Code  | Title                                     | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|---|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | EC251 | Basic Electronics & Instrumentation       | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.     | CE201 | Civil Engineering Basics and Applications | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | CE203 | Engineering Mechanics                     | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | CE205 | Fluid Mechanics                           | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | CE207 | Engineering Analysis and Design           | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 6.     | FEC   | Foundation Elective 3                     | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                              |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S. No. | Code  | Title                           | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|---------------------------------|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | EN252 | Environmental Engineering       | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.     | CE202 | Mechanics of solids             | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | CE204 | Engineering Survey              | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | CE206 | Soil Mechanics                  | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | CE208 | Hydraulics & Hydraulic Machines | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 6.     | FEC   | Foundation Elective 4           | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                    |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

### III Year: Fifth Semester

| S. No. | Code  | Title                              | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|------------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | CE301 | Analysis of Determinate Structures | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 2.     | CE303 | Design of RCC structures           | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 3.     | CE3xx | Departmental Elective Course-1     | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
| 4.     | CE3xx | Departmental Elective Course-2     | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
| 5.     | CE3xx | Departmental Elective Course-3     | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
| 6.     | MG301 | Fundamentals of Management         | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25    | -    | 25    | 50    | -   |
|        |       | <b>Total</b>                       |          | <b>23</b> |   |     |     |    |    |       |      |       |       |     |

### III Year: Sixth Semester

| S. No. | Code  | Title                                | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|--------------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | CE302 | Analysis of Indeterminate Structures | DCC      | 4         | 3 | 1   | 0   | 3  | 0  | 25    | -    | 25    | 50    | -   |
| 2.     | CE304 | Geotechnical Engineering             | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 3.     | CE306 | Transportation Engineering           | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 4.     | CE3xx | Departmental Elective Course-4       | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
| 5.     | CE3xx | Departmental Elective Course-5       | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
| 6.     | HU302 | Engineering Economics                | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25    | -    | 25    | 50    | -   |
|        |       | <b>Total</b>                         |          | <b>23</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Seventh Semester

| S. No. | Code   | Title                          | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|--------|--------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | CE 401 | B. Tech. Project               | DCC      | 4         |   |     |     |    |    |       |      |       |       |     |
| 2.     | CE 403 | Training Seminar               | DCC      | 2         |   |     |     |    |    |       |      |       |       |     |
| 3.     | CE4XX  | Departmental Elective Course-6 | DEC/ GEC | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 4.     | CE4XX  | Departmental Elective Course-7 | DEC/ GEC | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 5.     | CE4XX  | Departmental Elective Course-8 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
| 6.     | CE4XX  | Departmental Elective Course-9 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
|        |        | <b>Total</b>                   |          | <b>22</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Eighth Semester

| S. No. | Code   | Title                                       | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|--------|---|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | CE 402 | B. Tech. Project (Contd. From VII Semester) | DCC      | 8         |   |     |     |    |    |       |      |       |       |     |
| 2.     | CE4XX  | Departmental Elective Course-10             | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
| 3.     | CE4XX  | Departmental Elective Course-11             | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
| 4.     | CE4XX  | Departmental Elective Course-12             | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
|        |        | <b>Total</b>                                |          | <b>20</b> |   |     |     |    |    |       |      |       |       |     |

### List of Departmental Elective Courses

| S.No. | Course Code | Course Title   | Elective no.   |
|-------|-------------|--|----------------|
| 1.    | CE 305      | Mechanics of Materials   | DEC-1, 2, 3    |
| 2.    | CE 307      | Advanced Geo-Technical Engineering                                   |                |
| 3.    | CE 309      | Environmental Engineering Design                                     |                |
| 4.    | CE 311      | Photogrammetry and Astronomy   |                |
| 5.    | CE 313      | Earthquake Technology  |                |
| 6.    | CE 315      | Rock Engineering   |                |
| 7.    | CE 317      | Solid waste management and air pollution control                     |                |
| 8.    | CE 319      | Application of Geo-Informatics Remote Sensing and GIS in Engineering |                |
| 9.    | CE 321      | Disaster Preparedness and mitigation                                 |                |
| 10.   | CE 323      | Occupational Safety and Health                                       |                |
| 11.   | CE 325      | Human Values and Ethics in Disaster Management                       |                |
| 12.   | CE 327      | Climate Change and Sustainable Development                           |                |
| 13.   | CE 308      | Disaster Management  | DEC-4, 5       |
| 14.   | CE 310      | Geo-Technical Processes  |                |
| 15.   | CE 312      | Waterpower System and Design   |                |
| 16.   | CE 314      | Tunnel ,Ports and Harbour Engineering                                |                |
| 17.   | CE 316      | Matrix Methods of Structural Analysis                                |                |
| 18.   | CE 318      | Analysis and Design of Underground Structures                        |                |
| 19.   | CE 320      | Computational Hydraulics   |                |
| 20.   | CE 322      | Traffic and Transportation Planning                                  |                |
| 21.   | CE 324      | Infrastructure Resilience and Socio-Economic Dynamic                 |                |
| 22.   | CE 405      | Design of Steel Structure  | DEC-6, 7, 8, 9 |
| 23.   | CE 407      | Water Resource Engineering   |                |
| 24.   | CE 409      | Advanced Design of Concrete Structures                               |                |
| 25.   | CE 411      | Interaction Behaviour of Soil Structures                             |                |



|     |        |   |                |
|-----|--------|---|----------------|
| 26. | CE 413 | Water Resources Management                                    |                |
| 27. | CE 415 | Transportation safety and Environment                         |                |
| 28. | CE 417 | Finite element method for 2-D Structure                       |                |
| 29. | CE 419 | Soil Dynamics   |                |
| 30. | CE 421 | Hydraulics Structure and flood control works                  |                |
| 31. | CE 423 | Advanced Transportation Engineering                           |                |
| 32. | CE 425 | Sustainable Construction and Practices                        |                |
| 33. | CE 427 | Wind Loads on Structures                                      |                |
| 34. | CE 429 | Disaster Induced Risk   |                |
| 35. | CE 431 | Cyclonic Hazard Assessment and Mitigation                     |                |
| 36. | CE 433 | Seismic Hazard Assessment and Mitigation                      |                |
| 37. | CE 435 | Landslide Hazard Assessment and Mitigation                    |                |
| 38. | CE 404 | Construction Technology and Management                        | DEC-10, 11, 12 |
| 39. | CE 406 | Advanced Design of Steel Structures                           |                |
| 40. | CE 408 | Computational Geo-Mechanics                                   |                |
| 41. | CE 410 | Advanced Fluid Mechanics                                      |                |
| 42. | CE 412 | Construction and design aspects in transportation engineering |                |
| 43. | CE 414 | Design of Bridges   |                |
| 44. | CE 416 | Geo-environmental and geo-hazard engineering                  |                |
| 45. | CE 418 | Ground water and seepage                                      |                |
| 46. | CE 420 | Traffic Engineering   |                |
| 47. | CE 422 | Vulnerability and Risk Analysis                               |                |
| 48. | CE 424 | Hazard Monitoring Prediction and Mitigation                   |                |
| 49. | CE 426 | Retrofitting of Structures                                    |                |

# BACHELOR OF TECHNOLOGY

## (Computer Science and Engineering)

### I Year: First Semester

| Teaching Scheme |              |                              |              |           | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative W Eights (%) |             |             |             |            |
|-----------------|--------------|------------------------------|--------------|-----------|--------------------|---|-----------|-------------------|-----------|-----------------------|-------------|-------------|-------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit    | L                  | T | P         | Theory            | Practical | CWS                   | PRS         | MTE         | ETE         | PRE        |
| <b>Group A</b>  |              |                              |              |           |                    |   |           |                   |           |                       |             |             |             |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                    | -           | 25          | 50          | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                    | 25          | 20          | 40          | -          |
| 3.              | AC101        | Chemistry                    | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                    | 25          | 20          | 40          | -          |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4         | 4                  | 0 | 0         | 3                 | 0         | 25                    | -           | 25          | 50          | -          |
| 5.              | ME103        | Workshop Practice            | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                     | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0           | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                       |             |             |             |            |
| <b>Group B</b>  |              |                              |              |           |                    |   |           |                   |           |                       |             |             |             |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                    | -           | 25          | 50          | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                    | 25          | 20          | 40          | -          |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                    | 25          | 20          | 40          | -          |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                    | 25          | 20          | 40          | -          |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                     | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0           | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                       |             |             |             |            |

## I Year: Second Semester

| Teaching Scheme |              |                              |              |           | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |             |                 |             |            |
|-----------------|--------------|------------------------------|--------------|-----------|--------------------|---|-----------|-------------------|-----------|----------------------|-------------|-----------------|-------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit    | L                  | T | P         | Theory            | Practical | CWS                  | PRS         | MTE             | ETE         | PRE        |
| <b>Group A</b>  |              |                              |              |           |                    |   |           |                   |           |                      |             |                 |             |            |
| 1.              | MA102        | Mathematics -II              | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25              | 50          | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40          | -          |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40          | -          |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40          | -          |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -               | -           | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/<br>0 | 50/<br>40/0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |             |                 |             |            |
| <b>Group B</b>  |              |                              |              |           |                    |   |           |                   |           |                      |             |                 |             |            |
| 1.              | MA102        | Mathematics -II              | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25              | 50          | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40          | -          |
| 3.              | AC102        | Chemistry                    | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20              | 40          | -          |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4         | 4                  | 0 | 0         | 3                 | 0         | 25                   | -           | 25              | 50          | -          |
| 5.              | ME106        | Workshop Practice            | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -               | -           | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/<br>0 | 50/<br>40/0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |             |                 |             |            |

## II Year: Third Semester

| S. No. | Code  | Title   | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|---|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | EC261 | Analog Electronics  | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.     | CO201 | Data Structures   | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | CO203 | Object Oriented Programming                               | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | CO205 | Discrete Structures                                       | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 5.     | CO207 | Engineering Analysis and Design (Modeling and Simulation) | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 6.     | FEC   | Foundation Elective 3                                     | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>  |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S. No. | Code  | Title                                  | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|--|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | EC262 | Digital Electronics                    | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.     | CO202 | Database Management Systems            | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | CO204 | Operating Systems Design               | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | CO206 | Computer Organization and Architecture | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 5.     | CO208 | Algorithm Design and Analysis          | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 6.     | FEC   | Foundation Elective 4                  | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                           |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

### III Year: Fifth Semester

| S. No. | Code  | Title                         | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|-------------------------------|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | CO301 | Software Engineering          | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 2.     | CO303 | Theory of Computation         | DCC      | 4         | 3 | 1   | 0   | 3  | 0  | 25     | 0    | 25     | 50     |     |
| 3.     | CO3xx | Department Elective Course -1 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | -   |
| 4.     | CO3xx | Department Elective Course -2 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | -   |
| 5.     | CO3xx | Department Elective Course -3 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | -   |
| 6.     | HU301 | Engineering Economics         | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                  |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### III Year: Sixth Semester

| S. No. | Code  | Title                        | Area     | Cr        | L | T    | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|------------------------------|----------|-----------|---|------|-----|----|----|--------|------|--------|--------|-----|
| 1.     | CO302 | Compiler Design              | DCC      | 4         | 3 | 0    | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 2.     | CO304 | Artificial Intelligence      | DCC      | 4         | 3 | 1    | 0   | 3  | 0  | 25     | -    | 25     | 50     | -   |
| 3.     | CO306 | Computer Networks            | DCC      | 4         | 3 | 0    | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 4.     | CO3xx | Department Elective Course-4 | DEC/ GEC | 4         | 3 | 0/ 1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | -   |
| 5.     | CO3xx | Department Elective Course-5 | DEC/ GEC | 4         | 3 | 0/ 1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | -   |
| 6.     | MG302 | Fundamentals of Management   | HMC      | 3         | 3 | 0    | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                 |          | <b>23</b> |   |      |     |    |    |        |      |        |        |     |

### IV Year: Seventh Semester

| S. No. | Code  | Title                         | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|-------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | CO401 | B.Tech. Project-I             | DCC      | 4         |   |     |     |    |    |       |      |       |       |     |
| 2.     | CO403 | Training Seminar              | DCC      | 2         |   |     |     |    |    |       |      |       |       |     |
| 3.     | CO4xx | Department Elective Course -6 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | CO4xx | Department Elective Course -7 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.     | CO4xx | Department Elective Course -8 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 6.     | CO4xx | Department Elective Course -9 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
|        |       | <b>Total</b>                  |          | <b>22</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Eighth Semester

| S. No. | Code  | Title                          | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|--------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | CO402 | B.Tech. Project-II             | DCC      | 8         |   |     |     |    |    |       |      |       |       |     |
| 2.     | CO4xx | Department Elective Course-10  | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 3.     | CO4xx | Department Elective Course -11 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | CO4xx | Department Elective Course -12 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
|        |       | <b>Total</b>                   |          | <b>20</b> |   |     |     |    |    |       |      |       |       |     |

## List of Departmental Elective Courses

|     | Course Code | Course Title   | Elective no. |
|-----|-------------|--|--------------|
| 1.  | CO-305      | Information Theory and coding                              | DEC-1, 2,3   |
| 2.  | CO-307      | Digital Signal Processing                                  |              |
| 3.  | CO-309      | Advanced Data Structures                                   |              |
| 4.  | CO-311      | Microprocessors and Interfacing                            |              |
| 5.  | CO-313      | Computer Graphics  |              |
| 6.  | CO-315      | Optimization Techniques                                    |              |
| 7.  | CO-317      | Soft Computing   |              |
| 8.  | CO-319      | Enterprise Java programming                                |              |
| 9.  | CO-321      | Embedded Systems   |              |
| 10. | CO-323      | Data Compression   |              |
| 11. | CO-325      | Probability and Statistics                                 |              |
| 12. | CO-327      | Machine Learning   |              |
| 13. | CO329       | Methods for Data Preparation & Analysis                    |              |
| 14. | CO 331      | Minor Project <b>(Only for students who opt for Minor)</b> |              |
| 15. | CO-308      | Parallel Algorithms  | DEC-4,5      |
| 16. | CO-310      | Digital Image Processing                                   |              |
| 17. | CO-312      | Communications Engineering                                 |              |
| 18. | CO-314      | Optical Networks   |              |
| 19. | CO-316      | High Speed Networks  |              |
| 20. | CO-318      | Advanced Database Management Systems                       |              |
| 21. | CO-320      | Multimedia System Design                                   |              |
| 22. | CO-322      | Real Time System   |              |
| 23. | CO-324      | Pattern Recognition  |              |
| 24. | CO-326      | Object Oriented Software Engineering                       |              |
| 25. | CO405       | Information and Network Security                           | DEC-6,7,8,9  |
| 26. | CO407       | Distributed Systems  |              |
| 27. | CO-409      | Robotics   |              |
| 28. | CO-411      | Computer Vision  |              |
| 29. | CO-413      | VLSI Design  |              |
| 30. | CO-415      | Wireless and Mobile Computing                              |              |
| 31. | CO-417      | Software Testing   |              |
| 32. | CO-419      | High Performance Computing                                 |              |
| 33. | CO-421      | Grid and Cluster Computing                                 |              |
| 34. | CO-423      | Swarm & Evolutionary Computing                             |              |
| 35. | CO-427      | Web Technology   |              |
| 36. | CO-429      | Neural Networks  |              |
| 37. | CO-431      | Reinforcement Learning                                     |              |
| 38. | CO-433      | Distributed Systems  |              |

|     |        |                                  |              |
|-----|--------|----------------------------------|--------------|
| 39. | CO-404 | Data-Warehousing and Data Mining | DEC-10,11,12 |
| 40. | CO-406 | Parallel Computer Architecture   |              |
| 41. | CO-408 | Intellectual Property Rights     |              |
| 42. | CO-410 | Bio Informatics                  |              |
| 43. | CO-412 | Software Quality and Metrics     |              |
| 44. | CO-414 | Big Data Analytics               |              |
| 45. | CO-416 | Cloud Computing                  |              |
| 46. | CO-418 | Natural Language Processing      |              |
| 47. | CO-420 | Cyber Forensics                  |              |
| 48. | CO-422 | Semantic Web and Web Mining      |              |
| 49. | CO-424 | Software Project Management      |              |



# BACHELOR OF TECHNOLOGY

## Electrical Engineering

### I Year: First Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |                 |                 |                 |            |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|-----------|-------------------|-----------|----------------------|-----------------|-----------------|-----------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P         | Theory            | Practical | CWS                  | PRS             | MTE             | ETE             | PRE        |
| Group A         |              |                              |              |        |                    |   |           |                   |           |                      |                 |                 |                 |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -               | 25              | 50              | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25              | 20              | 40              | -          |
| 3.              | AC101        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25              | 20              | 40              | -          |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0         | 3                 | 0         | 25                   | -               | 25              | 50              | -          |
| 5.              | ME103        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50              | -               | -               | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/<br>0      | 0/2<br>5<br>/50 | 25/<br>20/<br>0 | 50/<br>40/<br>0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |                 |                 |                 |            |
| Group B         |              |                              |              |        |                    |   |           |                   |           |                      |                 |                 |                 |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -               | 25              | 50              | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25              | 20              | 40              | -          |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25              | 20              | 40              | -          |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25              | 20              | 40              | -          |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50              | -               | -               | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/<br>0      | 0/2<br>5<br>/50 | 25/<br>20/<br>0 | 50/<br>40/<br>0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |                 |                 |                 |            |

## I Year: Second Semester

| Teaching Scheme |              |                              |              |           | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |                 |                 |                 |            |
|-----------------|--------------|------------------------------|--------------|-----------|--------------------|---|-----------|-------------------|-----------|----------------------|-----------------|-----------------|-----------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit    | L                  | T | P         | Theory            | Practical | CWS                  | PRS             | MTE             | ETE             | PRE        |
| <b>Group A</b>  |              |                              |              |           |                    |   |           |                   |           |                      |                 |                 |                 |            |
| 1.              | MA102        | Mathematics-II               | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -               | 25              | 50              | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25              | 20              | 40              | -          |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25              | 20              | 40              | -          |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25              | 20              | 40              | -          |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50              | -               | -               | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/2<br>5<br>/50 | 25/<br>20/<br>0 | 50/<br>40/<br>0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |                 |                 |                 |            |
| <b>Group B</b>  |              |                              |              |           |                    |   |           |                   |           |                      |                 |                 |                 |            |
| 1.              | MA102        | Mathematics- II              | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -               | 25              | 50              | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25              | 20              | 40              | -          |
| 3.              | AC102        | Chemistry                    | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25              | 20              | 40              | -          |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4         | 4                  | 0 | 0         | 3                 | 0         | 25                   | -               | 25              | 50              | -          |
| 5.              | ME106        | Workshop Practice            | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50              | -               | -               | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/2<br>5<br>/50 | 25/<br>20/<br>0 | 50/<br>40/<br>0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |                 |                 |                 |            |

## II Year: Third Semester

| S. No. | Code  | Title   | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|---|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | MC261 | Numerical and Engineering Optimization Methods      | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.     | EE201 | Network Analysis & Synthesis                        | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 3.     | EE203 | Electronic Devices and Circuits                     | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | EE205 | Electromechanical Energy Conversion and Transformer | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | EE207 | Electromagnetic Field Theory                        | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 6.     | FEC   | Foundation Elective 3                               | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>  |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S. No. | Code  | Title                                 | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|---------------------------------------|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | ME252 | Power Plant Engineering               | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.     | EE202 | Linear Integrated Circuit             | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | EE204 | Digital circuits and System           | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 4.     | EE206 | Control Systems                       | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | EE208 | Asynchronous and Synchronous Machines | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 6.     | FEC   | Foundation Elective 4                 | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                          |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

### III Year: Fifth Semester

| S. No. | Code  | Title                               | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|-------------------------------------|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | EE301 | Power Electronics                   | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 2.     | EE303 | Power Transmission and Distribution | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 3.     | EExxx | Departmental Elective Course- 1     | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | -   |
| 4.     | EExxx | Departmental Elective Course- 2     | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | -   |
| 5.     | EExxx | Departmental Elective Course- 3     | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | -   |
| 6.     | HU301 | Engineering Economics               | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                        |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### III Year: Sixth Semester

| S. No. | Code  | Title  | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|--|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | EE302 | Electric Drives                                | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 2.     | EE304 | Power System Analysis                          | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 3.     | EE306 | Microprocessors & Microcontroller Applications | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 4.     | EEXXX | Departmental Elective Course- 4                | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | -   |
| 5.     | EEXXX | Departmental Elective Course- 5                | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | -   |
| 6.     | MG302 | Fundamentals of Management                     | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                                   |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### IV Year: Seventh Semester

| S. No. | Code  | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|---------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | EE401 | B.Tech Project-I                | DCC      | 4         |   |     |     |    |    |       |      |       |       |     |
| 2.     | EE403 | Training Seminar                | DCC      | 2         |   |     |     |    |    |       |      |       |       |     |
| 3.     | EE4XX | Departmental Elective Course- 6 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
| 4.     | EE4XX | Departmental Elective Course- 7 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
| 5.     | EE4XX | Departmental Elective Course- 8 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
| 6.     | EE4xx | Departmental Elective Course- 9 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
|        |       | <b>Total</b>                    |          | <b>22</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Eighth Semester

| S. No. | Code  | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|---------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | EE402 | B.Tech. Project-II              | CC       | 8         |   |     |     |    |    |       |      |       |       |     |
| 2.     | EE4xx | Departmental Elective Course-10 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 |     |
| 3.     | EE4xx | Departmental Elective Course-11 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 |     |
| 4.     | EE4xx | Departmental Elective Course-12 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 |     |
|        |       | <b>Total</b>                    |          | <b>20</b> |   |     |     |    |    |       |      |       |       |     |

## List of Departmental Elective Courses

| S. No. | Course Code | Course Title  | Elective No. |
|--------|-------------|---|--------------|
| 1.     | EE305       | Signals and Systems   | DEC 1,2,3    |
| 2.     | EE307       | Power Station Practices                                       |              |
| 3.     | EE309       | Special Electrical Machines                                   |              |
| 4.     | EE311       | Energy Efficient Motors                                       |              |
| 5.     | EE313       | Engineering Analysis and Design                               |              |
| 6.     | EE315       | Digital Control and State Variable Analysis                   |              |
| 7.     | EE317       | Renewable Energy Systems                                      |              |
| 8.     | EE319       | Digital System Design   |              |
| 9.     | EE321       | Soft Computing Techniques                                     |              |
| 10.    | EE323       | Fundamentals of Machine Learning                              |              |
| 11.    | EE325       | Internet of Things  |              |
| 12.    | EE327       | Introduction to Python Programming                            |              |
| 13.    | EE308       | Power System Operation and Control                            | DEC 4,5      |
| 14.    | EE310       | Communication Systems   |              |
| 15.    | EE312       | Power System Optimization                                     |              |
| 16.    | EE314       | Power Electronic Applications to Power Systems                |              |
| 17.    | EE316       | Electrical Energy Storage Systems                             |              |
| 18.    | EE318       | Switched Mode Power Supplies                                  |              |
| 19.    | EE320       | VLSI Design   |              |
| 20.    | EE322       | Advanced Analog Circuit Design                                |              |
| 21.    | EE324       | Design, Estimation & Costing of Industrial Electrical Systems |              |
| 22.    | EE326       | CMOS Analog Integrated Circuits                               |              |
| 23.    | EE328       | Deep Learning with Artificial Neural Network                  |              |
| 24.    | EE330       | Introduction to ARM Architecture                              |              |
| 25.    | EE332       | Wireless Sensor Networks                                      |              |
| 26.    | EE405       | Digital Signal Processing                                     | DEC 6,7,8,9  |
| 27.    | EE407       | Instrumentation and Measurement                               |              |
| 28.    | EE409       | Switchgear and Protection                                     |              |
| 29.    | EE411       | Power System Modeling & Simulation                            |              |
| 30.    | EE413       | Power System Reliability                                      |              |
| 31.    | EE415       | Design of Electrical Machines                                 |              |
| 32.    | EE417       | Advanced Topics in Electrical Machines                        |              |
| 33.    | EE419       | Pulse Width Modulation for Power converters                   |              |

|     |       |   |              |
|-----|-------|---|--------------|
| 34. | EE421 | Advanced Communications                               |              |
| 35. | EE423 | Microcontroller and Embedded Systems                  |              |
| 36. | EE425 | IC Technology   |              |
| 37. | EE427 | Computer Architecture                                 |              |
| 38. | EE429 | Power Electronics Application to Photovoltaic Systems |              |
| 39. | EE404 | Power System Dynamics & Stability                     | DEC 10,11,12 |
| 40. | EE406 | Distribution Systems Analysis & Control               |              |
| 41. | EE408 | Restructured Power Systems                            |              |
| 42. | EE410 | Power System Planning                                 |              |
| 43. | EE412 | High Voltage Engineering                              |              |
| 44. | EE414 | Distributed Generation                                |              |
| 45. | EE416 | Grid Integration of Renewable Energy Sources          |              |
| 46. | EE418 | Selected Topics in Power Electronics                  |              |
| 47. | EE420 | Power Quality   |              |
| 48. | EE422 | HVDC Transmission                                     |              |
| 49. | EE424 | Flexible AC Transmission Systems                      |              |
| 50. | EE426 | Smart Grid  |              |
| 51. | EE428 | Digital Image Processing                              |              |
| 52. | EE430 | Filter Design   |              |
| 53. | EE432 | AI and Expert Systems                                 |              |
| 54. | EE434 | Computer Control of Processes                         |              |
| 55. | EE436 | Nonlinear and Adaptive Control                        |              |
| 56. | EE438 | DSP Applications to Electromechanical Systems         |              |
| 57. | EE440 | SCADA & Energy Management Systems                     |              |
| 58. | EE442 | Robotics and Machine Vision                           |              |
| 59. | EE444 | Utilization of Electrical Energy & Traction           |              |
| 60. | EE446 | Data Communication and Computer Networks              |              |
| 61. | EE448 | Big Data Analytics                                    |              |
| 62. | EE450 | Cloud Computing Fundamentals                          |              |

# BACHELOR OF TECHNOLOGY

## Electronics & Communication Engineering

### I Year: First Semester

| Teaching Scheme |              |                              |              |           | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |             |             |             |            |
|-----------------|--------------|------------------------------|--------------|-----------|--------------------|---|-----------|-------------------|-----------|----------------------|-------------|-------------|-------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit    | L                  | T | P         | Theory            | Practical | CWS                  | PRS         | MTE         | ETE         | PRE        |
| <b>Group A</b>  |              |                              |              |           |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | AC101        | Chemistry                    | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4         | 4                  | 0 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 5.              | ME103        | Workshop Practice            | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |             |             |             |            |
| <b>Group B</b>  |              |                              |              |           |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          |            |
| 2.              | AP101        | Physics – I                  | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          |            |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          |            |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          |            |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           |            |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |             |             |             |            |



## I Year: Second Semester

| Teaching Scheme |              |                              |              |           | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |             |             |             |            |
|-----------------|--------------|------------------------------|--------------|-----------|--------------------|---|-----------|-------------------|-----------|----------------------|-------------|-------------|-------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit    | L                  | T | P         | Theory            | Practical | CWS                  | PRS         | MTE         | ETE         | PRE        |
| <b>Group A</b>  |              |                              |              |           |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA102        | Mathematics – II             | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |             |             |             |            |
| <b>Group B</b>  |              |                              |              |           |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA102        | Mathematics – II             | ASC          | 4         | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | AC102        | Chemistry                    | ASC          | 4         | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4         | 4                  | 0 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 5.              | ME106        | Workshop Practice            | AEC          | 2         | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2         | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| <b>Total</b>    |              |                              |              | <b>20</b> |                    |   |           |                   |           |                      |             |             |             |            |

## II Year: Third Semester

| S. No. | Code  | Title  | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE          | ETE         | PRE        |
|--------|-------|--|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|--------------|-------------|------------|
| 1.     | EE251 | Electronic Instrumentation and Measurements                    | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20           | 40          | -          |
| 2.     | EC201 | Analog Electronics – I   | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20           | 40          | -          |
| 3.     | EC203 | Digital Design – I   | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20           | 40          | -          |
| 4.     | EC205 | Signals & Systems  | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20           | 40          |            |
| 5.     | EC207 | Engineering Analysis & Design (Network Analysis and Synthesis) | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 15          | 25          | 2099<br>9999 | 40          | -          |
| 6.     | FEC   | Foundation Elective 3  | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0  | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>   |      | <b>22</b> |           |   |           |           |           |             |             |              |             |            |

## II Year: Fourth Semester

| S. No. | Code   | Title                 | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|--------|-----------------------|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | EE262  | Electromagnetics      | AEC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 2.     | EC 202 | Analog Electronics–II | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | EC204  | Digital Design – II   | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | EC206  | Communication Systems | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | EC208  | Computer Architecture | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 6.     | FEC    | Foundation Elective 4 | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |        | <b>Total</b>          |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

### III Year: Fifth Semester

| S. No. | Code  | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|---------------------------------|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | EC301 | Digital Communication           | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     |     |
| 2.     | EC303 | Linear Integrated Circuits      | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 3.     | EC3xx | Departmental Elective Course -1 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 |     |
| 4.     | EC3xx | Departmental Elective Course- 2 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 |     |
| 5.     | EC3xx | Departmental Elective Course- 3 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | -   |
| 6.     | HU301 | Engineering Economics           | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                    |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### III Year: Sixth Semester

| S. No. | Code  | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|---------------------------------|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | EC302 | VLSI Design                     | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     |     |
| 2.     | EC304 | Digital Signal Processing       | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 3.     | EC306 | Embedded Systems                | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 4.     | EC3xx | Departmental Elective Course -4 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 |     |
| 5.     | EC3xx | Departmental Elective Course- 5 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20/ 25 | 40/ 50 |     |
| 6.     | MG302 | Fundamentals of Management      | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                    |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### IV Year: Seventh Semester

| S. No. | Code   | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|--------|---------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | EC401  | B. Tech Project-I               | DCC      | 4         |   |     |     |    |    |       |      |       |       |     |
| 2.     | EC403  | Training Seminar                | DCC      | 2         |   |     |     |    |    |       |      |       |       |     |
| 3.     | EC4xx  | Departmental Elective Course- 6 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | EC4xx  | Departmental Elective Course- 7 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.     | EC4xx  | Departmental Elective Course- 8 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 6.     | EC 4xx | Departmental Elective Course- 9 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
|        |        | <b>Total</b>                    |          | <b>22</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Eighth Semester

| S. No. | Code  | Title                                     | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|---|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | EC402 | B. Tech Project-II (Contd. From VII Sem.) | DCC      | 8         |   |     |     |    |    |       |      |       |       |     |
| 2.     | EC4xx | Departmental Elective Course- 10          | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 3.     | EC4xx | Departmental Elective Course- 11          | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | EC4xx | Departmental Elective Course- 12          | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
|        |       | <b>Total</b>                              |          | <b>20</b> |   |     |     |    |    |       |      |       |       |     |

## List of Departmental Elective Courses

| S.No. | Course Code | Course Title                                   | Elective No. |
|-------|-------------|--|--------------|
| 1.    | EC 305      | Semiconductor Device Electronics               | DEC -1,2,3   |
| 2.    | EC 307      | Antenna Design                                 |              |
| 3.    | EC 309      | Bio – Medical Electronics & Instrumentation    |              |
| 4.    | EC 311      | Algorithms Design And Analysis                 |              |
| 5.    | EC 313      | Microprocessors And Interfacing                |              |
| 6.    | EC 315      | Computer Communication Networks                |              |
| 7.    | EC 317      | Operating Systems                              |              |
| 8.    | EC 319      | CMOS Analog Integrated Circuits                |              |
| 9.    | EC 321      | IC Technology                                  |              |
| 10.   | EC 323      | Control Systems                                |              |
| 11.   | EC 325      | Probability and Random Process                 |              |
| 12.   | EC 327      | Time – Frequency Analysis                      |              |
| 13.   | EC 329      | Analog Signal Processing                       |              |
| 14.   | EC 308      | Analog Filter Design                           | DEC-4,5      |
| 15.   | EC 310      | Testing And Diagnosis Of Digital System Design |              |
| 16.   | EC 312      | Software Defined Radio And Cognitive Radio     |              |
| 17.   | EC 314      | RF Design                                      |              |
| 18.   | EC 316      | Wireless Sensor Networks                       |              |
| 19.   | EC 318      | RF Circuits in CMOS Technology                 |              |
| 20.   | EC 320      | Soft Computing                                 |              |
| 21.   | EC 322      | Green Sensors                                  |              |
| 22.   | EC 324      | Nano Electronics                               |              |
| 23.   | EC 326      | Data Converters                                |              |
| 24.   | EC 328      | Speech Recognition                             |              |
| 25.   | EC 330      | Digital Image Processing                       |              |
| 26.   | EC 332      | Information Theory and Coding                  |              |
| 27.   | EC 334      | Electronics System Design                      |              |
| 28.   | EC 336      | Flexible Electronics                           |              |
| 29.   | EC 338      | Design Verification                            |              |
| 30.   | EC 340      | Robust Analog Circuit Design                   |              |
| 31.   | EC 342      | Machine Learning                               |              |
| 32.   | EC 405      | Microwave Engineering                          |              |

|     |        |   |              |
|-----|--------|---|--------------|
| 33. | EC 407 | Optical Communication                                 | DEC-6,7,8,9  |
| 34. | EC 409 | Computer Vision                                       |              |
| 35. | EC 411 | Bio – Medical Signal and Image Processing             |              |
| 36. | EC 413 | Power Electronics                                     |              |
| 37. | EC 415 | System On Chip Design                                 |              |
| 38. | EC 417 | CAD For VLSI Design                                   |              |
| 39. | EC 419 | Memory Design   |              |
| 40. | EC 421 | Computer And Numerical Techniques In Electromagnetics |              |
| 41. | EC 423 | Internet and Web Technologies                         |              |
| 42. | EC 425 | Mixed Signal Design                                   |              |
| 43. | EC 427 | Mathematical Modelling & Simulation                   |              |
| 44. | EC 429 | Emerging Semiconductor Devices                        |              |
| 45. | EC 431 | MEMS and Sensor Design                                |              |
| 46. | EC 433 | Hardware Design Methodology                           |              |
| 47. | EC 435 | Quantum Electronics and Communication                 |              |
| 48. | EC 437 | Fractals and its application in electronics           |              |
| 49. | EC 439 | Microwave integrated circuit                          |              |
| 50. | EC 441 | Radar Signal processing                               |              |
| 51. | EC 443 | RF MEMS Design and Technology                         |              |
| 52. | EC 445 | Nano photonic Devices for Communications              |              |
| 53. | EC 447 | Spread Spectrum Techniques and Multiple Access        |              |
| 54. | EC 449 | Adaptive Signal Processing                            |              |
| 55. | EC 451 | Reconfigurable Computing                              |              |
| 56. | EC 453 | Statistical Signal Processing                         |              |
| 57. | EC 455 | Data Analytics  |              |
| 58. | EC 457 | Natural Language Processing                           |              |
| 59. | EC 459 | Adaptive Filter Theory                                |              |
| 60. | EC 461 | Multi-rate Signal Processing                          |              |
| 61. | EC 404 | Wireless Communication                                | DCE-10,11,12 |
| 62. | EC 406 | Autonomous Mobile Robots                              |              |
| 63. | EC 408 | Low Power VLSI Design                                 |              |
| 64. | EC 410 | Advanced Coding Theory                                |              |
| 65. | EC 412 | Machine Learning                                      |              |
| 66. | EC 414 | EMC / EMI   |              |
| 67. | EC 416 | Pattern Recognition                                   |              |

|     |        |  |
|-----|--------|--|
| 68. | EC 418 | Estimation and Detection Theory                |
| 69. | EC 420 | Cloud Computing                                |
| 70. | EC 422 | Robotics & Machine Vision                      |
| 71. | EC 424 | Fault Tolerant Computing                       |
| 72. | EC 426 | Distributed Computing                          |
| 73. | EC 428 | Neuroelectronics                               |
| 74. | EC 430 | Advanced Computer Architecture                 |
| 75. | EC 432 | Bio – Impedance Based Measurements             |
| 76. | EC 434 | Fundamentals of MIMO                           |
| 77. | EC 436 | Advance Microwave & Antenna Design             |
| 78. | EC 438 | Radar and Satellite Communication              |
| 79. | EC 440 | Photonic Integrated Circuits and Communication |
| 80. | EC 442 | Microwave Digital Communication                |
| 81. | EC 444 | Wavelets and its application in Antenna        |
| 82. | EC 446 | RF and Microwave Active circuits               |
| 83. | EC 448 | Optical Electronics for Communication Systems  |
| 84. | EC 450 | Optical Networks                               |
| 85. | EC 452 | Optical CDMA systems                           |
| 86. | EC 454 | 5G Wireless technologies                       |
| 87. | EC 456 | Wavelets in Signal Processing                  |
| 88. | EC 458 | Deep Learning                                  |
| 89. | EC 460 | Computational Optimization                     |
| 90. | EC 462 | Recent Trends in Artificial Intelligence       |
| 91. | EC 464 | Virtual Reality                                |
| 92. | EC 466 | Human Computer Interaction                     |
| 93. | EC 468 | Probabilistic Graphical Models                 |

# BACHELOR OF TECHNOLOGY

## Environmental Engineering

### I Year: First Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |             |             |             |            |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|-----------|-------------------|-----------|----------------------|-------------|-------------|-------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P         | Theory            | Practical | CWS                  | PRS         | MTE         | ETE         | PRE        |
| Group A         |              |                              |              |        |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | AC101        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 5.              | ME103        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |             |             |             |            |
| Group B         |              |                              |              |        |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |             |             |             |            |



## I Year: Second Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |             |             |             |            |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|-----------|-------------------|-----------|----------------------|-------------|-------------|-------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P         | Theory            | Practical | CWS                  | PRS         | MTE         | ETE         | PRE        |
| Group A         |              |                              |              |        |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA102        | Mathematics -II              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |             |             |             |            |
| Group B         |              |                              |              |        |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA102        | Mathematics-II               | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | AC102        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 5.              | ME106        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |             |             |             |            |

## II Year: Third Semester

| S. No. | Code  | Title                                  | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|--|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | CE251 | Building Material & Construction       | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.     | EN201 | Strength of Materials                  | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | EN203 | Engineering & Environmental Surveying  | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | EN205 | Environmental Chemistry & Microbiology | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 5.     | EN207 | Engineering Analysis & Design          | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 6.     | FEC   | Foundation Elective 3                  | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                           |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S. No. | Code  | Title                                     | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|---|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | CE252 | Structural Analysis                       | AEC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 2.     | EN202 | Geotechnical Engineering                  | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | EN204 | Water Engineering: Design & Application   | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | EN206 | Engineering Geology, GIS & Remote Sensing | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | EN208 | Fluid Mechanics & Hydraulic Machines      | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 6.     | FEC   | Foundation Elective 4                     | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                              |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

### III Year: Fifth Semester

| S. No. | Code  | Title   | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|---|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | EN301 | Waste Water Engineering: Design and Applications        | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     |     |
| 2.     | EN303 | Instrumentation Techniques for Environmental Monitoring | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 3.     | EN3xx | Departmental Elective Course-1                          | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 |     |
| 4.     | EN3xx | Departmental Elective Course-2                          | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 |     |
| 5.     | EN3xx | Departmental Elective Course-3                          | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 |     |
| 6.     | HU301 | Engineering Economics                                   | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>  |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### III Year: Sixth Semester

| S. No. | Code  | Title                                 | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|---------------------------------------|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | EN302 | Solid Waste Management                | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     |     |
| 2.     | EN304 | Air Pollution & Control               | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 3.     | EN306 | Hydrology & Ground Water Engineering. | DCC      | 4         | 3 | 1   | 0   | 3  | 0  | 25     | -    | 25     | 50     | -   |
| 4.     | EN3xx | Departmental Elective Course -4       | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 |     |
| 5.     | EN3xx | Departmental Elective Course- 5       | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 |     |
| 6.     | MG302 | Fundamentals of Management            | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                          |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### IV Year: Seventh Semester

| S. No. | Code  | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|---------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | EN401 | B. Tech Project-I               | DCC      | 4         |   |     |     |    |    |       |      |       |       |     |
| 2.     | EN403 | Training Seminar                | DCC      | 2         |   |     |     |    |    |       |      |       |       |     |
| 3.     | EN4xx | Departmental Elective Course- 6 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 |     |
| 4.     | EN4xx | Departmental Elective Course- 7 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 |     |
| 5.     | EN4xx | Departmental Elective Course- 8 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 |     |
| 6.     | EN4xx | Departmental Elective Course- 9 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 |     |
|        |       | <b>Total</b>                    |          | <b>22</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Eighth Semester

| S. No. | Code  | Title                            | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|----------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | EN402 | B. Tech Project -II              | DCC      | 8         |   |     |     |    |    |       |      |       |       |     |
| 2.     | EN404 | Departmental Elective Course- 10 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 | -   |
| 3.     | EN4xx | Departmental Elective Course- 11 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 |     |
| 4.     | EN4xx | Departmental Elective Course- 12 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/0 | 20/25 | 40/50 |     |
|        |       | <b>Total</b>                     |          | <b>20</b> |   |     |     |    |    |       |      |       |       |     |

## List of Departmental Elective Courses

| S.No. | Course Code | Course Title  | Elective No.   |
|-------|-------------|---|----------------|
| 1.    | EN305       | Soil Pollution & Remediation                          | DEC -1 ,2,3    |
| 2.    | EN307       | Planning and Design of Environmental Enng. Works      |                |
| 3.    | EN309       | Water Resources System                                |                |
| 4.    | EN311       | Climate Change & CDM                                  |                |
| 5.    | EN313       | Environmental Toxicology & Risk Assessment            |                |
| 6.    | EN315       | Ecology and Bio-monitoring Techniques                 |                |
| 7.    | EN317       | Environmental Management                              |                |
| 8.    | EN308       | Hazardous & Biomedical Waste Management               | DEC-4,5        |
| 9.    | EN310       | Surface & Ground Water Pollution                      |                |
| 10.   | EN312       | Advance Surveying                                     |                |
| 11.   | EN314       | Green Technology                                      |                |
| 12.   | EN316       | Environmental Law and Policy                          |                |
| 13.   | EN318       | Transportation and Traffic Engineering                |                |
| 14.   | EN405       | Project Management                                    | DEC-6,7,8,9    |
| 15.   | EN407       | Vibration Analysis & Control of Noise Pollution       |                |
| 16.   | EN409       | Industrial Waste Management                           |                |
| 17.   | EN411       | Occupational Hazards, Health & Safety                 |                |
| 18.   | EN413       | Water and Soil Conservation                           |                |
| 19.   | EN415       | System Simulation & Modeling                          |                |
| 20.   | EN417       | Environmental Risk Assessment                         |                |
| 21.   | EN419       | Environmental Economics                               |                |
| 22.   | EN421       | Design of water distribution network                  |                |
| 23.   | EN404       | Environmental Impact Assessment & Audit               | DEC-10, 11, 12 |
| 24.   | EN406       | Advanced Open Channel Hydraulics                      |                |
| 25.   | EN408       | Risk and Reliability Analysis of Environmental System |                |
| 26.   | EN410       | Irrigation and Drainage Engineering                   |                |
| 27.   | EN412       | Environment and Sustainable Development               |                |
| 28.   | EN414       | Disaster Management                                   |                |
| 29.   | EN416       | Non-Conventional Energy Systems                       |                |
| 30.   | EN418       | Environmental Biotechnology                           |                |
| 31.   | EN420       | Life Cycle Assessment                                 |                |

# BACHELOR OF TECHNOLOGY

## Information Technology

### I Year: First Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |        | Exam Duration (h) |           | Relative Weights (%) |          |          |          |         |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|--------|-------------------|-----------|----------------------|----------|----------|----------|---------|
| S.No.           | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P      | Theory            | Practical | CWS                  | PRS      | MTE      | ETE      | PRE     |
| Group A         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | AC101        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 5.              | ME103        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |
| Group B         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 15       | 30       | 40       | -       |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 15       | 30       | 40       | -       |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |

## I Year: Second Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |        | Exam Duration (h) |           | Relative Weights (%) |          |          |          |         |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|--------|-------------------|-----------|----------------------|----------|----------|----------|---------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P      | Theory            | Practical | CWS                  | PRS      | MTE      | ETE      | PRE     |
| Group A         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA102        | Mathematics - II             | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |
| Group B         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA102        | Mathematics -II              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | AC102        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 5.              | ME106        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |

## II Year: Third Semester

| S. No. | Code  | Title   | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|---|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | EC261 | Analog Electronics                                      | AEC  | 4         | 3         | 0 | 2         | 3         | -         | 15          | 25          | 20          | 40          | -          |
| 2.     | IT201 | Data Structures   | DCC  | 4         | 3         | 0 | 2         | 3         | -         | 15          | 25          | 20          | 40          | -          |
| 3.     | IT203 | Object Oriented Programming                             | DCC  | 4         | 3         | 0 | 2         | 3         | -         | 15          | 25          | 20          | 40          | -          |
| 4.     | IT205 | Discrete Structures                                     | DCC  | 4         | 3         | 1 | 0         | 3         | -         | 25          | -           | 25          | 50          | -          |
| 5.     | IT207 | Engineering Analysis and Design (Modeling & Simulation) | DCC  | 4         | 3         | 1 | 0         | 3         | -         | 25          | -           | 25          | 50          | -          |
| 6.     | FEC   | Foundation Elective 3                                   | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>  |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S. No. | Code  | Title                                  | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|--|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | EC262 | Digital Electronics                    | AEC  | 4         | 3         | 0 | 2         | 3         | -         | 15          | 25          | 20          | 40          | -          |
| 2.     | IT202 | Database Management Systems            | DCC  | 4         | 3         | 0 | 2         | 3         | -         | 15          | 25          | 20          | 40          | -          |
| 3.     | IT204 | Operating System                       | DCC  | 4         | 3         | 0 | 2         | 3         | -         | 15          | 25          | 20          | 40          | -          |
| 4.     | IT206 | Computer Organization and Architecture | DCC  | 4         | 3         | 1 | 0         | 3         | -         | 25          | -           | 25          | 50          | -          |
| 5.     | IT208 | Algorithm Design and Analysis          | DCC  | 4         | 3         | 1 | 0         | 3         | -         | 25          | -           | 25          | 50          | -          |
| 6.     | FEC   | Foundation Elective 4                  | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                           |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |



### III Year: Fifth Semester

| S. No. | Code  | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|---------------------------------|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | IT301 | Theory of Computation           | DCC      | 4         | 3 | 1   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
| 2.     | IT303 | Computer Networks               | DCC      | 4         | 3 | 0   | 2   | 3  | -  | 15     | 25   | 20     | 40     | -   |
| 3.     | IT3xx | Departmental Elective Course -1 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | -  | 15/ 25 | 25/- | 20 /25 | 40/ 50 | -   |
| 4.     | IT3xx | Departmental Elective Course -2 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | -  | 15/ 25 | 25/- | 20 /25 | 40/ 50 | -   |
| 5.     | IT3xx | Departmental Elective Course -3 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | -  | 15/ 25 | 25/- | 20 /25 | 40/ 50 | -   |
| 6.     | HU301 | Engineering Economics           | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                    |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### III Year: Sixth Semester

| S. No. | Code  | Title                                      | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|--|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | IT302 | Compiler Design                            | DCC      | 4         | 3 | 0   | 2   | 3  | -  | 15     | 25   | 20     | 40     | -   |
| 2.     | IT304 | Software Engineering                       | DCC      | 4         | 3 | 1   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
| 3.     | IT306 | Artificial Intelligence and Expert Systems | DCC      | 4         | 3 | 0   | 2   | 3  | -  | 15     | 25   | 20     | 40     | -   |
| 4.     | IT3xx | Department Elective Course -4              | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | -  | 15/ 25 | 25/- | 20 /25 | 40/ 50 | -   |
| 5.     | IT3xx | Department Elective Course -5              | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | -  | 15/ 25 | 25/- | 20 /25 | 40/ 50 | -   |
| 6.     | MG302 | Fundamentals of Management                 | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                               |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### IV Year: Seventh Semester

| S. No. | Code  | Title                         | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|-------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | IT401 | B.Tech. Project-I             | DCC      | 4         |   |     |     |    |    |       |      |       |       |     |
| 2.     | IT403 | Training Seminar              | DCC      | 2         |   |     |     |    |    |       |      |       |       |     |
| 3.     | IT4xx | Department Elective Course- 6 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | IT4xx | Department Elective Course- 7 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.     | IT4xx | Department Elective Course- 8 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 6.     | IT4xx | Department Elective Course- 9 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
|        |       | <b>Total</b>                  |          | <b>22</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Eighth Semester

| S. No. | Code  | Title                          | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|--------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | IT402 | B.Tech. Project-II             | DCC      | 8         |   |     |     |    |    |       |      |       |       |     |
| 2.     | IT4xx | Department Elective Course- 10 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 3.     | IT4xx | Department Elective Course- 11 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 4.     | IT4xx | Department Elective Course-12  | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
|        |       | <b>Total</b>                   |          | <b>20</b> |   |     |     |    |    |       |      |       |       |     |

## List of Departmental Elective Courses

| S.No. | Course Code | Course Title                         | Elective No. |
|-------|-------------|--------------------------------------|--------------|
| 1.    | IT305       | Computer Graphics                    | DEC- 1, 2,3  |
| 2.    | IT307       | Pattern Recognition                  |              |
| 3.    | IT309       | Information Theory and coding        |              |
| 4.    | IT311       | Advanced Data Structures             |              |
| 5.    | IT313       | Microprocessor & Interfacing         |              |
| 6.    | IT315       | Distributed Systems                  |              |
| 7.    | IT317       | Soft Computing                       |              |
| 8.    | IT319       | Data Compression                     |              |
| 9.    | IT321       | Malware Analysis                     |              |
| 10.   | IT323       | Machine Learning                     |              |
| 11.   | IT325       | Secure Coding                        |              |
| 12.   | IT308       | Optimization Techniques              | DEC – 4,5    |
| 13.   | IT310       | Parallel Algorithms                  |              |
| 14.   | IT312       | Cyber Forensics                      |              |
| 15.   | IT314       | Optical Networks                     |              |
| 16.   | IT316       | High Speed Networks                  |              |
| 17.   | IT318       | Advanced Database Management Systems |              |
| 18.   | IT320       | Multimedia System Design             |              |
| 19.   | IT322       | Real Time System                     |              |
| 20.   | IT324       | Deep Learning                        |              |
| 21.   | IT326       | Object Oriented Software Engineering |              |
| 22.   | IT328       | Ethical Hacking                      |              |
| 23.   | IT405       | Data -Warehouse and Data Mining      | DEC 6,7,8,9  |
| 24.   | IT407       | Information and Network Security     |              |
| 25.   | IT409       | Enterprise Java Programming          |              |
| 26.   | IT411       | Digital Image Processing             |              |

|     |       |  |                |
|-----|-------|--|----------------|
| 27. | IT413 | VLSI Design                                  |                |
| 28. | IT415 | Software Project Management                  |                |
| 29. | IT417 | High Performance Computing                   |                |
| 30. | IT419 | Grid and Cluster Computing                   |                |
| 31. | IT421 | Swarm Optimization & Evolutionary Computing  |                |
| 32. | IT423 | Computational Number Theory and Cryptography |                |
| 33. | IT425 | Natural Language Processing                  |                |
| 34. | IT427 | Intrusion Detection and Information Warfare  |                |
| 35. | IT429 | Cyber laws                                   |                |
| 36. | IT431 | Information Security and Audit               |                |
| 37. | IT433 | Multi modal data processing                  |                |
| 38. | IT404 | Big data Analytics                           | DEC – 10,11,12 |
| 39. | IT406 | Web Technology                               |                |
| 40. | IT408 | Parallel Computer Architecture               |                |
| 41. | IT410 | Intellectual Property Rights                 |                |
| 42. | IT412 | Bio Informatics                              |                |
| 43. | IT414 | Software Testing                             |                |
| 44. | IT416 | Nomadic Computing                            |                |
| 45. | IT418 | Cloud Computing                              |                |
| 46. | IT420 | Computer Vision                              |                |
| 47. | IT422 | Embedded Systems                             |                |
| 48. | IT424 | Semantic Web and Web Mining                  |                |
| 49. | IT426 | Software quality and metrics                 |                |
| 50. | IT428 | Mobile and Digital Forensics                 |                |
| 51. | IT430 | Speech & Natural Language Understanding      |                |

# BACHELOR OF TECHNOLOGY

## Mechanical Engineering

### I Year: First Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |        | Exam Duration (h) |           | Relative Weights (%) |          |          |          |         |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|--------|-------------------|-----------|----------------------|----------|----------|----------|---------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P      | Theory            | Practical | CWS                  | PRS      | MTE      | ETE      | PRE     |
| Group A         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | AC101        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 5.              | ME103        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |
| Group B         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |

## I Year: Second Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |        | Exam Duration (h) |           | Relative Weights (%) |          |          |          |         |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|--------|-------------------|-----------|----------------------|----------|----------|----------|---------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P      | Theory            | Practical | CWS                  | PRS      | MTE      | ETE      | PRE     |
| Group A         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA102        | Mathematics -II              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |
| Group B         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA102        | Mathematics-II               | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | AC102        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 5.              | ME106        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |

## II Year: Third Semester

| S. No. | Code  | Title                              | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|------------------------------------|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | PE251 | Engineering Materials & Metallurgy | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 2.     | ME201 | Mechanics of Solids                | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | ME203 | Thermal Engineering-I              | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | ME205 | Machine Drawing and Solid Modeling | DCC  | 4         | 0         | 0 | 6         | 0         | 3         | 0           | 50          | -           | -           | 50         |
| 5.     | ME207 | Engineering Analysis and Design    | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 6.     | FEC   | Foundation Elective 3              | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                       |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S. No. | Code  | Title                      | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|----------------------------|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | PE252 | Manufacturing Machines     | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.     | ME202 | Thermal Engineering-II     | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | ME204 | Fluid Mechanics            | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | ME206 | Kinematics of Machines     | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | ME208 | Manufacturing Technology-I | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 6.     | FEC   | Foundation Elective 4      | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>               |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

### III Year: Fifth Semester

| S. No. | Code  | Title                           | Area        | Cr        | L | T       | P   | TH | PH | CWS       | PRS  | MTE       | ETE       | PRE |
|--------|-------|---------------------------------|-------------|-----------|---|---------|-----|----|----|-----------|------|-----------|-----------|-----|
| 1.     | ME301 | Fluid Systems                   | DCC         | 4         | 3 | 0       | 2   | 3  | -  | 15        | 25   | 20        | 40        | -   |
| 2.     | ME303 | Dynamics of Machines            | DCC         | 4         | 3 | 0       | 2   | 3  | -  | 15        | 25   | 20        | 40        | -   |
| 3.     | ME3xx | Departmental Elective Course -1 | DEC/<br>GEC | 4         | 3 | 0/<br>1 | 2/0 | 3  | -  | 15/<br>25 | 25/- | 20<br>/25 | 40/<br>50 | -   |
| 4.     | ME3xx | Departmental Elective Course -2 | DEC/<br>GEC | 4         | 3 | 0/<br>1 | 2/0 | 3  | -  | 15/<br>25 | 25/- | 20<br>/25 | 40/<br>50 | -   |
| 5.     | ME3xx | Departmental Elective Course -3 | DEC/<br>GEC | 4         | 3 | 0/<br>1 | 2/0 | 3  | -  | 15/<br>25 | 25/- | 20<br>/25 | 40/<br>50 | -   |
| 6.     | MG301 | Fundamentals of Management      | HMC         | 3         | 3 | 0       | 0   | 3  | -  | 25        | -    | 25        | 50        | -   |
|        |       | <b>Total</b>                    |             | <b>23</b> |   |         |     |    |    |           |      |           |           |     |

### III Year: Sixth Semester

| S. No. | Code  | Title                          | Area        | Cr        | L | T   | P   | TH | PH | CWS       | PRS  | MTE       | ETE       | PRE |
|--------|-------|--------------------------------|-------------|-----------|---|-----|-----|----|----|-----------|------|-----------|-----------|-----|
| 1.     | ME302 | Heat And Mass Transfer         | DCC         | 4         | 3 | 0   | 2   | 3  | -  | 15        | 25   | 20        | 40        |     |
| 2.     | ME304 | Design of Machine Elements     | DCC         | 4         | 3 | 0   | 2   | 3  | -  | 15        | 25   | 20        | 40        |     |
| 3.     | ME306 | Manufacturing Technology-II    | DCC         | 4         | 3 | 0   | 2   | 3  | -  | 15        | 25   | 20        | 40        | -   |
| 4.     | ME3xx | Departmental Elective Course-4 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | -  | 15/<br>25 | 25/- | 20<br>/25 | 40/<br>50 |     |
| 5.     | ME3xx | Departmental Elective Course-5 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | -  | 15/<br>25 | 25/- | 20<br>/25 | 40/<br>50 |     |
| 6.     | HU302 | Engineering Economics          | HMC         | 3         | 3 | 0   | 0   | 3  | -  | 25        | -    | 25        | 50        | -   |
|        |       | <b>Total</b>                   |             | <b>23</b> |   |     |     |    |    |           |      |           |           |     |



### IV Year: Seventh Semester

| S. No. | Code  | Title                          | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|--------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | ME401 | B. Tech Project-I              | DCC      | 4         |   |     |     |    |    |       |      |       |       |     |
| 2.     | ME403 | Training Seminar               | DCC      | 2         |   |     |     |    |    |       |      |       |       |     |
| 3.     | ME4xx | Departmental Elective Course-6 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | -  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 4.     | ME4xx | Departmental Elective Course-7 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | -  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 5.     | ME4xx | Departmental Elective Course-8 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | -  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 6.     | ME4xx | Departmental Elective Course-9 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | -  | 15/25 | 25/- | 20/25 | 40/50 |     |
|        |       | <b>Total</b>                   |          | <b>22</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Eighth Semester

| S. No. | Code   | Title                            | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|--------|----------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | ME 402 | B. Tech Project-II               | DCC      | 8         |   |     |     |    |    |       |      |       |       |     |
| 2.     | ME 4xx | Departmental Elective Course -10 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 3.     | ME 4xx | Departmental Elective Course -11 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 4.     | ME4xx  | Departmental Elective Course -12 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
|        |        | <b>Total</b>                     |          | <b>20</b> |   |     |     |    |    |       |      |       |       |     |

## List of Departmental Elective Courses

| S.No. | Course Code | Course Title                                | Elective No. |
|-------|-------------|---|--------------|
| 1.    | ME 305      | Design of Machine Elements                  | DEC 1,2,3    |
| 2.    | ME 307      | Manufacturing Technology -II                |              |
| 3.    | ME 351      | Power Plant Engineering                     |              |
| 4.    | ME 353      | Renewal Sources of Energy                   |              |
| 5.    | ME 355      | Thermal Systems                             |              |
| 6.    | ME 361      | Industrial Engineering                      |              |
| 7.    | ME 363      | Product Design & Simulation                 |              |
| 8.    | ME 365      | Computational Fluid Dynamics                |              |
| 9.    | ME 367      | Finite Element Methods                      |              |
| 10.   | ME 369      | Total Life Cycle Management                 |              |
| 11.   | ME 371      | Value Engineering                           |              |
| 12.   | ME 308      | Gas Dynamics & Jet Propulsion               |              |
| 13.   | ME 310      | Automation in Manufacturing                 | DEC -4,5     |
| 14.   | ME 312      | Quality Management & Six Sigma Applications |              |
| 15.   | ME 314      | Mechanical Vibrations                       |              |
| 16.   | ME 316      | Power Plant Engineering                     |              |
| 17.   | ME 318      | Computer Aided Manufacturing                |              |
| 18.   | ME 320      | Reliability & Maintenance Engineering       |              |
| 19.   | ME 322      | Design of Mechanical Assemblies             |              |
| 20.   | ME 324      | System modeling, simulation and analysis    |              |
| 21.   | ME 326      | Pressure vessels and Piping Technology      |              |
| 22.   | ME 328      | Composite Material Technology               |              |
| 23.   | ME 330      | Production and Operations Management        |              |
| 24.   | ME 332      | Finite Element Method                       |              |
| 25.   | ME 407      | Refrigeration & Air Conditioning            | DEC 6,7,8,9  |
| 26.   | ME 409      | Mechatronics & Control                      |              |
| 27.   | ME 411      | I.C. Engines                                |              |
| 28.   | ME 413      | Metrology                                   |              |
| 29.   | ME 415      | Project Management                          |              |

|     |         |  |               |
|-----|---------|--|---------------|
| 30. | ME 419  | Robotics & Automation                    |               |
| 31. | ME 421  | Computational Fluid Dynamics             |               |
| 32. | ME 423  | Advanced Manufacturing Processes         |               |
| 33. | ME 427  | Operations Research                      |               |
| 34. | ME -429 | Industrial Tribology                     |               |
| 35. | ME 431  | Non-conventional Energy Sources          |               |
| 36. | ME 433  | Computer Integrated Manufacturing        |               |
| 37. | ME 435  | Optimization techniques                  |               |
| 38. | ME 404  | Industrial Engineering                   | DEC -10,11,12 |
| 39. | ME 406  | Elastic & Plastic Behaviour of Materials |               |
| 40. | ME 408  | Combustion Generated Pollution           |               |
| 41. | ME 410  | Advances in Welding & Casting            |               |
| 42. | ME 412  | Supply Chain Management                  |               |
| 43. | ME 414  | Fracture Mechanics                       |               |
| 44. | ME 416  | Nuclear Energy                           |               |
| 45. | ME 418  | Operations and Manufacturing Strategy    |               |
| 46. | ME 420  | Materials management                     |               |
| 47. | ME 422  | Fuel Cell                                |               |

# BACHELOR OF TECHNOLOGY

## Mechanical Engineering with Specialization

### in Automotive Engineering

#### I year : First Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |           | Exam Duration (h) |           | Relative Weights (%) |             |             |             |            |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|-----------|-------------------|-----------|----------------------|-------------|-------------|-------------|------------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P         | Theory            | Practical | CWS                  | PRS         | MTE         | ETE         | PRE        |
| Group A         |              |                              |              |        |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | AC101        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 5.              | ME103        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1<br>/0          | 0 | 0/2<br>/4 | 3/3<br>/0         | 0/2<br>/3 | 25/<br>15/0          | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |             |             |             |            |
| Group B         |              |                              |              |        |                    |   |           |                   |           |                      |             |             |             |            |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0         | 3                 | 0         | 25                   | -           | 25          | 50          | -          |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2         | 3                 | 0         | 15                   | 25          | 20          | 40          | -          |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3         | 0                 | 3         | -                    | 50          | -           | -           | 50         |
| Total           |              |                              |              | 20     |                    |   |           |                   |           |                      |             |             |             |            |

## I Year: Second Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |        | Exam Duration (h) |           | Relative Weights (%) |          |          |          |         |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|--------|-------------------|-----------|----------------------|----------|----------|----------|---------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P      | Theory            | Practical | CWS                  | PRS      | MTE      | ETE      | PRE     |
| Group A         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA102        | Mathematics – II             | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |
| Group B         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA102        | Mathematics -II              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | AC102        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 5.              | ME106        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |

## II Year: Third Semester

| S. No. | Code  | Title                           | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|---------------------------------|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | PE261 | Quantitative Techniques         | AEC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 2.     | AE201 | Engineering Mechanics           | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | AE203 | Thermodynamics                  | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | AE205 | Manufacturing Machines          | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | AE207 | Engineering Analysis and Design | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 6.     | FEC   | Foundation Elective 3           | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                    |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S. No. | Code  | Title                                 | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|---------------------------------------|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | EE272 | Automotive Electrical and Electronics | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.     | AE202 | Heat and Mass Transfer                | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | AE204 | Theory of Machines                    | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | AE206 | Mechanics of Solids                   | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | AE208 | Material Engineering & Metallurgy     | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 6.     | FEC   | Foundation Elective 4                 | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                          |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

### III Year: Fifth Semester

| S. No. | Code  | Title                                  | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|--|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | AE301 | Manufacturing Technology               | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 2.     | AE303 | Fluid Mechanics And Hydraulic Machines | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 3.     | AE3xx | Departmental Elective Course -1        | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20 /25 | 40/ 50 | -   |
| 4.     | AE3xx | Departmental Elective Course -2        | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20 /25 | 40/ 50 | -   |
| 5.     | AE3xx | Departmental Elective Course -3        | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20 /25 | 40/ 50 | -   |
| 6.     | MG301 | Fundamentals of Management             | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                           |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### III Year: Sixth Semester

| S. No. | Code  | Title                                | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|--------------------------------------|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | AE302 | Design of Machine Elements           | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 2.     | AE304 | Internal Combustion Engines          | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 3.     | AE306 | Alternative Fuels and Energy Systems | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     | -   |
| 4.     | AE3xx | Departmental Elective Course-4       | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20 /25 | 40/ 50 | -   |
| 5.     | AE3xx | Departmental Elective Course-5       | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20 /25 | 40/ 50 | -   |
| 6.     | HU302 | Engineering Economics                | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                         |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### IV Year: Seventh Semester

| S. No. | Code  | Title                          | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|--------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | AE401 | B.Tech. Project-I              | DCC      | 4         |   |     |     |    |    |       |      |       |       |     |
| 2.     | AE403 | Training Seminar               | DCC      | 2         |   |     |     |    |    |       |      |       |       |     |
| 3.     | AE4xx | Departmental Elective Course-6 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | AE4xx | Departmental Elective Course-7 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.     | AE4xx | Departmental Elective Course-8 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 6.     | AE4xx | Departmental Elective Course-9 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
|        |       | <b>Total</b>                   |          | <b>22</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year Eighth Semester

| S. No. | Code  | Title                            | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|----------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | AE402 | B.Tech Project-II                | DCC      | 8         |   |     |     |    |    |       |      |       |       |     |
| 2.     | AE4xx | Departmental Elective Course -10 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 3.     | AE4xx | Departmental Elective Course -11 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 4.     | AE4xx | Departmental Elective Course -12 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
|        |       | <b>Total</b>                     |          | <b>20</b> |   |     |     |    |    |       |      |       |       |     |



## List of Departmental Elective Courses

| S.No. | Course Code | Course Title                                | Elective no. |
|-------|-------------|---|--------------|
| 1.    | AE305       | Automotive Aerodynamics & CFD               | DEC-1, 2,3   |
| 2.    | AE307       | Combustion Generated Pollution              |              |
| 3.    | AE309       | Operation Research                          |              |
| 4.    | AE311       | Tyre Technology                             |              |
| 5.    | AE313       | Thermal Engineering                         |              |
| 6.    | AE315       | Turbo machinery and gas dynamics            |              |
| 7.    | AE317       | Power units and transmission                |              |
| 8.    | AE319       | Computer Simulation of I.C. Engine Process  |              |
| 9.    | AE321       | Advanced strength of material               |              |
| 10.   | AE323       | Finite Element Methods and Applications     |              |
| 11.   | AE308       | Measurement and Instrumentation             | DEC-4,5      |
| 12.   | AE310       | Advanced Manufacturing Technology           |              |
| 13.   | AE312       | Quality Management & Six Sigma Applications |              |
| 14.   | AE314       | Metrology                                   |              |
| 15.   | AE316       | Advances in Welding & Casting               |              |
| 16.   | AE318       | Materials for automobile components         |              |
| 17.   | AE320       | Tribology and lubrication                   |              |
| 18.   | AE322       | Reliability & Maintenance Engineering       |              |
| 19.   | AE324       | Elastic & Plastic Behaviour of Materials    |              |
| 20.   | AE326       | Production Planning & Inventory Control     |              |
| 21.   | AE405       | Design of Automobile Components             | DEC-6,7,8,9  |
| 22.   | AE407       | Production And Operations Management        |              |
| 23.   | AE409       | Computer Aided Vehicle Design And Safety    |              |
| 24.   | AE411       | Vehicle Maintenance & Tribology             |              |

|     |       |   |              |
|-----|-------|---|--------------|
| 25. | AE413 | Vehicle Transport Management                      |              |
| 26. | AE415 | Power Plant Engineering                           |              |
| 27. | AE417 | Robotics & Automation                             |              |
| 28. | AE419 | Nuclear Energy                                    |              |
| 29. | AE404 | Computer Integrated Manufacturing Systems         | DEC-10,11,12 |
| 30. | AE406 | Total Life Cycle Management                       |              |
| 31. | AE408 | Refrigeration & Automobile Air Conditioning       |              |
| 32. | AE410 | Fuel Cells  |              |
| 33. | AE412 | Modern Vehicle Technology                         |              |
| 34. | AE414 | Automobiles Vibration System Analysis             |              |
| 35. | AE416 | Renewable Sources of Energy                       |              |
| 36. | AE418 | Supply Chain Management                           |              |
| 37. | AE420 | Vehicle Safety Engineering                        |              |
| 38. | AE422 | Packaging Technology                              |              |
| 39. | AE424 | Mechatronics                                      |              |
| 40. | AE426 | Financial Management                              |              |
| 41. | AE428 | Fracture mechanics                                |              |
| 42. | AE430 | Product design and development                    |              |
| 43. | AE432 | Tractors and Farm Equipment and Off Road Vehicles |              |
| 44. | AE434 | Automobile process control                        |              |

# BACHELOR OF TECHNOLOGY

## Production and Industrial Engineering

### I Year: First Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |        | Exam Duration (h) |           | Relative Weights (%) |          |          |          |         |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|--------|-------------------|-----------|----------------------|----------|----------|----------|---------|
| S.No.           | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P      | Theory            | Practical | CWS                  | PRS      | MTE      | ETE      | PRE     |
| Group A         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | AC101        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 5.              | ME103        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |
| Group B         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |

## I Year: Second Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |        | Exam Duration (h) |           | Relative Weights (%) |          |          |          |         |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|--------|-------------------|-----------|----------------------|----------|----------|----------|---------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P      | Theory            | Practical | CWS                  | PRS      | MTE      | ETE      | PRE     |
| Group A         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA102        | Mathematics-II               | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |
| Group B         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA102        | Mathematics- II              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       |         |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       |         |
| 3.              | AC102        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       |         |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       |         |
| 5.              | ME106        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        |         |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |

## II Year: Third Semester

| S. No. | Code  | Title  | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|--|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | ME261 | Kinematic And Dynamic Of Machines                        | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 2.     | PE201 | Engineering Materials & Metallurgy                       | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 3.     | PE203 | Thermal Engineering-I                                    | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 4.     | PE205 | Manufacturing Machines                                   | DCC  | 4         | 3         | 0 | 2         | 3         | 2         | 15          | 25          | 20          | 40          |            |
| 5.     | PE207 | Engineering Analysis And Design(Modeling And Simulation) | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 6.     | FEC   | Foundation Elective 3                                    | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>   |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S. No. | Code  | Title                                       | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|---|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | ME262 | Machine Design                              | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 2.     | PE202 | Thermal Engineering-II                      | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 3.     | PE204 | Industrial Engineering & Operation Research | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 4.     | PE206 | Fluid Mechanics & Machinery                 | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 5.     | PE208 | Metal Cutting & Tool Design                 | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          |            |
| 6.     | FEC   | Foundation Elective 4                       | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                                |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

### III Year: Fifth Semester

| S. No. | Code  | Title                          | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|--------------------------------|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | PE301 | Casting Technology             | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     |     |
| 2.     | PE303 | Production Planning & Control  | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     |     |
| 3.     | PE3xx | Departmental Elective Course-1 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20 /25 | 40/ 50 |     |
| 4.     | PE3xx | Departmental Elective Course-2 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20 /25 | 40/ 50 |     |
| 5.     | PE3xx | Departmental Elective Course-3 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20 /25 | 40/ 50 |     |
| 6.     | MG301 | Fundamentals of Management     | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                   |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### III Year: Sixth Semester

| S. No. | Code  | Title                          | Area     | Cr        | L | T   | P   | TH | PH | CWS    | PRS  | MTE    | ETE    | PRE |
|--------|-------|--------------------------------|----------|-----------|---|-----|-----|----|----|--------|------|--------|--------|-----|
| 1.     | PE302 | Welding Technology             | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     |     |
| 2.     | PE304 | Precision Manufacturing        | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     |     |
| 3.     | PE306 | Metrology & Quality Assurance  | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15     | 25   | 20     | 40     |     |
| 4.     | PE3xx | Departmental Elective Course-4 | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20 /25 | 40/ 50 |     |
| 5.     | PE3xx | Department Elective Course-5   | DEC/ GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/ 25 | 25/- | 20 /25 | 40/ 50 |     |
| 6.     | HU302 | Engineering Economics          | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25     | -    | 25     | 50     | -   |
|        |       | <b>Total</b>                   |          | <b>23</b> |   |     |     |    |    |        |      |        |        |     |

### IV Year: Seventh Semester

| S. No. | Code  | Title                        | Area        | Cr        | L | T   | P   | TH | PH | CWS       | PRS  | MTE       | ETE       | PRE |
|--------|-------|------------------------------|-------------|-----------|---|-----|-----|----|----|-----------|------|-----------|-----------|-----|
| 1.     | PE401 | B. Tech Project-I            | DCC         | 4         |   |     |     |    |    |           |      |           |           |     |
| 2.     | PE403 | Training Seminar             | DCC         | 2         |   |     |     |    |    |           |      |           |           |     |
| 3.     | PE4xx | Department Elective Course-6 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20<br>/25 | 40/<br>50 |     |
| 4.     | PE4xx | Department Elective Course-7 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20<br>/25 | 40/<br>50 |     |
| 5.     | PE4xx | Department Elective Course-8 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20<br>/25 | 40/<br>50 |     |
| 6.     | PE4xx | Department Elective Course-9 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20<br>/25 | 40/<br>50 |     |
|        |       | <b>Total</b>                 |             | <b>22</b> |   |     |     |    |    |           |      |           |           |     |

### IV Year: Eighth Semester

| S. No. | Code  | Title                            | Area        | Cr        | L | T   | P   | TH | PH | CWS       | PRS  | MTE       | ETE       | PRE |
|--------|-------|----------------------------------|-------------|-----------|---|-----|-----|----|----|-----------|------|-----------|-----------|-----|
| 1.     | PE402 | B. Tech Project-II               | DCC         | 8         |   |     |     |    |    |           |      |           |           |     |
| 2.     | PE4xx | Departmental Elective Course -10 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20<br>/25 | 40/<br>50 |     |
| 3.     | PE4xx | Departmental Elective Course -11 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20<br>/25 | 40/<br>50 |     |
| 4.     | PE4xx | Departmental Elective Course -12 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20<br>/25 | 40/<br>50 |     |
|        |       | <b>Total</b>                     |             | <b>20</b> |   |     |     |    |    |           |      |           |           |     |

## List of Departmental Electives Courses

| S.No. | Course Code | Course Title                                 | Elective No. |
|-------|-------------|--|--------------|
| 1.    | PE305       | Advance Machine Design                       | DEC-1,2,3    |
| 2.    | PE307       | Finite Element Method                        |              |
| 3.    | PE309       | Rapid Prototyping Tooling & Manufacturing    |              |
| 4.    | PE311       | Sustainable Manufacturing                    |              |
| 5.    | PE313       | Design Innovation & Manufacturing            |              |
| 6.    | PE315       | Mechatronics                                 |              |
| 7.    | PE351       | Advance Machining Process                    |              |
| 8.    | PE353       | Supply Chain Management                      |              |
| 9.    | PE355       | Work Study Design                            |              |
| 10.   | PE357       | Product Design & Simulation                  |              |
| 11.   | PE359       | Total Life Cycle Management                  |              |
| 12.   | PE361       | Total Quality Management                     |              |
| 13.   | PE308       | Green Energy Technology                      | DEC-4,5      |
| 14.   | PE310       | Industrial Automation                        |              |
| 15.   | PE312       | Automobile Eng.                              |              |
| 16.   | PE314       | Manufacturing of Composite Materials         |              |
| 17.   | PE316       | Advances in Welding                          |              |
| 18.   | PE318       | Advances in Casting                          |              |
| 19.   | PE405       | Metal Forming & Press Working                | DEC-6,7,8,9  |
| 20.   | PE407       | Quantitative Techniques                      |              |
| 21.   | PE409       | CNC Machine & Programming                    |              |
| 22.   | PE411       | Computer Integrated Design and Manufacturing |              |
| 23.   | PE413       | Robotics and Automation                      |              |



|     |       |  |              |
|-----|-------|--|--------------|
| 24. | PE415 | Financial Management                               |              |
| 25. | PE417 | Materials Management                               |              |
| 26. | PE419 | Project Management                                 |              |
| 27. | PE421 | Reliability, Maintenance & Safety Engineering      |              |
| 28. | PE423 | Thermal Spray Technology                           |              |
| 29. | PE404 | Total Quality Management                           | DEC-10,11,12 |
| 30. | PE406 | Manufacturing & Applications of Polymer Composites |              |
| 31. | PE408 | Industrial Tribology                               |              |
| 32. | PE410 | Packaging Technology                               |              |
| 33. | PE412 | Supply Chain Management & Value Engineering        |              |
| 34. | PE414 | Flexible Manufacturing System                      |              |
| 35. | PE416 | Work Study & Ergonomic                             |              |
| 36. | PE418 | Advance Manufacturing Processes                    |              |

# BACHELOR OF TECHNOLOGY

## Software Engineering

### I Year: First Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |        | Exam Duration (h) |           | Relative Weights (%) |          |          |          |         |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|--------|-------------------|-----------|----------------------|----------|----------|----------|---------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P      | Theory            | Practical | CWS                  | PRS      | MTE      | ETE      | PRE     |
| Group A         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | AC101        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | ME101        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 5.              | ME103        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |
| Group B         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |          |         |
| 1.              | MA101        | Mathematics - I              | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50       | -       |
| 2.              | AP101        | Physics – I                  | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 3.              | EE101        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 4.              | CO101        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40       | -       |
| 5.              | ME105        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -        | 50      |
| 6.              | FEC          | Foundation Elective 1        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0 | 0/0 /50 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |          |         |

## I Year: Second Semester

| Teaching Scheme |              |                              |              |        | Contact Hours/Week |   |        | Exam Duration (h) |           | Relative Weights (%) |          |          |           |           |
|-----------------|--------------|------------------------------|--------------|--------|--------------------|---|--------|-------------------|-----------|----------------------|----------|----------|-----------|-----------|
| S. No.          | Subject Code | Course Title                 | Subject Area | Credit | L                  | T | P      | Theory            | Practical | CWS                  | PRS      | MTE      | ETE       | PRE       |
| Group A         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |           |           |
| 1.              | MA102        | Mathematics – II             | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50        | -         |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40        | -         |
| 3.              | EE102        | Basic Electrical Engineering | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40        | -         |
| 4.              | CO102        | Programming Fundamentals     | AEC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40        | -         |
| 5.              | ME102        | Engineering Graphics         | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -         | 50        |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/0  | 0/ 0 /5 0 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |           |           |
| Group B         |              |                              |              |        |                    |   |        |                   |           |                      |          |          |           |           |
| 1.              | MA102        | Mathematics – II             | ASC          | 4      | 3                  | 1 | 0      | 3                 | 0         | 25                   | -        | 25       | 50        | -         |
| 2.              | AP102        | Physics – II                 | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40        | -         |
| 3.              | AC102        | Chemistry                    | ASC          | 4      | 3                  | 0 | 2      | 3                 | 0         | 15                   | 25       | 20       | 40        | -         |
| 4.              | ME104        | Basic Mechanical Engineering | AEC          | 4      | 4                  | 0 | 0      | 3                 | 0         | 25                   | -        | 25       | 50        | -         |
| 5.              | ME106        | Workshop Practice            | AEC          | 2      | 0                  | 0 | 3      | 0                 | 3         | -                    | 50       | -        | -         | 50        |
| 6.              | FEC          | Foundation Elective 2        | FEC          | 2      | 2/1 /0             | 0 | 0/2 /4 | 3/3 /0            | 0/2 /3    | 25/ 15/0             | 0/25 /50 | 25/ 20/0 | 50/ 40/ 0 | 0/ 0 /5 0 |
|                 | Total        |                              |              | 20     |                    |   |        |                   |           |                      |          |          |           |           |

## II Year: Third Semester

| S. No. | Code  | Title   | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|---|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | EC271 | Digital Electronics                                   | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.     | SE201 | Data Structures                                       | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | SE203 | Object Oriented Programming                           | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | SE205 | Operating System                                      | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | SE207 | Engineering Analysis and Design(Software Engineering) | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 6.     | FEC   | Foundation Elective 3                                 | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>  |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

## II Year: Fourth Semester

| S. No. | Code  | Title                                | Area | Cr        | L         | T | P         | TH        | PH        | CWS         | PRS         | MTE         | ETE         | PRE        |
|--------|-------|--------------------------------------|------|-----------|-----------|---|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------------|
| 1.     | EC272 | Computer System Architecture         | AEC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 2.     | SE202 | Object Oriented Software Engineering | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 3.     | SE204 | Machine Learning                     | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 4.     | SE206 | Database Management Systems          | DCC  | 4         | 3         | 0 | 2         | 3         | 0         | 15          | 25          | 20          | 40          | -          |
| 5.     | SE208 | Algorithm Design & Analysis          | DCC  | 4         | 3         | 1 | 0         | 3         | 0         | 25          | -           | 25          | 50          | -          |
| 6.     | FEC   | Foundation Elective 4                | FEC  | 2         | 2/1<br>/0 | 0 | 0/2<br>/4 | 3/3<br>/0 | 0/2<br>/3 | 25/<br>15/0 | 0/25<br>/50 | 25/<br>20/0 | 50/<br>40/0 | 0/0<br>/50 |
|        |       | <b>Total</b>                         |      | <b>22</b> |           |   |           |           |           |             |             |             |             |            |

### III Year: Fifth Semester

| S. No. | Code  | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|---------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | SE301 | Software Testing                | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 2.     | SE303 | Software Quality Metrics        | DCC      | 4         | 3 | 1   | 0   | 3  | 0  | 25    | -    | 25    | 50    | -   |
| 3.     | SE3xx | Departmental Elective Course -1 | DEC/G EC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 4.     | SE3xx | Departmental Elective Course -2 | DEC/G EC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 5.     | SE3xx | Departmental Elective Course -3 | DEC/G EC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 |     |
| 6.     | HU301 | Engineering Economics           | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25    | -    | 25    | 50    | -   |
|        |       | <b>Total</b>                    |          | <b>23</b> |   |     |     |    |    |       |      |       |       |     |

### III Year: Sixth Semester

| S. No. | Code  | Title                           | Area     | Cr        | L | T   | P   | TH | PH | CWS   | PRS  | MTE   | ETE   | PRE |
|--------|-------|---------------------------------|----------|-----------|---|-----|-----|----|----|-------|------|-------|-------|-----|
| 1.     | SE302 | Empirical Software Testing      | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 2.     | SE304 | Computer Networks               | DCC      | 4         | 3 | 0   | 2   | 3  | 0  | 15    | 25   | 20    | 40    | -   |
| 3.     | SE306 | Compiler Design                 | DCC      | 4         | 3 | 1   | 0   | 3  | 0  | 25    | -    | 25    | 50    | -   |
| 4.     | SE3xx | Departmental Elective Course -4 | DEC/G EC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 5.     | SE3xx | Departmental Elective Course -5 | DEC/G EC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/25 | 25/- | 20/25 | 40/50 | -   |
| 6.     | MG302 | Fundamentals of Management      | HMC      | 3         | 3 | 0   | 0   | 3  | -  | 25    | -    | 25    | 50    | -   |
|        |       | <b>Total</b>                    |          | <b>23</b> |   |     |     |    |    |       |      |       |       |     |

### IV Year: Seventh Semester

| S. No. | Code  | Title                           | Area        | Cr        | L | T   | P   | TH | PH | CWS       | PRS  | MTE       | ETE       | PRE |
|--------|-------|---------------------------------|-------------|-----------|---|-----|-----|----|----|-----------|------|-----------|-----------|-----|
| 1.     | SE401 | B.Tech. Project-I               | DCC         | 4         |   |     |     |    |    |           |      |           |           |     |
| 2.     | SE403 | Training Seminar                | DCC         | 2         |   |     |     |    |    |           |      |           |           |     |
| 3.     | SE4xx | Departmental Elective Course -6 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20/<br>25 | 40/<br>50 |     |
| 4.     | SE4xx | Departmental Elective Course -7 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20/<br>25 | 40/<br>50 |     |
| 5.     | SE4xx | Departmental Elective Course -8 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20/<br>25 | 40/<br>50 |     |
| 6.     | SE4xx | Departmental Elective Course- 9 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20/<br>25 | 40/<br>50 |     |
|        |       | <b>Total</b>                    |             | <b>22</b> |   |     |     |    |    |           |      |           |           |     |

### IV Year: Eighth Semester

| S. No. | Code  | Title                            | Area        | Cr        | L | T   | P   | TH | PH | CWS       | PRS  | MTE       | ETE       | PRE |
|--------|-------|----------------------------------|-------------|-----------|---|-----|-----|----|----|-----------|------|-----------|-----------|-----|
| 1.     | SE402 | B.Tech. Project-II               | DCC         | 8         |   |     |     |    |    |           |      |           |           |     |
| 2.     | SE4xx | Departmental Elective Course- 10 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20/<br>25 | 40/<br>50 |     |
| 3.     | SE4xx | Departmental Elective Course- 11 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20/<br>25 | 40/<br>50 |     |
| 4.     | SE4xx | Departmental Elective Course- 12 | DEC/<br>GEC | 4         | 3 | 0/1 | 2/0 | 3  | 0  | 15/<br>25 | 25/- | 20/<br>25 | 40/<br>50 |     |
|        |       | <b>Total</b>                     |             | <b>20</b> |   |     |     |    |    |           |      |           |           |     |

## List of Departmental Elective Courses

| S. No. | Course Code | Course Title   | Elective no. |
|--------|-------------|--|--------------|
| 1.     | SE305       | Software Requirement Engineering                             | DEC-1, 2,3   |
| 2.     | SE307       | Computer Graphics  |              |
| 3.     | SE309       | Information Theory and coding                                |              |
| 4.     | SE311       | Digital Signal Processing                                    |              |
| 5.     | SE313       | Advanced Data Structures                                     |              |
| 6.     | SE315       | Microprocessor & Interfacing                                 |              |
| 7.     | SE317       | Distributed Systems  |              |
| 8.     | SE319       | Soft Computing   |              |
| 9.     | SE321       | Artificial Intelligence                                      |              |
| 10.    | SE323       | Theory of Computation  |              |
| 11.    | SE325       | Web Technology   |              |
| 12.    | SE327       | Methods for Data Analysis                                    |              |
| 13.    | SE329       | Predictive Modeling  |              |
| 14.    | SE333       | Minor Project ( <b>Only for students who opt for Minor</b> ) |              |
| 15.    | SE308       | Software Reliability   | DEC-4,5      |
| 16.    | SE310       | Multimedia Systems   |              |
| 17.    | SE312       | Parallel Computer Architecture                               |              |
| 18.    | SE314       | Bio-Informatics  |              |
| 19.    | SE316       | Natural Language Processing                                  |              |
| 20.    | SE318       | Advanced Database Management Systems                         |              |
| 21.    | SE320       | Data Compression   |              |
| 22.    | SE322       | Real Time Systems  |              |
| 23.    | SE324       | Parallel Algorithms  |              |
| 24.    | SE326       | Probability and Statics                                      |              |
| 25.    | SE328       | Business Analytics   | DEC-6,7,8,9  |
| 26.    | SE409       | Software Maintenance   |              |
| 27.    | SE411       | Discrete Structures  |              |
| 28.    | SE413       | Grid & Cluster Computing                                     |              |
| 29.    | SE415       | Pattern Recognition  |              |
| 30.    | SE417       | Agile Software Process                                       |              |
| 31.    | SE419       | Cyber-Forensics  |              |
| 32.    | SE421       | Robotics   |              |
| 33.    | SE423       | Wireless and Mobile Computing                                |              |

|     |       |   |              |
|-----|-------|---|--------------|
| 34. | SE425 | Intellectual Property Rights & Cyber Laws |              |
| 35. | SE427 | Software Project Management               |              |
| 36. | SE429 | Data Warehouse & Data Mining              |              |
| 37. | SE406 | Advances in Software Engineering          |              |
| 38. | SE408 | Information & Network Security            | DEC-10,11,12 |
| 39. | SE410 | Swarm & Evolutionary Computing            |              |
| 40. | SE412 | Semantic Web and Web Mining               |              |
| 41. | SE414 | Cloud Computing                           |              |
| 42. | SE416 | Big Data Analytics                        |              |
| 43. | SE418 | Data Management and Ethics                |              |

### List of Foundation Electives

| Course Code | Course Title                                   |
|-------------|--|
| FEC1        | Sports-I                                       |
| FEC2        | Sports-II                                      |
| FEC3        | Physical Education, Health and Sports          |
| FEC4        | NSS  |
| FEC5        | NCC  |
| FEC6        | Corporate Social Responsibility                |
| FEC7        | Introduction to Environmental Sciences         |
| FEC8        | Environment Development and Society            |
| FEC9        | Spoken Skills in English                       |
| FEC10       | Communication Skills                           |
| FEC11       | Soft Skills and Personality Development        |
| FEC12       | Business Communication and Presentation Skills |
| FEC13       | Public Speaking                                |
| FEC14       | Appreciation of Short Stories                  |
| FEC15       | Appreciation of Poetry & Prose                 |
| FEC16       | Appreciation of Fiction                        |
| FEC17       | Financial Literacy                             |



|       |  |
|-------|--|
| FEC18 | Financial Statements Analysis                      |
| FEC19 | Basics of Accounting                               |
| FEC20 | Theatre  |
| FEC21 | Dance  |
| FEC22 | Yoga   |
| FEC23 | Digital Film Making                                |
| FEC24 | Music  |
| FEC25 | Universal Human Values 1: Self and Family          |
| FEC26 | Universal Human Values 2: Self, Society and Nature |
| FEC27 | Professional Ethics & Human Values                 |
| FEC28 | Emotional Intelligence                             |
| FEC29 | Art of Happiness                                   |
| FEC30 | Nutraceutical                                      |
| FEC31 | Food Chemistry                                     |
| FEC32 | Logical Reasoning                                  |
| FEC33 | Corporate Governance and Business Ethics           |
| FEC34 | Computer Fundamentals                              |
| FEC35 | Geography in Everyday Life                         |
| FEC36 | Psychology for Everyday Living                     |
| FEC37 | French   |
| FEC38 | Mandarin Chinese                                   |
| FEC39 | Japanese   |
| FEC40 | German   |
| FEC41 | Spanish  |
| FEC42 | Entrepreneurship Development                       |
| FEC43 | Public Administration                              |
| FEC44 | Cyber Law  |
| FEC45 | Engineering Exploration                            |

|       |  |
|-------|--|
| FEC46 | Technical Communication                                  |
| FEC47 | Values Driven Leadership                                 |
| FEC48 | Introduction to Biological Sciences                      |
| FEC49 | Sketching & Rendering                                    |
| FEC50 | Tinkering & Elements of Design                           |
| FEC51 | Entrepreneurship Exploration                             |
| FEC52 | Extension and Outreach Activities                        |
| FEC53 | Hindi Language   |
| FEC54 | Negotiation and Leadership                               |
| FEC55 | Fostering Social Responsibility and Community Engagement |
| FEC56 | Universal Human Values: Understanding Harmony            |
| FEC57 | Leadership Mastery Through Self-Management               |

### List of Open Electives

| S.No. | Course Code | Course Title   |
|-------|-------------|--|
| 1     | CO351       | Enterprise & Java Programming  |
| 2     | CO353       | E-commerce & ERP   |
| 3     | CO355       | Cryptography & Information Security  |
| 4     | CO357       | Operating System   |
| 5.    | CO359       | Intellectual Property Rights & Cyber Laws  |
| 6.    | CO361       | Database Management System   |
| 7.    | EC351       | Mechatronics   |
| 8.    | EC353       | Computer Vision  |
| 9.    | EC355       | Embedded System  |
| 10.   | EC357       | Digital Image Processing   |
| 11.   | EC359       | VLSI Design ( <b>Not For students of Electronics and Communication Engineering</b> ) |
| 12.   | EC361       | Analog circuits: Design to Layout  |
| 13.   | EC363       | Signal Processing and design using MATLAB  |
| 14.   | EE351       | Power Electronics Systems  |
| 15.   | EE353       | Electrical Machines and Power Systems  |
| 16.   | EE355       | Instrumentation Systems  |
| 17.   | EE357       | Utilization of Electrical Energy   |

|     |        |  |
|-----|--------|--|
| 18. | EE359  | Non-conventional Energy Systems  |
| 19. | EE361  | Embedded Systems   |
| 20. | EN351  | Environmental Pollution & E- Waste Management  |
| 21. | EN353  | Occupational Health & Safety Management  |
| 22. | EN355  | GIS & Remote Sensing   |
| 23. | EP351  | Physics of Engineering Materials   |
| 24. | EP353  | Nuclear Security   |
| 25. | HU351  | Econometrics   |
| 26. | MA351  | History Culture & Excitement of Mathematics  |
| 27. | ME351  | Power Plant Engineering  |
| 28. | ME353  | Renewable Sources of Energy  |
| 29. | ME355  | Combustion Generated Pollution   |
| 30. | ME357  | Thermal System <b>(Not For students of Mechanical Engineering)</b>                   |
| 31. | ME359  | Refrigeration & Air Conditioning <b>(Not For students of Mechanical Engineering)</b> |
| 32. | ME361  | Industrial Engineering   |
| 33. | ME363  | Product Design & Simulation  |
| 34. | ME365  | Computational fluid dynamics   |
| 35. | ME367  | Finite Element Methods   |
| 36. | ME369  | Total Life Cycle Management  |
| 37. | ME371  | Value Engineering  |
| 38. | MG351  | Fundamentals of Financial Accounting and Analysis                                    |
| 39. | MG353  | Fundamentals of Marketing  |
| 40. | MG355  | Human Resource Management  |
| 41. | MG357  | Knowledge and Technology Management  |
| 42. | PE351  | Advance Machining Process  |
| 43. | PE 353 | Supply Chain Management  |
| 44. | PE355  | Work Study Design  |
| 45. | PE357  | Product Design & Simulation  |
| 46. | PE359  | Total Life Cycle Management  |
| 47. | PE361  | Total Quality Management   |
| 48. | PT361  | High Performance Polymers  |
| 49. | PT363  | Separation Technology  |
| 50. | PT365  | Non-Conventional Energy  |
| 51. | PT367  | Polymer Waste Management   |
| 52. | PT369  | Nanotechnology in Polymers   |

|     |        |  |
|-----|--------|--|
| 53. | PT371  | Applications of Polymer Blends and Composite |
| 54. | IT 351 | Artificial Intelligence and Machine Learning |
| 55. | IT 353 | Data Structures and Algorithms               |
| 56. | IT 355 | Communication and Computing Technology       |
| 57. | IT 357 | Internet and Web Programming                 |
| 58. | IT 359 | Java Programming                             |
| 59. | DD351  | Clay, Ceramics & Glass moulding              |
| 60. | DD353  | Metal, Plastic & Mix Materials               |

## The Minors offered by various academic departments

### Department of Applied Chemistry

#### 1. Minor in Chemical Engineering (For students of other Disciplines)

| Core         |   | Electives    |   |
|--------------|---|--------------|---|
| Course Codes | Course Title                              | Course Codes | Course Title                              |
| CH201        | Chemical Engineering Process Calculations | CH202        | Fluid Mechanics                           |
| CH203        | Transport Phenomena                       | CH204        | Chemical Reaction Engineering-1           |
|              |   | CH206        | Mechanical Operations                     |
|              |   | CH208        | Heat Transfer                             |
|              |   | CH303        | Mass Transfer-1                           |
|              |   | CH302        | Chemical Reaction Engineering-2           |
|              |   | CH304        | Mass Transfer-2                           |
|              |   | CH306        | Chemical Process Technology               |
|              |   | CH321        | Numerical Methods in Chemical Engineering |
|              |   | CH409        | Plant Engineering and Process Economics   |
|              |   | CH411        | Advanced Mass Transfer Operations         |
|              |   | CH410        | Process Engineering and Design            |
|              |   | CH424        | Safety & Hazards in Chemical Industries   |

#### 2. Minor in Polymer Technology

| Core        |                   | Electives   |                                       |
|-------------|-------------------|-------------|---------------------------------------|
| Course Code | Course Title      | Course Code | Course Title                          |
| CH301       | Polymer Materials | CH311       | Rheology                              |
|             |                   | CH315       | Plastic Technology                    |
|             |                   | CH317       | Resin Technology                      |
|             |                   | CH319       | Rubber Technology                     |
|             |                   | CH310       | Paint Technology                      |
|             |                   | CH312       | Polymer Processing Techniques         |
|             |                   | CH316       | Coatings and Adhesives                |
|             |                   | CH320       | Packaging Technology                  |
|             |                   | CH322       | Tyre Technology                       |
|             |                   | CH405       | Fiber Technology                      |
|             |                   | CH407       | Polymer Blends and Composites         |
|             |                   | CH417       | Polymer Waste Management              |
|             |                   | CH425       | Application of Polymers in Biomedical |

|  |  |       |   |
|--|--|-------|---|
|  |  | CH408 | Specialty Polymers                        |
|  |  | CH412 | Thermoplastic Elastomers                  |
|  |  | CH414 | Non-woven Technology                      |
|  |  | CH418 | Application of Nanotechnology in Polymers |
|  |  | CH420 | Inorganic Polymers                        |

### 3. Minor in Petrochemical Engineering

| Core Courses |                  | Elective Courses |   |
|--------------|------------------|------------------|---|
| Course Code  | Course Title     | Course Code      | Course Title                            |
| CH303        | Mass Transfer I  | CH307            | Petroleum Refining Engineering          |
| CH304        | Mass Transfer II | CH315            | Plastic Technology                      |
|              |                  | CH312            | Polymer Processing Techniques           |
|              |                  | CH318            | Petrochemical Engineering               |
|              |                  | CH324            | Heat Exchangers                         |
|              |                  | CH409            | Plant Engineering and Process Economics |
|              |                  | CH411            | Advanced Mass Transfer Operations       |
|              |                  | CH421            | Polymer Reaction Engineering            |
|              |                  | CH427            | Combustion Engineering                  |
|              |                  | CH429            | Energy Resources                        |
|              |                  | CH406            | Catalysis                               |
|              |                  | CH410            | Process Engineering and Design          |
|              |                  | CH426            | Biofuel Engineering                     |
|              |                  | CH428            | Energy Conservation and Recycling       |

## Department of Applied Mathematics.

### 1. Minor in Mathematics & Computing (For students of other Disciplines)

| Core Courses |  | Elective Courses |                                      |
|--------------|--|------------------|--------------------------------------|
| Course Code  | Course Title   | Course Code      | Course Title                         |
| MC 205       | Probability and Statistics   | MC 305           | Operations Research                  |
| MC 207       | Engineering Analysis & Design<br>(Differential Equations and Applications) | MC 312           | Artificial Intelligence              |
| MC 208       | Linear Algebra   | MC 404           | Matrix Computation                   |
|              |  | MC 405           | Graph Theory                         |
|              |  | MC 407           | Cryptography and Network Security    |
|              |  | MC 409           | Mathematical Modeling and Simulation |
|              |  | MC 432           | Fuzzy Set and Fuzzy Logic            |

### 2. Minor in Industrial Mathematics

| Core Courses |                            | Elective Courses |                                      |
|--------------|----------------------------|------------------|--------------------------------------|
| Course Code  | Course Title               | Course Code      | Course Title                         |
| MC 205       | Probability and Statistics | MC 305           | Operation Research                   |
| MC 303       | Stochastic Processes       | MC 405           | Graph Theory                         |
| MC 306       | Financial Engineering      | MC 408           | Quality Control and Decision Making  |
|              |                            | MC 409           | Mathematical Modeling and Simulation |
|              |                            | MC 418           | Optimization Techniques              |
|              |                            | MC 424           | Game Theory                          |
|              |                            | MC 432           | Fuzzy Set and Fuzzy Logic            |
|              |                            | MC 440           | Statistical Inference                |
|              |                            | MC 419           | Machine Learning                     |

### 3. Minor in Computational Intelligence

| Core Courses |                               | Elective Courses |                                      |
|--------------|-------------------------------|------------------|--------------------------------------|
| Course Code  | Course Title                  | Course Code      | Course title                         |
| MC 205       | Probability and Statistics    | MC 312           | Artificial Intelligence              |
| CS 262       | Algorithm Design and Analysis | MC 324           | Big Data Analytics                   |
| MC 303       | Stochastic Processes          | MC408            | Quality Control and Decision Making  |
|              |                               | MC 409           | Mathematical Modeling and Simulation |
|              |                               | MC 411           | Data Warehousing & Data Mining       |
|              |                               | MC 422           | Finite element methods               |
|              |                               | MC 440           | Statistical Inference                |
|              |                               | MC 419           | Machine Learning                     |

## Department of Applied Physics

### 1. Minor in Engineering Physics (For students of other Disciplines)

| Core Courses |  | Elective Courses |   |
|--------------|--|------------------|---|
| Course Codes | Course Title                           | Course Codes     | Course Title                              |
| EP 205       | Classical & Quantum Mechanics          | EP 305           | Atomic and Molecular Physics              |
| EP 202       | Condensed Matter Physics               | EP 309           | Quantum Information and Computing         |
| EP 302       | Fiber Optics and Optical Communication | EP 351           | Physics of Engineering Materials          |
|              |  | EP 308           | Laser and Instrumentation                 |
|              |  | EP 316           | Cosmology and Astrophysics                |
|              |  | EP 411           | Advanced Simulation Techniques in Physics |
|              |  | EP 423           | Space and Atmospheric Sciences –I         |
|              |  | EP 425           | Plasma Science and Technology-I           |
|              |  | EP 406           | Introduction to Spintronics               |
|              |  | EP 408           | Integrated Optics                         |
|              |  | EP 414           | Space and Atmospheric Sciences –II        |
|              |  | EP 416           | Plasma Science and Technology-II          |



## 2. Minor in Material Science & Engineering

| Core Courses |   | Elective Course |   |
|--------------|---|-----------------|---|
| Course Codes | Course Title                                | Course Codes    | Course Title                                      |
| EP202        | Condensed Matters Physics                   | EP313           | Thermodynamics of Materials                       |
| EP301        | Semiconductor Devices                       | EP315           | Advanced Materials for Photonic Devices           |
| EP304        | Fabrication & Characterization of materials | EP318           | Science and Technology of Thin Films              |
|              |   | EP320           | Computational Material Science                    |
|              |   | EP322           | Mechanical and Electrical Behaviour of Thin Films |
|              |   | EP415           | Nano Science and Technology                       |
|              |   | EP427           | Advanced Materials for Photonic Devices           |
|              |   | NST6403         | Nano Sensor and Devices                           |
|              |   | NST6405         | Micro & Nano Electromechanical Systems            |
|              |   | EP404           | Alternate Energy Storage and Conversion Devices   |
|              |   | EP406           | Introduction to Spintronics                       |

## 3. Minor in Photonics

| Core Courses |  | Elective Courses |   |
|--------------|--|------------------|---|
| Course Codes | Course Title                                     | Course Codes     | Course Title                            |
| EP204        | Optics   | EP305            | Atomic and Molecular Physics            |
| EP303        | Electromagnetic theory, antennas and propagation | EP309            | Quantum Information and Computing       |
| EP302        | Fiber optics and optical communication           | EP308            | Laser and Instrumentation               |
|              |  | EP312            | Fourier Optics and Holography           |
|              |  | EP417            | Optical Electronics                     |
|              |  | EP427            | Advanced Materials for Photonic Devices |
|              |  | MSPH213          | Advanced Numerical Physics              |
|              |  | MSPH216          | Advanced Functional Materials           |
|              |  | EP408            | Integrated Optics                       |
|              |  | NST5402          | Nanophotonics                           |

## Biotechnology

### 1. Minor in Biotechnology (For students of other Disciplines)

| Core Courses |                               | Elective Courses |                                       |
|--------------|-------------------------------|------------------|---------------------------------------|
| Course Code  | Courses                       | Course Code      | Course Title                          |
| BT201        | Introduction to Biotechnology | BT206            | Microbiology                          |
| BT202        | Molecular Biology             | BT 301           | Immunology and Immuno- Technology     |
| BT303        | Genetic Engineering           | BT424            | Environmental Biotechnology           |
|              |                               | BT203            | Biochemistry                          |
|              |                               | BT 207           | Fundamentals of Computational Biology |
|              |                               | BT306            | Genomics and Proteomics               |
|              |                               | BT327            | Project Work related to minor         |

### 2. Minor in Biological Computing

| Core Courses |                                       | Elective Courses |  |
|--------------|---------------------------------------|------------------|--|
| Course Code  | Course Title                          | Course Code      | Course Title                                   |
| BT 303       | Fundamentals of Computational Biology | BT419            | Pharmacogenomics and Personalized Medicine     |
| BT306        | Advances in Computational Biology     | BT328            | Bioinformatics approaches in Complex disorders |
| BT319        | Drug Design and Delivery              | BT309            | Object oriented Programing                     |
|              |                                       | BT306            | Genomics and Proteomics                        |
|              |                                       | BT320            | Genomics in Medicine                           |
|              |                                       | BT316            | Population Genetics                            |
|              |                                       | BT327            | Project Work related to minor                  |

### 3. Minor in Public Health

| Core Courses |  | Elective Courses |                               |
|--------------|--|------------------|-------------------------------|
| Course Code  | Course Title                             | Course Code      | Course Title                  |
| BT424        | Environmental Biotechnology              | BT307            | Food and Nutrition            |
| BT441        | Principles and practice of Public Health | BT206            | Microbiology                  |
| BT411        | Basic Epidemiology                       | BT430            | Waste water treatment         |
|              |  | BT443            | Rehabilitation Engineering    |
|              |  | BT316            | Population Genetics           |
|              |  | BT425            | Pharmaceutical Sciences       |
|              |  | BT327            | Project Work related to minor |

## Department of Civil Engineering

### 1. Minor in Civil Engineering (For students of other Disciplines)

| Core Courses |                                 | Elective Courses |  |
|--------------|---------------------------------|------------------|--|
| Course Code  | Course Title                    | Course Code      | Course Title                               |
| CE 202       | Mechanics of Solid              | CE 204           | Engineering Survey                         |
| CE 206       | Soil Mechanics                  | CE 205           | Fluid Mechanics                            |
| CE 207       | Engineering Analysis and Design | CE 301           | Analysis of Determinate Structure          |
|              |                                 | CE 303           | Design of RCC Structure                    |
|              |                                 | CE 304           | Geotechnical Engineering                   |
|              |                                 | CE 306           | Transportation Engineering                 |
|              |                                 | CE 308           | Disaster Management                        |
|              |                                 | CE 313           | Earthquake Technology                      |
|              |                                 | CE 406           | Advanced design of Steel Structure         |
|              |                                 | CE 411           | Interaction Behaviour of Soil Structure    |
|              |                                 | CE 420           | Traffic Engineering                        |
|              |                                 | CE 421           | Hydraulic Structure and Flood Control Work |

### 2. Minor in Sustainable Infrastructure

| Core Courses |                                 | Elective Courses |  |
|--------------|---------------------------------|------------------|--|
| Course Code  | Course Title                    | Course Code      | Course Title   |
| CE 205       | Fluid Mechanics                 | CE 319           | Application of Geoinformatics and GIS in Engineering |
| CE 206       | Soil Mechanics                  | CE 322           | Traffic and Transportation Planning                  |
| CE 207       | Engineering Analysis and Design | CE 323           | Occupational Safety and Health                       |
|              |                                 | CE 324           | Infrastructure Resilience and Socio-Economic Dynamic |
|              |                                 | CE 413           | Water Resources Management                           |
|              |                                 | CE 416           | Geo-Environmental and Geo-Hazard Engineering         |
|              |                                 | CE 425           | Sustainable Construction and Practices               |

### 3. Minor in Disaster mitigation and management

| Core Courses |  | Elective Courses |  |
|--------------|--|------------------|--|
| Course Code  | Course Title                           | Course Code      | Course Title   |
| CE 201       | Civil Engineering Basics & Application | CE 308           | Disaster Management  |
| CE 207       | Engineering Analysis and Design        | CE 319           | Application of Geo-Informatics Remote Sensing and GIS in Engineering |
|              |  | CE 321           | Disaster Preparedness and Mitigation                                 |
|              |  | CE 325           | Human Values and Ethics in Disaster Management                       |
|              |  | CE 327           | Climate Change and Sustainable Development                           |
|              |  | CE 422           | Vulnerability and Risk Analysis                                      |
|              |  | CE 424           | Hazard Monitoring, Prediction and Mitigation                         |
|              |  | CE 426           | Retrofitting of Structures   |
|              |  | CE 427           | Wind Loads on Structures   |
|              |  | CE 429           | Disaster Induced Risk  |
|              |  | CE 431           | Cyclonic Hazard Assessment and Mitigation                            |
|              |  | CE 433           | Seismic Hazard Assessment and Mitigation                             |
|              |  | CE 435           | Landslide Hazard Assessment and Mitigation                           |

## Department of Computer Science & Engineering

### 1. Minor in Computer Engineering (For students of other Disciplines)

| Core Courses |                             | Elective Courses |  |
|--------------|-----------------------------|------------------|--|
| Course Code  | Course Title                | Course Code      | Course Title                           |
| CO201        | Data Structures             | CO204            | Operating Systems Design               |
| CO202        | Database Management Systems | CO205            | Discrete Structures                    |
| CO203        | Object Oriented Programming | CO206            | Computer Organization and Architecture |
|              |                             | CO208            | Algorithm Design & Analysis            |
|              |                             | CO301            | Software Engineering                   |
|              |                             | CO302            | Compiler Design                        |
|              |                             | CO303            | Theory of Computation                  |
|              |                             | CO304            | Artificial Intelligence                |
|              |                             | CO306            | Computer Networks                      |
|              |                             | CO308            | Parallel Algorithms                    |
|              |                             | CO313            | Computer Graphics                      |
|              |                             | CO327            | Machine Learning                       |
|              |                             | CO427            | Web Technology                         |
|              |                             | CO428            | Data Warehouse and Data Mining         |
|              |                             | CO331            | Minor Project                          |

### 2. Minor in Machine Learning

| Core Courses |                             | Elective Courses |   |
|--------------|-----------------------------|------------------|---|
| Course sCode | Course Title                | Course Code      | Course Title                            |
| CO203        | Object Oriented Programming | CO325            | Probability and Statistics              |
| CO201        | Data Structures             | CO329            | Methods for Data Preparation & Analysis |
| CO327        | Machine Learning            | CO411            | Computer Vision                         |
|              |                             | CO418            | Natural Language Processing             |
|              |                             | CO423            | Swarm & Evolutionary Computing          |
|              |                             | CO426            | Advanced Machine Learning               |
|              |                             | CO429            | Neural Networks                         |
|              |                             | CO430            | Deep Learning                           |
|              |                             | CO431            | Reinforcement Learning                  |
|              |                             | CO331            | Project work related to Minor           |

## Department of Software Engineering

### 1. Minor in Software Engineering (For students of other Disciplines)

| Core Courses |                             | Elective Courses |                                      |
|--------------|-----------------------------|------------------|--------------------------------------|
| Course Code  | Course Title                | Course Code      | Course Title                         |
| SE201        | Data Structures             | SE202            | Object Oriented Software Engineering |
| SE206        | Database Management Systems | SE301            | Software Testing                     |
| SE207        | Software Engineering        | SE302            | Empirical Software Engineering       |
|              |                             | SE305            | Software Requirement Engineering     |
|              |                             | SE308            | Software Reliability                 |
|              |                             | SE406            | Advances in Software Engineering     |
|              |                             | SE409            | Software Maintenance                 |
|              |                             | SE411            | Software Quality & Metrics           |
|              |                             | SE427            | Software Project management          |
|              |                             | SE333            | Minor Project                        |

### 2. Minor in Data Analytics

| Core Courses |                             | Elective Courses |                               |
|--------------|-----------------------------|------------------|-------------------------------|
| Course Code  | Course Title                | Course Code      | Course Title                  |
| SE201        | Data Structures             | SE204            | Machine Learning              |
| SE203        | Object Oriented Programming | SE327            | Methods for Data Analysis     |
| SE206        | Database Management Systems | SE328            | Business Analytics            |
|              |                             | SE329            | Predictive Modeling           |
|              |                             | SE326            | Probability and Statistics    |
|              |                             | SE412            | Semantic Web & Web Mining     |
|              |                             | SE416            | Big Data Analytics            |
|              |                             | SE418            | Data Management and Ethics    |
|              |                             | SE429            | Data Warehouse & Data Mining  |
|              |                             | SE333            | Project work related to Minor |

## Department of Electrical Engineering

### 1. Minor in Electrical Engineering (For students of other Disciplines)

| Core Courses |                                     | Elective Courses |   |
|--------------|-------------------------------------|------------------|---|
| Course Codes | Course Title                        | Course Codes     | Course Title  |
| EE201        | Network Analysis and Synthesis      | EE203            | Electronic Devices and Circuits                                 |
| EE206        | Control Systems                     | EE208            | Asynchronous and Synchronous machines                           |
| EE303        | Power Transmission and Distribution | EE301            | Power Electronics   |
|              |                                     | EE317            | Renewable Energy systems  |
|              |                                     | EE357            | Utilization of Electrical Energy                                |
|              |                                     | EE302            | Electric Drives   |
|              |                                     | EE304            | Power System Analysis   |
|              |                                     | EE306            | Microprocessors & Microcontroller Applications                  |
|              |                                     | EE324            | Design, Estimation and costing of Industrial Electrical Systems |
|              |                                     | EE326            | Process Instrumentation and control                             |
|              |                                     | EE407            | Measurement and Instrumentation                                 |
|              |                                     | EE434            | Computer control of processes                                   |
|              |                                     | EE440            | SCADA and Energy Management Systems                             |

### 2. Minor in Machine Learning for IOT Systems

| Core Courses |  | Elective Courses |  |
|--------------|--|------------------|--|
| Course Codes | Course Title                                   | Course Codes     | Course Title                                 |
| MC261        | Numerical and Engineering Optimization Methods | EE323            | Fundamentals of Machine Learning             |
| EE-407       | Instrumentation and Measurement                | EE325            | Internet of Things                           |
|              |  | EE327            | Introduction to Python Programming           |
|              |  | EE328            | Deep Learning with Artificial Neural Network |
|              |  | EE330            | Introduction to ARM Architecture             |
|              |  | EE332            | Wireless Sensor Networks                     |
|              |  | EE405            | Digital Signal Processing                    |
|              |  | EE423            | Microcontroller and Embedded Systems         |
|              |  | EE442            | Robotics and Machine Vision                  |
|              |  | EE446            | Data Communication and Computer Networks     |
|              |  | EE448            | Big Data Analytics                           |
|              |  | EE450            | Cloud computing fundamentals                 |

### 3. Minor in Power Electronics and Renewable Energy Systems

| Core Courses |                                     | Elective Courses |   |
|--------------|-------------------------------------|------------------|---|
| Course Codes | Course Title                        | Course Codes     | Course Title  |
| EE301        | Power Electronics                   | EE309            | Special Electrical machines                           |
| EE 303       | Power Transmission and Distribution | EE317            | Renewable Energy Systems                              |
| EE302        | Electric drives                     | EE351            | Power Electronics Systems                             |
|              |                                     | EE314            | Power Electronics Applications to Power Systems       |
|              |                                     | EE318            | Switch mode power supply                              |
|              |                                     | EE419            | PWM For Power Converters                              |
|              |                                     | EE429            | Power Electronics Application to Photovoltaic Systems |
|              |                                     | EE408            | Restructured Power systems                            |
|              |                                     | EE416            | Grid Integration of Renewable Energy Sources          |
|              |                                     | EE418            | Selected Topics in Power Electronics                  |
|              |                                     | EE420            | Power Quality   |
|              |                                     | EE422            | High Voltage DC Transmission                          |
|              |                                     | EE424            | Flexible AC Transmission Systems                      |
|              |                                     | EE426            | Smart Grid  |



## Department of Electronics and Communication Engineering

### 1. Minor in Electronics and Communication Engineering (For students of other Disciplines)

| Core Courses |                      | Elective Courses |   |
|--------------|----------------------|------------------|---|
| Course Codes | Course Title         | Course Codes     | Course Title                                |
| EC201        | Analog Electronics-I | EE251            | Network analysis and synthesis              |
| EC203        | Digital Design -I    | EC202            | Analog Electronics-II                       |
| EC205        | Signal and Systems   | EC206            | Communication Systems                       |
|              |                      | EC303            | Linear Integrated Circuits                  |
|              |                      | EC305            | Semiconductor device Electronics            |
|              |                      | EC307            | Antenna Design                              |
|              |                      | EC313            | Microprocessor and interfacing              |
|              |                      | EC323            | Control systems                             |
|              |                      | EC325            | Probability and random Process              |
|              |                      | EC302            | VLSI Design                                 |
|              |                      | EC304            | Digital Signal Processing                   |
|              |                      | EC306            | Embedded Systems                            |
|              |                      | EC308            | Analog Filter Design                        |
|              |                      | EC332            | Information Theory and coding               |
|              |                      | EC330            | Digital Image Processing                    |
|              |                      | EC407            | Optical communication                       |
|              |                      | EC405            | Microwave Engineering                       |
|              |                      | EC409            | Computer Vision                             |
|              |                      | EC437            | Fractals and its application in electronics |
|              |                      | EC416            | Pattern Recognition                         |
|              |                      | EC438            | RADAR and Satellite Communication systems   |
|              |                      | EC442            | Microwave Digital Communication             |
|              |                      | EC444            | Wavelets and its application in Antenna     |

## 2. Minor in VLSI Design

| Core Elective |                      | Elective Courses |  |
|---------------|----------------------|------------------|--|
| Course Code   | Course Title         | Course Code      | Course Title                                   |
| EC201         | Analog Electronics I | EC305            | Semiconductor Device Electronics               |
| EC203         | Digital Design I     | EC319            | CMOS Analog Integrated Circuits                |
| EC302         | VLSI Design          | EC321            | IC Technology                                  |
|               |                      | EC361            | Analog circuits: Design to Layout              |
|               |                      | EC308            | Analog Filter Design                           |
|               |                      | EC310            | Testing and Diagnosis of Digital System Design |
|               |                      | EC318            | RF Circuits in CMOS Technology                 |
|               |                      | EC324            | Nano Electronics                               |
|               |                      | EC326            | Data Converters                                |
|               |                      | EC336            | Flexible Electronics                           |
|               |                      | EC338            | Design Verification                            |
|               |                      | EC340            | Robust Analog Circuit Design                   |
|               |                      | EC415            | System on Chip Design                          |
|               |                      | EC417            | CAD for VLSI Design                            |
|               |                      | EC419            | Memory Design                                  |
|               |                      | EC425            | Mixed Signal Design                            |
|               |                      | EC429            | Emerging Semiconductor Devices                 |
|               |                      | EC431            | MEMS and Sensor Design                         |
|               |                      | EC433            | Hardware Design Methodology                    |
|               |                      | EC435            | Quantum Electronics                            |
|               |                      | EC408            | Low Power VLSI Design                          |
|               |                      | EC412            | Machine Learning                               |
|               |                      | EC428            | Neuro-electronics                              |
|               |                      | EC430            | Advanced Computer Architecture                 |
|               |                      | EC440            | Photonic Integrated Circuits                   |

### 3. Minor in Signal Processing & Machine Intelligence

| Core Courses |                           | Elective Courses |   |
|--------------|---------------------------|------------------|---|
| Course Code  | Course Title              | Course Code      | Course Title                                |
| EC205        | Signal and Systems        | EC309            | Bio – Medical Electronics & Instrumentation |
| EC304        | Digital Signal Processing | EC327            | Time-frequency analysis                     |
|              |                           | EC329            | Analog Signal Processing                    |
|              |                           | EC308            | Analog Filter Design                        |
|              |                           | EC320            | Soft Computing                              |
|              |                           | EC328            | Speech Recognition                          |
|              |                           | EC330            | Digital Image Processing                    |
|              |                           | EC342            | Machine Learning                            |
|              |                           | EC409            | Computer Vision                             |
|              |                           | EC411            | Bio – Medical Signal And Image Processing   |
|              |                           | EC427            | Mathematical Modelling & Simulation         |
|              |                           | EC449            | Adaptive Signal Processing                  |
|              |                           | EC451            | Reconfigurable Computing                    |
|              |                           | EC453            | Statistical Signal Processing               |
|              |                           | EC455            | Data Analytics                              |
|              |                           | EC457            | Natural Language Processing                 |
|              |                           | EC406            | Autonomous Mobile Robots                    |
|              |                           | EC416            | Pattern Recognition                         |
|              |                           | EC420            | Cloud Computing                             |
|              |                           | EC422            | Robotics & Machine Vision                   |
|              |                           | EC456            | Wavelets in Signal Processing               |
|              |                           | EC458            | Deep Learning                               |
|              |                           | EC460            | Computational Optimization                  |
|              |                           | EC462            | Recent Trends in Artificial Intelligence    |
|              |                           | EC464            | Virtual Reality                             |
|              |                           | EC466            | Human Computer Interaction                  |
|              |                           | EC468            | Probabilistic Graphical Models              |

#### 4. Minor in Advanced Communication Systems

| Core Courses |                       | Elective Courses |  |
|--------------|-----------------------|------------------|--|
| Course Code  | Course Title          | Course Code      | Course Title                                   |
| EC206        | Communication Systems | EC405            | Microwave Engineering                          |
| EE262        | Electromagnetics      | EC407            | Optical Communication                          |
| EC301        | Digital Communication | EC427            | Information Theory and Coding                  |
|              |                       | EC435            | Quantum Electronics and Communication          |
|              |                       | EC439            | Microwave integrated circuit                   |
|              |                       | EC441            | Radar Signal processing                        |
|              |                       | EC443            | RF MEMS Design and Technology                  |
|              |                       | EC445            | Nanophotonic Devices for Communications        |
|              |                       | EC447            | Spread Spectrum Techniques and Multiple Access |
|              |                       | EC449            | Adaptive Signal Processing                     |
|              |                       | EC404            | Wireless Communication                         |
|              |                       | EC410            | Advanced Coding Theory                         |
|              |                       | EC418            | Estimation and Detection Theory                |
|              |                       | EC436            | Advance Microwave & Antenna Design             |
|              |                       | EC438            | Radar and Satellite Communication              |
|              |                       | EC440            | Photonic Integrated Circuits for Communication |
|              |                       | EC446            | RF and Microwave Active circuits               |
|              |                       | EC448            | Optical Electronics for Communication Systems  |
|              |                       | EC450            | Optical Networks                               |
|              |                       | EC452            | Optical CDMA systems                           |
|              |                       | EC454            | 5G Wireless technologies                       |

## Department of Environmental Engineering

### 1. Minor in Environmental Engineering (For students of other Disciplines)

| Core Courses |   | Elective Courses |   |
|--------------|---|------------------|---|
| Course Code  | Course Title                                    | Course Code      | Course Title                            |
| EN204        | Water Engineering: Design & Application         | EN205            | Environmental Chemistry & Microbiology  |
| EN301        | Waste Water Engineering: Design and Application | EN311            | Climate Change & CDM                    |
| EN304        | Air Pollution & Control                         | EN302            | Solid Waste Management                  |
|              |   | EN306            | Hydrology & Ground water Engineering    |
|              |   | EN316            | Environmental Law & Policy              |
|              |   | EN404            | Environmental Impact Assessment & Audit |
|              |   | EN412            | Environment & Sustainable Development   |
|              |   | EN416            | Non-Conventional Energy Systems         |

### 2. Minor in Environmental Remediation & Control

| Core Courses |                                   | Elective Courses |   |
|--------------|-----------------------------------|------------------|---|
| Course Code  | Course Title                      | Course Code      | Course Title                                |
| EN310        | Surface and Groundwater Pollution | EN206            | Engineering geology, GIS and Remote Sensing |
| EN413        | Water & Soil Conservation         | EN305            | Soil Pollution & Remediation                |
|              |                                   | EN304            | Air Pollution & Control                     |
|              |                                   | EN314            | Green Technology                            |
|              |                                   | EN409            | Industrial waste management                 |
|              |                                   | EN417            | Environmental Risk assessment               |
|              |                                   | EN416            | Non-Conventional Energy Systems             |

### 3. Minor in Sustainability and Environmental Management

| Core Courses |                                       | Elective Courses |  |
|--------------|---------------------------------------|------------------|--|
| Course Code  | Course Title                          | Course Code      | Course Title                                 |
| EN412        | Environment & Sustainable Development | EN311            | Climate Change & CDM                         |
| EN317        | Environmental Management              | EN351            | Environmental Pollution & e-waste management |
|              |                                       | EN314            | Green Technology                             |
|              |                                       | EN413            | Water & Soil Conservation                    |
|              |                                       | EN417            | Environmental Risk assessment                |
|              |                                       | EN414            | Disaster Management                          |
|              |                                       | EN416            | Non-Conventional Energy Systems              |
|              |                                       | EN420            | Life Cycle Assessment                        |

## Department of Mechanical Engineering

### 1. Minor in Mechanical Engineering (For students of other Disciplines)

| Core Courses |                             | Electives Courses |                                    |
|--------------|-----------------------------|-------------------|------------------------------------|
| Course Code  | Course title                | Course Code       | Course title                       |
| ME201        | Mechanics of Solids         | ME305             | Design of Machine Elements         |
| ME208        | Manufacturing Technology-I  | ME302             | Heat and Mass Transfer             |
| ME307        | Manufacturing Technology-II | ME316             | Power Plant Engineering            |
|              |                             | ME318             | Computer Aided Manufacturing       |
|              |                             | ME407             | Refrigeration and Air Conditioning |
|              |                             | ME411             | I C Engines                        |
|              |                             | ME423             | Advanced Manufacturing Processes   |
|              |                             | ME433             | Computer Integrated Manufacturing  |
|              |                             | ME404             | Industrial Engineering             |

## 2. Minor in Production Engineering (For students of other Disciplines)

| Core Courses |                               | Elective Courses |   |
|--------------|-------------------------------|------------------|---|
| Course Code  | Course Title                  | Course Code      | Course Title                                |
| PE208        | Metal Cutting and Tool Design | PE314            | Manufacturing of Composite Materials        |
| PE301        | Casting Technology            | PE316            | Advances In Welding                         |
| PE302        | Welding Technology            | PE318            | Advances In Casting                         |
|              |                               | PE405            | Metal Forming and Press Working             |
|              |                               | PE411            | Computer Integrated Design AndManufacturing |
|              |                               | PE413            | Robotics And Automation                     |
|              |                               | PE414            | Flexible Manufacturing System               |
|              |                               | PE418            | Advance Manufacturing Processes             |

## 3. Minor in Automotive Engineering (For students of other Disciplines)

| Core Courses |                                      | Elective Courses |   |
|--------------|--------------------------------------|------------------|---|
| Course Code  | Course Title                         | Course Code      | Course Title                                  |
| Ae317        | Power Units And Transmission         | Ae305            | Automobile Aerodynamics AndCfd                |
| Ae304        | Internal Combustion Engine           | Ae307            | Combustion Generated Pollution                |
| Ae306        | Alternative Fuels and Energy Systems | Ae315            | Turbo Machinery And Gas Dynamic               |
|              |                                      | AE411            | Vehicle Maintenance and Tribology             |
|              |                                      | AE413            | Vehicle Transport Management                  |
|              |                                      | AE408            | Refrigeration And Automobile Air Conditioning |
|              |                                      | AE412            | Modern Vehicle Technology                     |
|              |                                      | AE414            | Automobiles Vibration System Analysis         |
|              |                                      | AE420            | Vehicle Safety Engineering                    |

#### 4. Minor in Energy Technology

| Core Courses |                            | Elective Courses |                                 |
|--------------|----------------------------|------------------|---------------------------------|
| ME301        | Fluid System               | ME302            | Heat And Mass Transfer          |
| ME353        | Reneable Sources of Energy | ME308            | Gas Dynamics and Jet Propulsion |
| ME316        | Power Plant Engineering    | ME411            | Internal Combustion Engine      |
|              |                            | ME421            | Computational Fluid Dynamic     |
|              |                            | ME408            | Combustion Generated Polution   |
|              |                            | ME416            | Nuclear Energy                  |
|              |                            | ME422            | Fuel Cell                       |

#### 5. Minor in Operations and Supply Chain Management

| Core Courses |   | Elective Courses |                                       |
|--------------|---|------------------|---------------------------------------|
| ME304        | Production And Operations Manegement          | ME415            | Project Management                    |
| ME312        | Quality Management and Six Sigma Applications | ME427            | Operations Research                   |
| ME320        | Reliability and Maintenance Engineering       | ME435            | Optimization Techniques               |
|              |   | ME404            | Industrial Engineering                |
|              |   | ME412            | Supply Chain Management               |
|              |   | ME418            | Operations and Manufacturing Strategy |
|              |   | ME420            | Materials Management                  |

#### 6. Minor in Design and Automation Engineering

| Core Courses |  | Elective Courses |   |
|--------------|--|------------------|---|
| ME305        | Design Of Machine Elements               | ME306            | Finite Element Method                       |
| ME324        | System Modeling, Simulation And Analysis | ME310            | Automation In Manufacturing                 |
| ME409        | Mechatronics And Control                 | ME314            | Mechanical Vibrations                       |
|              |  | ME322            | Design Of Mechanical Assemblies             |
|              |  | ME419            | Robotics And Automation                     |
|              |  | ME429            | Industrial Tribology                        |
|              |  | ME406            | Elastic And Plastics Behaviour Of Materials |
|              |  | ME414            | Fracture Mechanics                          |



## Department of Information Technology

### 1. Minor in Information Technology (For students of other discipline)

| Course Code | Core Courses                  | Course Code | Elective Courses                             |
|-------------|-------------------------------|-------------|--|
| IT201       | Data Structures               | IT351       | Artificial Intelligence and Machine Learning |
| IT208       | Algorithm Design and Analysis | IT302       | Compiler Design                              |
| IT303       | Computer Networks             | IT321       | Malware Analysis                             |
|             |                               | IT304       | Software Engineering                         |
|             |                               | IT407       | Information and Network Security             |
|             |                               | IT404       | Big Data Analytics                           |
|             |                               | IT204       | Operating System                             |
|             |                               | IT 427      | Intrusion Detection and Information Warfare  |
|             |                               | IT425       | Natural Language Processing                  |
|             |                               | IT 307      | Pattern Recognition                          |

### 2. Minor in Cyber Forensics & Cyber Laws

| Course Code | Core Courses     | Course Code | Elective Courses                 |
|-------------|------------------|-------------|----------------------------------|
| IT204       | Operating System | IT325       | Secure Coding                    |
| IT321       | Malware Analysis | IT328       | Ethical Hacking                  |
| IT312       | Cyber Forensics  | IT407       | Information and Network Security |
|             |                  | IT429       | Cyber laws                       |
|             |                  | IT431       | Information Security and Audit   |
|             |                  | IT428       | Mobile and Digital Forensics     |

### 3. Minor in Artificial Intelligence and Machine Learning

| Core Courses |                               | Elective Courses |  |
|--------------|-------------------------------|------------------|--|
| Course Code  | Name of Course                | Course Code      | Name of Course                             |
| IT201        | Data Structures               | IT307            | Pattern Recognition                        |
| IT208        | Algorithm Design and Analysis | IT306            | Artificial Intelligence and Expert Systems |
| IT323        | Machine Learning              | IT324            | Deep Learning                              |
|              |                               | IT411            | Digital Image Processing                   |
|              |                               | IT425            | Natural Language Processing                |
|              |                               | IT433            | Multi modal data processing                |
|              |                               | IT420            | Computer Vision                            |
|              |                               | IT430            | Speech & Natural Language Understanding    |

## Delhi School of Management

### 1. Minor in Supply Chain Management

| Core Courses |                                      | Elective Courses |  |
|--------------|--------------------------------------|------------------|--|
| Course Code  | Course Title                         | Course Code      | Course Title                               |
| MGT26        | Operations & Supply Chain Management | MGS02            | Operations Analytics                       |
| MGT27        | Management Accounting                | MGS03            | Logistics Planning & Strategy              |
|              |                                      | MGS04            | Total Quality Management                   |
|              |                                      | MGS07            | Supply Chain Strategy & Innovation         |
|              |                                      | MGS08            | Transportation and Distribution Management |
|              |                                      | MGM05            | Sales & Distribution Management            |
|              |                                      |                  | Retail Management                          |
|              |                                      | MGM11            | Customer Relationship Management           |

### 2. Minor in Marketing Management

| Core Courses |                      | Elective Courses |                                      |
|--------------|----------------------|------------------|--------------------------------------|
| Course Code  | Course Title         | Course Code      | Course Title                         |
| MGM10        | Digital Marketing    | MGM01            | Consumer Behavior                    |
| MGT13        | Marketing Management | MGM02            | Advertising & Brand Management       |
|              |                      | MGM04            | International Marketing              |
|              |                      | MGM06            | Marketing Research                   |
|              |                      | MGM08            | Promotion Management & B2B Marketing |
|              |                      | MGM09            | Marketing of Services                |
|              |                      | MGM11            | Customer Relationship Management     |
|              |                      | MGM12            | Entrepreneurial Marketing & Sales    |

### 3. Minor in Innovation and Entrepreneurship

|             | Core courses                 |             | Elective Courses  |
|-------------|------------------------------|-------------|---|
| Course Code | Course Title                 | Course Code | Course Title  |
| MBEALS1     | Action Learning Segment-1    | BBA201      | Organizational Behaviour  |
| MBEALS2     | Action Learning Segment-1I   | BBA202      | Marketing Management  |
| BBA303      | Entrepreneurship Development | BBA211      | Human Resource Management   |
|             |                              | DD303       | Design Thinking   |
|             |                              | BBA302      | Financial Management  |
|             |                              | AE430       | Product Design & Development  |
|             |                              | CO408       | Intellectual Property Rights  |
|             |                              | FB404       | Government Policies, Institutions and Economic Zones for Entrepreneurship |
|             |                              | FIE1        | International Entrepreneurship  |
|             |                              | FSE5        | Venture Capital Investment  |
|             |                              | MGK01       | Knowledge Creation, Critical Thinking and Innovation                      |
|             |                              | MGM10       | Digital Marketing   |
|             |                              | MGM12       | Entrepreneurial Marketing and Sales                                       |
|             |                              | MGT17       | Business Communication  |
|             |                              | MGT28       | Information Technology and Innovation Management                          |

## Department of Humanities

### 1. Minor in Economics

| Core Code | Elective Course |  |
|-----------|-----------------|--|
|           | Course Code     | Paper  |
| None      | HU 312          | Microeconomics   |
|           | HU 305          | Macroeconomics   |
|           | HU 306          | Money, Banking and Finance                                 |
|           | HU 307          | Basic Econometrics   |
|           | HU 308          | Mathematical Economics                                     |
|           | HU 309          | Indian Economy   |
|           | HU 310          | International Trade  |
|           | HU 405          | Economic Growth  |
|           | HU 406          | Public Finance and Policy                                  |
|           | HU 407          | Wealth and Poverty of Nations- Indian Economic Development |

## 2. Minor in English

| Core Code | Elective Course |                              |
|-----------|-----------------|------------------------------|
|           | Course Code     | Paper                        |
| None      | HU 317          | Basic Communication Skills   |
|           | HU 318          | Professional Writing Skills  |
|           | HU 325          | Creative Writing Skills      |
|           | HU 326          | Rhetoric and Public Speaking |
|           | HU 327          | Non-Verbal Communication     |
|           | HU 328          | Theatre and stagecraft       |
|           | HU 425          | Soft Skills Development      |
|           | HU 426          | Language and Social Media    |
|           | HU 427          | Literary Appreciation        |
|           | HU 428          | Adaptation and Translation   |
|           | HU 429          | Advanced Spoken Skills       |

## Department of Design

### Minor in Industrial Design

| Core courses |                                     | Elective Course |                                       |
|--------------|-------------------------------------|-----------------|---------------------------------------|
| Couse Code   | Couse Code                          | CourseCode      | Couse Name                            |
| DD108        | Material & Processes for Designers  | DD102           | Design Methodology & Methods          |
| DD106        | Communication Studios and Semiotics | DD107           | Tinkering Studio                      |
| DD205        | Basics of Interaction Design        | DD201           | Physical Ergonomics                   |
|              |                                     | DD202           | Cognitive Ergonomics                  |
|              |                                     | DD203           | Design and People                     |
|              |                                     | DD204           | Video Editing & Compositing           |
|              |                                     | DD209           | Visual Design                         |
|              |                                     | DD207           | Basics of Photography and Videography |

## Guidelines for Implementation of Minors

- a) A student opting for a Minor offered by his/her own discipline shall have to earn only 20 credits (5 courses) from the prescribed basket whereas, for obtaining Minor of disciplines other than his/her own discipline, he/she will have to earn 24 credits (6 courses).
- b) Student desirous of opting a Minor shall register for the same in 4<sup>th</sup> semester of his/her program of study.
- c) Student shall be permitted to register for the courses pertaining to the Minor opted by him/her as and when they are offered by the respective department (i.e. odd or even semester) during his/her studies.
- d) If a student has already earned credits for a course from some discipline other than the one in the basket of a Minor, and its syllabus is similar to the course of Minor then an Equivalence Committee may examine and recommend for counting these credits towards requirement of Minor. The Constitution of Equivalence Committee shall be (i) HoD's of department offering Minor; (ii) Head of Department in which student is enrolled; (iii) Coordinator of the course.
- e) Academic departments shall ensure that courses across the Minors offered by the departments shall not be common/ similar enough so that a student is able to earn two Minors on the basis of same courses. **A student shall not be allowed to opt for Two Minors in any case.**
- f) Academic departments shall offer sufficient number of electives. Normally, Maximum class strength for an elective shall not exceed 75 students. Electives shall be offered to students on first come, first served basis irrespective of his/her discipline.

## Procedure for Conduct and Evaluation of DEC (XX 391)\* -Mini Project

(\* XX represents the department code)

**Course Objective:** The aim of the mini project is to enable the students apply knowledge to address the real-world situation/problem and find the solutions for them. The students will be required to produce and present a working prototype at the end of the course.

### 1 Course Content

The requirement of this course is to design and develop a product which provides solution to a real-world situation/problem.

The outcome of the mini project would be considered for the award of credits based upon the development of a working prototype in the prescribed duration of the course.

### 2 Procedure for Conduct and Evaluation

- 1) This course will be offered in the 5<sup>th</sup> semester of the B. Tech. program and its total duration will be two semesters.
- 2) The student/team shall register for the course in the beginning of the 5<sup>th</sup> semester along with the name of the faculty advisor and consent letter from the faculty advisor. A team for mini project may have at the most two students only.
- 3) The student(s) shall be required to prepare a title that relates to the engineering discipline and the topic MUST emulate a real-world situation/problem. An early **proposal in prescribed format**

(**Format enclosed in 'Forms and Formats' Section**) must be submitted describing the proposed idea and the expected output of the final product in the office of HOD within 10 days of registration.

- 4) The duration of the course will be one year. The evaluation will be based on two progress reports submitted in semester 5<sup>th</sup> and 6<sup>th</sup> and End-Term Examination (ETE) conducted at the end of 6<sup>th</sup> semester with the weightage of 40% and 60% respectively. During each semester two progress reports of 3-4 pages must be submitted briefing on the current progress.
- 5) The mid semester examination will be held in each of the 5<sup>th</sup> and 6<sup>th</sup> semesters with a total weightage of 40%. The Mid-Term examination will involve report submission, presentation and oral viva-voce by the student to the faculty advisor. The evaluation will be based on understanding of the project, quantum and quality of work done and regularity of the student.
- 6) The end term mini project examination will be carried out at the end of 6<sup>th</sup> semester (for 4 credits) and, within 10 days from the last theory paper. For this purpose, suitable examination committee will be appointed by the BoS, with at least one external examiner.
- 7) The students shall be required to submit a final project report after incorporating correction suggested by the project faculty advisor, with the signature of the faculty advisor, to the department, at least 3 days before the date of end semester mini project examination.
- 8) The final examination presentation may be in the form of demonstration of the product and viva-voce. The final evaluation will be based on the report quality, product demonstration, and presentation and question answer session.
- 9) Absolute grading system will be used for the mini project. The Grade Moderation Committee for the course will be the same as that for other courses of the class.
- 10) In case a student is awarded a failing grade in the mini project, he/she shall have to repeat the course in the form of a new project/register in some other departmental elective course having equivalent credits.
- 11) Normal attendance regulations will not apply to this course.

### **The layout of the final report of the mini project report**

- a. Title ("Final Report of xx391 Mini Project submitted by", name of students with roll numbers, "under the guidance of", name of faculty advisor, DTU Logo and, Delhi Technological University, Delhi, <Month name><Year>").
- b. Acknowledgement
- c. Table of Contents
- d. Introduction
- e. Product specifications/Software requirement specifications
- f. Design of the product (Methodology, structured chart, algorithm, pseudocode)
- g. System Manual
- h. Conclusion
- i. Future work

- j. References
- k. Appendix – Code (if any)

## Procedure for Conduct and Evaluation of DEC (XX 393)\* - Undergraduate Research Project

(\*XX represents the department code)

**Course objective:** The idea of the course is to develop analytical skills and critical thinking among the students. The course will enable the student learn appropriate research methodologies and to use them. The course will enable the student to develop a new idea. Further it will allow the student to understand, apply, interpret and evaluate the research concepts. To summarize, the research experience at the undergraduate level will not only allow the student to learn content, but they will also learn how knowledge is constructed in a particular discipline. The aim of the course is to promote and recognize published research work at the undergraduate level. Hence, the outcome of the course will be a publication in a reputed journal.

### 1. Course Content

The requirement of this course is to conduct original research. The ideas must be relevant, thoroughly analyzed and empirically validated using quantitative, descriptive, correlational, comparative, quasi-theoretical, and experimental techniques.

It may comprise of creative and meticulous work undertaken to contribute to the state of knowledge, including knowledge of universal, biological, societal systems, and the use of valid stock of knowledge to devise new applications. It may be used to establish or confirm facts, reaffirm the results of previous work, solve new or existing problems, support theorems, or develop new theories.

The outcome of the research would be considered for the award of credits based upon a published work in the reputed journals as listed with in the duration of the curriculum.

### 2. Prerequisites

The student must have obtained minimum 6\* CGPA at the end of fourth semester. The faculty advisor must have at least 5\* SCI/SCI-Expanded/Scopus publications.

### 3. Course Details and Publication Acceptance Criteria:

The course will be offered to the students in the 5<sup>th</sup> semester. The students will be allowed to earn 4 credits by publishing paper in the third and/or fourth year of B.Tech program provided:

- The research work is published in one of the journals listed in the category of premier or commendable research as detailed in point 4;
- Faculty advisor is co-author and the number of student authors is not more than **two**. Further, there cannot be any other co-author from outside /inside the university apart from faculty advisor in the publication.

\*In case of the student extremely willing to pursue this course prerequisite can be waived with the recommendation of HOD/Dean IRD  
By the vice chancellor.

#### 4. **Categories of Publication:**

The publication made in the journals, which seeks publication fee (article processing charges or open access charges), shall not be considered for irrespective of the listing in the publication societies/ houses/ presses specified in the following lists.

##### **Category A) Premier Research Publications**

The research publication must be in a journal, indexed in SCI or SCI expanded and published in the following:

1. Proceedings of Royal Society
2. American Mathematical Society
3. American Physical Society
4. American Society for Civil Engineers (ASCE)
5. American Society for Mechanical Engineers (ASME)
6. IEEE Transactions
7. Association for Computing Machinery (ACM) Transactions
8. Institute of Civil Engineering Publishing, London
9. Institute of Mechanical Engineering, London
10. American Society of Testing Materials (ASTM)
11. Nature Publishing Group

In addition to the above list, the journals with impact factor equal to or more than thirty (30) will be also be considered.

##### **Category B) Commendable Research Publications**

The research publication must be in a journal indexed in SCI or SCI expanded and published in the following:

1. IEEE Journals
2. Springer
3. Elsevier (Science Direct)
4. Oxford University Press
5. Pergamon-Elsevier Science Ltd
6. Cambridge University Press
7. Wiley-Blackwell



8. Blackwell Publishing
9. John Wiley & Sons
10. Institute of Engineering and Technology (IET)
11. Biomedical Central Ltd
12. MIT Press
13. Indiana University Press
14. American Meteorological Society
15. American Physiological Society
16. American Society for Microbiology
17. American Chemical Society
18. American Institute of Physics
19. IOP Publishing Ltd.
20. Massachusetts Medical Society
21. IOS Press
22. Princeton University Press
23. Society of Industrial and Applied Mathematics
24. Proceedings of National Academy of Sciences of USA

In addition to the above list, SCI and SCI expanded indexed journal not included in the above list having impact factor equal to or more than five shall also be considered.

## **5. Process of Registration and Award of Grades**

- A. The student will be required to register for the course in the beginning of the fifth semester along with the name of the faculty advisor and consent letter from the faculty advisor.
- B. The credits can be earned by the student in subsequent semester (VI-VIII) when the student provides evidence, through faculty advisor and HOD, of the online publication of the research paper. For, instance, if the student provides evidence of the online publication in semester 5<sup>th</sup>, 4 credits will be awarded to the student in semester 6<sup>th</sup>. However, in case the publication is made in the semester 8<sup>th</sup>, the student will be awarded credits in the same semester.
- C. The following grades will be awarded to the students based on the category of the publication:

| Publication Condition   | Grade |
|---|-------|
| Publication in Premier/Commendable Research category with impact factor $\geq 1$            | O     |
| Publication in Premier/Commendable Research category with impact factor between 0.1 to 0.99 | A+    |

- D. In case a student wants to withdraw from this course then he will have to earn 04 credits by registering in an alternative departmental elective course.
- E. If a student has not registered for this research course in 5<sup>th</sup> semester but is able to meet all other requirements for earning the credits from UG research project course then he/she may be allowed to replace his grade and credits earned from some other elective course with grade and credits earned from UG research project.

## Procedure for Conduct and Evaluation of DEC (XX 395)\*- Entrepreneurship and Venture Development

( \* XX is the departmental code)

**Course Objective:** The aim of the Entrepreneurship track is to help student to build-up entrepreneurial skills and encourage the start-up culture in the University.

The students who opt for entrepreneurship program will be required to produce credible evidence of establishing enterprise / start-up which has been conceptualized and started operation

### 1. Course Content

The requirements of this course is to conceptualize a business idea and develop the idea into the form of a Start-up/Enterprise/ Venture which comes into operation at the end of course with credible evidence of operation.

The outcome of the Entrepreneurship course would be considered for the award of credits based upon the credible evidence of operation of the start-up.

### 2. Course Registration

- a. The Entrepreneurship option will be offered to the students in the V semester as part of Departmental/General elective courses.
- b. The duration of the course shall be 1-2 year. The examination for the course will be conducted at the end of the VI to VIII semester.
- c. A maximum of four students can register for this elective out of which not more than two should be from the specific department.

### 3. Procedure of Conduct and Evaluation

- a. The registered student/team must submit a proposal detailing the enterprise being setup including innovative idea generation, planning, organizing, financing and marketing strategies of the proposed plan in the academic section within 10 days of registration, in the prescribed format. ((**Format enclosed in Forms and Formats Section**),)
- b. An evaluation committee, comprising of (i) Chairperson(s) BOS of the respective department of the student/team (ii) Two faculty members and (iii) External expert; nominated by Vice chancellor will approve/reject proposals based on the merits and expected outcome of the proposals. The same committee may also assign the maximum possible grades for an approved proposal.
- c. The duration of the course shall be 1-2 years. The examination for the course shall be conducted at the end of the VI to VIII semester.
- d. The evaluation of the course will be based on mid-term and end term examination with a weightage of 40% and 60% respectively.
- e. The mid-term evaluation will be held at the end of each semester till the proposal approaches its outcome. The mid-term evaluation will be based on progress reports submitted and presentation at the end of every semester, before final submission.
- f. The end term examination will be carried out at the end of VI to VIII semester and not later than 10 days from the last theory paper examination. The examination will be conducted by the same committee which approved the proposal. However, in case of non-availability of any of the members the Vice Chancellor may nominate other examiners.
- g. The student/team shall be required to submit a final detailed project report (DPR) at least 3 days before the scheduled date of end semester examination for this course.
- h. The final evaluation will be based on the proposal outcome, report quality, presentation and viva voce.
- i. Absolute grading system will be used for the course. The Grade Moderation Committee for the course will be the same as that for other courses of the class.
- j. In case a student/team is awarded a failing grade in the course student/team shall have to repeat the course either in the form of a new project or register in some other departmental/generic elective course having equivalent credits as per their choice.
- k. In case a student/team wants to drop this course the student/team shall have to register in some other departmental/generic elective course having equivalent credits.
- l. Normal attendance regulations will not apply to this course.

## **Guidelines for Evaluation of Industrial/Field Training**

- a) Every student will submit a written report to the Training and Placement Department on the work carried out during the training period along with a certificate from the Organization where training was undertaken. HoD of Training and Placement will forward all these reports to respective departments.
- b) A time slot of 2 hour/week/batch will be assigned in the student time table and the students will be asked to present their work in the form of a seminar of about 30-minutes duration, before a committee appointed by the BoS and other students of that batch.
- c) The performance of the students will be evaluated by the committee in marks on the basis of (i) the training report, (ii) presentation, (iii) viva-voce.
- d) Although normal attendance will not apply to this course component, 10-20% marks will be awarded on the basis of attendance in seminars to encourage participation of the entire class.
- e) The grades will be computed on the basis of the established procedure as for other courses.
- f) The grade moderation committee for the course will be the same as that for the other courses of the class.
- g) If a student is awarded a “F” grade in this course, he / she shall have to repeat the course by undergoing 6-10 week training either at the University or at an organization outside the University during the summer vacation following the eighth semester.

## **Procedure for Conduct and Evaluation of B. Tech. Project**

- a) This course will be offered in the final year of the B. Tech. program and its total duration will be two semesters.
- b) Head of the department shall appoint a project coordinator on the advice of BoS from amongst the faculty members of the department who will act as the course coordinator.
- c) The project can be carried out by the student either individually or in a group. However the number of students in a group will generally not exceed three.
- d) The project coordinator will invite proposals from the faculty members and students and finalize the project problems allotted to various groups by August 31, in the 7<sup>th</sup> semester.
- e) An L-T-P loading of 0-0-4 and 0-0-8 will be shown in the time table of students in the seventh and eighth semesters, respectively and the students would be required to work on their projects during these periods. However, no teacher will be assigned for these periods and the progress of students will be monitored by their respective supervisors.
- f) The evaluation will be based upon Mid–Term examinations (MTE) and an End-Term examination (ETE) with a weightage of 40% and 60% respectively.
- g) Mid-Term examination will be held in each of the 7<sup>th</sup> and 8<sup>th</sup> semesters. The Mid-Term examination will involve report submission, presentation and oral viva-voce. For this purpose, suitable committees will be constituted by the BoS for evaluation of report, presentation and oral viva-voce. The project examination

committees will award marks to individual students and forward them to the project coordinator who will maintain these record.

- h) The end term project examination will be carried out at the end of 7<sup>th</sup> (for 4 credits) and 8<sup>th</sup> (for 8 credits) semester respectively, within 10 days form the last theory paper. For this purpose, suitable examination committees will be appointed by the BoS in consultation with the project coordinator, with at least one external examiner. In case an examiner from outside the University is not available, faculty member of the University from outside the Department may be appointed as an external examiner after taking his/her consents.
- i) The students will be required to submit a final project report to the project coordinator, at least 3 days before the date of final project examination.
- j) The final examination may be in the form of demonstration in the laboratory and viva-voce or only viva-voce depending upon the nature of the project.
- k) The examination committee will award marks to individual students and forward them to project coordinator who will compute grades in accordance with the prescribed procedures as given in Project Grade Table below.

### Project Grade Table

| Grade                   | Conditions to be fulfilled   |
|-------------------------|--|
| O or A+                 | One paper accepted/published in SCI/ SCI expanded/SSCI/Scopus indexed journal and on the basis of performance during the viva voce.                      |
| A+ or A                 | One good quality full-length papers accepted/published in peer reviewed Scopus indexed conferences and on the basis of performance during the viva voce. |
| B <sup>+</sup> /B/C/P/F | On the basis of performance during the viva voce   |

- l) The Grade Moderation Committee for the course will be the same as that for other courses of the class.
- m) In case a student is awarded a failing grade in the B.Tech. Project, he / she shall have to repeat the course in the form of a new project. Such a student will have to work full time on the project for a minimum period of 4 months.
- n) Normal attendance regulations will not apply to this course.

## Syllabus for Common courses of B. Tech. Program

1. Subject Code: **ME 101/104** : Course Title: **Basic Mechanical Engineering**
2. Contact Hours : L: 04, T: 00, P: 00
3. Examination Duration (Hrs.) : Theory: 3, Practical: 00
4. Relative Weight : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 04
6. Semester : First/Second
7. Subject Area : AEC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the concepts of thermodynamics, fluid mechanics, power plants, engineering materials, manufacturing processes and metrology.

### 10. Details of Course

| S. No.       | Contents  | Contact Hours |
|--------------|---|---------------|
|              | <b>PART A</b>   |               |
| 1            | <b>Introduction:</b> Introduction to Thermodynamics, Concepts of systems, control volume, state, properties, equilibrium, quasi-static process, reversible & irreversible process, cyclic process. Zeroth Law and Temperature, Ideal Gas. Heat and Work.  | 05            |
| 2            | First Law of Thermodynamics for closed & open systems. Non Flow Energy Equation. Steady State, Steady Flow Energy Equation. Second Law of Thermodynamics-Kelvin and Plank's Statements, Clausius inequality, Definition of Heat Engines, Heat pumps, Refrigerators. Concept of Energy and availability. Carnot Cycle; Carnot efficiency, Otto, Diesel, Dual cycle and their efficiencies. | 12            |
| 3            | Principles of power production, basic introduction about thermal power plant, hydroelectric power plant and nuclear power plant.  | 04            |
| 4            | Properties & Classification of Fluids, Ideal & real fluids, Newton's law of viscosity, Pressure at a point, Pascal's law, Pressure variation in a static fluid, General description of fluid motion, stream lines, continuity equation, Bernoulli's equation, Steady and unsteady flow.   | 07            |
|              | <b>PART B</b>   |               |
| 5            | Introduction to engineering materials for mechanical construction. Composition, mechanical and fabricating characteristics and applications of various types of cast irons, plain carbon and alloy steels, copper, aluminum and their alloys like duralumin, brasses and bronzes cutting tool materials, super alloys thermoplastics, thermosets and composite materials.                 | 12            |
| 6            | Introduction to Manufacturing processes for various machine elements. Introduction to Casting & Welding processes. Sheet metal and its operations. Introduction to machining processes – turning, milling, shaping, drilling and boring operations. Fabrication of large and small assemblies – examples nuts and bolts, turbine rotors etc.  | 12            |
| 7            | Introduction to quality measurement for manufacturing processes; standards of measurements, line standards, end standards, precision measuring instruments and gauges: vernier calliper, height gauges, micrometer, comparators, dial indicator, and limit gauges.  | 04            |
| <b>Total</b> |   | <b>56</b>     |

**11. Suggested Books:**

| S. No. | Name of Authors /Books / Publishers   | Year of Publication/ Reprint |
|--------|---|------------------------------|
|        | <b>TEXT BOOKS:</b>  |                              |
| 1      | Engineering Thermodynamics, P. K. Nag, Tata McGrawa-Hill                    | 2005                         |
| 2      | Fundamentals of Classical Thermodynamics, G. J. Van Wylen and R. E. Santag. | 1994                         |
| 3      | Manufacturing Processes, Kalpakjian   | 2013                         |
| 4.     | Basic Mechanical Engineering,1/e, Pravin Kumar, Pearson Education, Delhi    | 2013                         |
|        | <b>REFERENCE BOOKS:</b>   |                              |
| 1      | Introduction to Fluid Mechanics and Fluid Machines, S. K. Som and G. Biswas | 2013                         |
| 2      | Fluid Mechanics and Hydraulic Machines, R. K. Bansal                        | 2010                         |
| 3      | Workshop Practices, K. Hazara Chowdhary                                     | 2007                         |
| 4      | Workshop Technology, W. A. J. Chapman                                       | 1972                         |
| 5      | Production Engineering, R. K. Jain, Khanna Publishers                       | 2001                         |

1. Subject Code: **AC 101/102** : Course Title:**Chemistry**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory: 03, Practical: 00
4. Relative Weight : CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First / Second
7. Subject Area : ASC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the concepts of Engineering Chemistry, Material characterization and greenChemistry.

**10. Details of Course :**

| S. No. | Contents  | Contact Hours |
|--------|---|---------------|
| 1.     | <b>Conventional Analysis:</b> Volumetric Analysis, Types of Titrations, Theory of Indicators.   | 06            |
| 2.     | <b>Spectral Methods of Analysis:</b> UV-visible, IR, NMR& MS: Principles and Applications.  | 08            |
| 3.     | <b>Thermal Methods of Analysis:</b> Thermo-gravimetry, Differential thermal analysis and Differential Scanning Calorimetry: Principles and Applications.  | 04            |
| 4.     | <b>Polymers &amp; Plastics:</b> Functionality and Degree of Polymerization, Mechanism of Polymerization, Molecular Weights of Polymers, Methods of polymerization, Functional Polymers, Industrial applications of Polymers.  | 06            |
| 5.     | <b>Electrochemistry:</b> Electrochemical cells, components, characteristics of batteries. Primary and Secondary battery systems, Zinc-Carbon cells, Lead storage and lithium batteries. Fuel Cells, Electro-deposition, Electrical and chemical requirements. Electroplating bath and linings. Agitation, Circulation and filtration equipment. | 08            |
| 6.     | <b>Phase Equilibrium:</b> Definitions of Phase, component and degree of freedom, Gibb's phase rule. One component systems: Water and sulphur. Two component systems: Pb-Ag and Cu-Ni.   | 06            |
| 7.     | <b>Green Chemistry:</b> Principles of Green Chemistry, Examples of Green Methods of Synthesis, Reagents and Reactions, Evaluation of feedstocks, Future trends in Green Chemistry.  | 04            |
|        | <b>Total</b>  | <b>42</b>     |

**11. Suggested Books:**

| S. No. | Name of Books/Authors/Publisher   | Year of Publication/Reprint |
|--------|---|-----------------------------|
| 1.     | Introduction to Thermal Analysis/Michael E. Brown/ Springer Netherlands   | 2001                        |
| 2.     | Vogel's Quantitative Chemical Analysis/J. Mendham, R.C. Denney, J. D. Barnes, M.J.K. Thomas / Prentice Hall/6 edition | 2000                        |
| 3.     | Green Chemistry: Theory & Practice/P.T. Anastas & J.C. Warner/Oxford Univ Press                                       | 2000                        |
| 4.     | Polymer Science and Technology/ Fried Joel R./ PHI; 2 edition   | 2005                        |
| 5.     | Electrochemistry/ Philip H. Rieger / Springer   | 2009                        |

1. Subject Code: **AP 101** : Course Title: **Physics – I**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory:03, Practical: 00
4. Relative Weight : CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First
7. Subject Area : ASC
8. Pre-requisite : NIL
9. Objective :



## 10. Details of Course :

| S. No. | Contents   | Contact Hours |
|--------|--|---------------|
| 1.     | <b>RELATIVITY:</b> Review of concepts of frames of reference and Galilean transformation equation, Michelson – Morley experiment and its implications, Einstein's special theory of relativity, Lorentz transformation equations, Law of addition of velocities, simulation concept, Length contraction, Time dilation, Twin Paradox, Mass variation with velocity, Inter-relation among mass, energy and momentum, concept of Mass less particle.     | 10            |
| 2.     | <b>OSCILLATIONS:</b> Simple harmonic Oscillation, Damped Harmonic oscillation: Equation of motion and its solution, Types of damping-heavy, critical and light damping, Logarithmic decrement, Relation time and Q-factor, Energy dissipation, forced oscillator: Equation of motion and its solution, Mechanical Impedance, Resonance-velocity, displacement and power, Q-factor of terms of resonance absorption bandwidth and amplification factor. | 08            |
| 3.     | <b>INTERFERENCE AND DIFFRACTION :</b> Condition for sustained Interference; Production of coherent light :division of wave front and amplitude, Young's Double slit experiment, Thin films – Parallel and wedge shaped, Newton's ring, Michelson Interferometer, Fresnel diffraction (Introduction), Fraunhofer diffraction, single slit, double slit and N-slit / grating, Resolving power of telescope, prism and grating.                           | 08            |
| 4.     | <b>POLARIZATION:</b> Polarization by reflection and by transmission, Brewster's law, Double refraction, elliptically and circularly polarized light, Nicol prism, Quarter and half wave plates.  | 04            |
| 5.     | <b>LASERS:</b> Important characteristics of laser, Transmission between energy states: Absorption, Spontaneous and stimulated Emission, Relation among Einstein's co-efficient, Population Inversion and pumping, Metastable states, and Brief working principle of laser, Type of lasers: working of Ruby laser, He-Ne laser, Application of lasers.  | 07            |
| 6.     | <b>OPTICAL FIBER:</b> Classification of optical fibers, Refractive index profile, Core cladding refractive index difference, Numerical aperture of optical fiber, Pulse dispersion in optical fiber (ray theory), introduction to optical fiber communication system.  | 05            |
|        | <b>Total</b>   | <b>42</b>     |

## 11. Suggested Books:

| S. No. | Name of Books/Authors                           | Year of Publication/ Reprint |
|--------|---|------------------------------|
| 1.     | Physics of Vibrations and Waves, by H.J. Pain.  | 2005/ John Wiley & Sons Ltd  |
| 2.     | Vibrations and Waves, by A.P. French.           | 1971/CRC Press               |
| 3.     | Perspective of Modern Physics, by Arthur Beiser | 1981/ McGraw-Hill            |
| 4.     | Optics, by A. Ghatak.                           | 2006/Tata McGraw-Hill        |
| 5.     | Berkley Physics Course Vol – 1.                 | 2009/ Tata McGraw-Hill       |

1. Subject Code: **AP 102** : Course Title: **Applied Physics-II**
2. Contact Hours : L: 03, T: 00, P: 02
3. Examination Duration (Hrs.) : Theory: 03, Practical: 00
4. Relative Weight : CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First / Second
7. Subject Area : ASC
8. Pre-requisite : NIL
9. Objective :

**10. Details of Course:****Year: I (Semester: II)**

| S. No. | Contents  | Contact Hours |
|--------|---|---------------|
| 1.     | <b>Quantum Physics</b> :Failure of classical physics, Compton effect, Pair production, de-broglie relation, wave function, Probability density, Schrodinger wave equation, operators, expectation values and eigen-value equation, particle in a box, simple harmonic oscillator problem, concept of degeneracy.  | 10            |
| 2.     | <b>Classical Statistics:</b> Microscopic-macroscopic systems, concept of phase space, basic postulates of statistical mechanics, Maxwell—Boltzmann distribution law.  | 05            |
| 3.     | <b>Quantum Statistics:</b> Fermi—Dirac and Bose—Einstein Distribution, Fermi- Dirac probability function, Fermi energy level.   | 05            |
| 4.     | <b>Nuclear Physics:</b> Nuclear properties, constituent of the nucleus, binding energy, stable nuclei, radioactive decay law (alpha and beta spectrum), Q-value of nuclear reaction , nuclear models: liquid drop and shell model, nuclear fission and fusion, elementary ideas of nuclear reactors.  | 06            |
| 5.     | <b>Electrodynamics:</b> Maxwell's equations, concept of displacement current, Derivation of wave equation for plane electromagnetic wave, Poynting vector. Poynting theorem, Energy density, wave equation in dielectric & conducting media.  | 09            |
| 6      | <b>Semiconductor Physics:</b> Introduction to semiconductors, origin of Band theory of solid, Intrinsic and Extrinsic semiconductors, Fermi level variation with temperature Statistics of holes and electrons, Law of mass action, Hall effect, Effect of temperature on conductivity and band gap, Life time, generation and recombination, Drift and diffusion current, Einstein Relation. | 07            |
|        | <b>Total</b>  | <b>42</b>     |

**11.Suggested Books:**

| S. No. | Name of Books/Authors                           | Year of Publication/ Reprint |
|--------|---|------------------------------|
| 1.     | Nuclear Physics, by Erwin Kaplan                | 2002/Narosa                  |
| 2.     | Concept of Nuclear Physics, by Bernard Cohen    | 2001/ McGraw-Hill            |
| 3.     | Perspective of Modern Physics, by Arthur Beiser | 1969/ McGraw-Hill US         |
| 4.     | Electrodynamics, by Griffith                    | 2012/PHI Learning            |
| 5.     | Electricity & magnetism, by Rangawala& Mahajan. | 2012/ McGraw-Hill            |

1. Subject Code: **EE-101/102** : Course Title: **Basic Electrical Engineering**
2. Contact Hours : L: 03, T: 00, P: 02
3. Examination Duration (Hrs.) : Theory: 03, Practical: 00
4. Relative Weight : CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First / Second
7. Subject Area : AEC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the concepts of electrical circuits, magnetic circuits, transformer and measuring instruments.

**10. Details of Course:**

| S. No. | Contents   | Contact Hours |
|--------|--|---------------|
| 1.     | <b>Introduction:</b> Role and importance of circuits in Engineering, concept of fields, charge, current, voltage, energy and their interrelationships. V- I characteristics of ideal voltage and ideal current sources, various types of controlled sources, passive circuit components, V-I characteristics and ratings of different types of R, L, C elements. DC Network: Series and parallel circuits, power and energy, Kirchhoff's Laws, delta-star transformation, superposition theorem, Thevenin's theorem, Norton's theorem, maximum power transfer theorem, Tellegen's theorem. | 10            |
| 2.     | <b>Single Phase AC Circuits:</b> Single phase emf generation, average and effective values of sinusoids, complex representation of impedance, series and parallel circuits, concept of phasor, phasor diagram, power factor, complex power, real power, reactive power and apparent power, resonance in series and parallel circuits, Q-factor, bandwidth and their relationship, half power points.   | 10            |
| 3.     | <b>Three-Phase AC Circuits:</b> Three phase emf generation, delta and star connection, line and phase quantities, solution of three phase circuits: balanced supply and balanced load, phasor diagram, three phase power measurement by two wattmeter method.  | 05            |
| 4.     | <b>Magnetic Circuits and Transformers:</b> Amperes circuital law, B-H curve, concept of reluctance, flux and mmf, analogies between electrical and magnetic quantities, solution of magnetic circuits, hysteresis and eddy current losses, mutual inductance and dot convention, single phase transformer – construction and principle of working, auto transformer and their applications.  | 12            |
| 5      | <b>Measuring Instruments:</b> Analog indicating instruments, PMMC ammeters and voltmeters, damping in indicating instruments, shunt and multipliers, moving iron ammeter and voltmeters, dynamometer type instruments, multimeters, AC watt-hour meters. digital voltmeters, ammeters and watt meters.   | 05            |
|        | <b>Total</b>   | <b>42</b>     |

### 11. Suggested Books:

| S. No. | Name of Authors /Books / Publishers   | Year of Publication/Reprint |
|--------|---|-----------------------------|
| 1.     | Basic Electrical Engineering, A. E. Fitzgerald, David Higginbotham, Arvin Gabel, <b>Tata McGraw-Hill Publishing Company; 5<sup>th</sup> Edition.</b>                            | 2009                        |
| 2.     | <b>Electrical and Electronic Technology,</b> Edward Hughes, Ian Mckenzie Smith, John Hiley, <b>Pearson Education, 10<sup>th</sup> edition.</b>                                  | 2010                        |
| 3.     | <b>Linear Circuit Analysis: Time, Domain, Phasor and Laplace Transform Approaches</b> Raymond A. De Carlo, Pen-Min Lin, <b>Oxford University Press, 2<sup>nd</sup> Edition.</b> | 2001                        |
| 4.     | Hayt, Kemmerly & Durbin, “Engineering Circuit Analysis”, Tata McGraw Hill Publishing Company Ltd.   | 2007                        |
| 5.     | Electrical Engineering Fundamental V. Del Toro, Prentice-Hall, 2 <sup>nd</sup> Edition.   | 1989                        |
| 6.     | Basic Electrical Engineering, C.L. Wadhwa, <b>New Age International Pvt Ltd Publishers</b>  | 2007                        |
| 7.     | Introduction to Electrical Engineering, Mulukutla S. Sarma, Oxford University Press Inc.  | 2001                        |

- |    |                                 |   |  |
|----|---------------------------------|---|--|
| 1. | Subject Code: <b>ME-102/105</b> | : | Course Title: <b>Engineering Graphics</b>                                    |
| 2. | Contact Hours                   | : | L: 00,T: 00, P: 03   |
| 3. | Examination Duration (Hrs.)     | : | Theory: 0, Practical: 03   |
| 4. | Relative Weight                 | : | CWS: 00, PRS: 50, MTE: 00, ETE: 00, PRE: 50                                  |
| 5. | Credits                         | : | 02   |
| 6. | Semester                        | : | First / Second   |
| 7. | Subject Area                    | : | AEC  |
| 8. | Pre-requisite                   | : | NIL  |
| 9. | Objective                       | : | To familiarize the students with drafting and engineering drawing practices. |

### 10. Details of Course :

| S. No.        | Contents   | Contact Hours |
|---------------|--|---------------|
| <b>PART A</b> |  |               |
| 1.            | <b>General:</b> Importance, Significance and scope of engineering drawing Lettering, Dimensioning, Scales, Sense of Proportioning, Different types of Projections, B.I.S. Specification, line symbols, rules of printing.  | 03            |
| 2.            | <b>Projections of Points and Lines:</b> Introduction of planes of projection, Reference and auxiliaryplanes, projections of points and lines in different quadrants, traces, inclinations, and true lengths of the lines, projections on auxiliary planes, shortest distance, intersecting and non-intersecting lines. | 03            |

|    |  |           |
|----|--|-----------|
| 3. | <b>Planes Other than the Reference Planes:</b> Introduction of other planes (perpendicular and oblique), their traces, inclinations etc., projections of points lines in the planes, conversion of oblique plane into auxiliary plane and solution of related problems.  | 03        |
| 4. | <b>Projections of Plane Figures:</b> Different cases of plane figure (of different shapes) making different angles with one or both reference planes and lines lying in the plane figures making different given angles (with one or both reference planes). Obtaining true shape of the plane figure by projection. | 03        |
| 5. | <b>Projection of Solids:</b> Simple cases when solid is placed in different positions, Axis, faces and lines lying in the faces of the solid making given angles.  | 03        |
| 6. | <b>Isometric and Orthographic Views:</b> First and Third angle of system of projection, sketching of Orthographic views from pictorial views and vice –versa, Sectional views.   | 09        |
| 7. | Principles of dimensioning.  | 03        |
| 8. | Development of lateral surfaces of simple solids.  | 06        |
| 9. | Introduction to available drafting softwares like AutoCAD  | 09        |
|    | <b>Total</b>   | <b>42</b> |

#### 11. Suggested Books:

| S. No. | Name of Authors /Books / Publishers                                    | Year of Publication/ Reprint |
|--------|--|------------------------------|
|        | <b>TEXT BOOKS:</b>   |                              |
| 1.     | Engineering Graphics, Narayana, K.L. and Kannaiah, P, Tata McGraw Hill | 2005                         |
|        | <b>REFERENCE BOOKS:</b>  |                              |
| 2.     | Engineering Graphics, Naveen Kumar and S C Sharma                      | 2013                         |
| 3.     | Engineering Graphics, Chandra, A.M. and Chandra Satish, CRC Press      | 2003                         |

- Subject Code: **MA-101** : Course Title : **Mathematics – I**
- Contact Hours : L: 03, T: 01, P: 00
- Examination Duration (Hrs.) : Theory: 03 Hrs., Practical: 00
- Relative Weight : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
- Credits : 04
- Semester : First
- Subject Area : ASC
- Pre-requisite : NIL
- Objective : To acquaint the students with the knowledge of series & sequence, single & multiple variable calculus, knowledge of vector calculus and their applications.

## 10. Details of Course :

| S. No. | Contents  | Contact Hours |
|--------|---|---------------|
| 1.     | <b>Infinite series:</b> Tests for convergence of series (Comparison, Ratio, Root, Integral, Raabe's, logarithmic), Alternating series, Absolute convergence, Conditional convergence.   | 06            |
| 2.     | <b>Differential &amp; Integral Calculus of single variable:</b> Taylor's & MaClaurin's expansion, Radius of curvature, Tracing of some standard curves, Applications of definite integral to Area, Arc length, Surface area and volume (in cartesian, parametric and polar co-ordinates). | 07            |
| 3.     | <b>Calculus of several variables:</b> Partial differentiation, Euler's theorem, Total differential, Taylor's theorem, Maxima-Minima, Lagrange's method of multipliers, Application in estimation of error and approximation.  | 07            |
| 4.     | <b>Multiple Integrals:</b> Double integral (Cartesian and polar co-ordinates), Change of order of integration, Triple integrals (Cartesian, cylindrical and spherical co-ordinates), Beta and Gamma functions, Applications of multiple integration in area and volume.                   | 08            |
| 5.     | <b>Vector Differential Calculus:</b> Continuity and differentiability of vector functions, Scalar and Vector point function, Gradient, Directional Derivative, Divergence, Curl and their applications.   | 07            |
| 6.     | <b>Vector Integral Calculus:</b> Line integral, Surface integral and Volume integral, Applications to work done by the force, Applications of Green's, Stoke's and Gauss divergence theorems.   | 07            |
|        | <b>Total</b>  | <b>42</b>     |

## 11. Suggested Books:

| S. No. | Name of Books/Authors Publishers   | Year of Publication/Reprint |
|--------|--|-----------------------------|
| 1.     | Advanced engineering mathematics: Kreyszig; Wiley-India. 9 <sup>th</sup> Edition<br>ISBN : 978-81-265-3135-6 | 2011                        |
| 2.     | Advanced engineering mathematics: Jain/Iyenger; Narosa. 2 <sup>nd</sup> Edition.<br>ISBN: 81-7319-541-2      | 2003                        |
| 3.     | Advanced engineering mathematics: Taneja; I K international<br>ISBN: 978-93-82332-64-0                       | 2014                        |
| 4.     | Advanced engineering mathematics: Alan Jeffery; Academic Press<br>ISBN: 978-93-80501-50-5                    | 2010                        |
| 5.     | Calculus and analytic geometry: Thomas/Finney; Narosa.<br>ISBN : 978-81-85015-52-1                           | 2013                        |

1. Subject Code: **MA-102** : Course Title: **Mathematics – II**
2. Contact Hours : L: 03, T: 01, P: 00
3. Examination Duration (Hrs.) : Theory: 3 Hrs., Practical: 00
4. Relative Weight : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 04
6. Semester : Second
7. Subject Area : ASC
8. Pre-requisite : NIL
9. Objective : To impart knowledge of matrices and applications closed form and series solutions of Differential equations, Laplace Transform, Fourier series, Fourier Transform & their applications.

**10. Details of Course :**

| S. No. | Contents  | Contact Hours |
|--------|---|---------------|
| 1.     | <b>Matrices:</b> Rank of a matrix, Inverse of a matrix using elementary transformations, Consistency of linear system of equations, Eigen-values and Eigenvectors of a matrix, Cayley Hamilton theorem, Diagonalization of matrix.  | 07            |
| 2.     | <b>Ordinary differential equations:</b> Second & higher order linear differential equations with constant coefficients, General solution of homogenous and non-homogenous equations, Method of variation of parameters, Euler-Cauchy equation, Simultaneous linear equations, Applications to simple harmonic motion. | 08            |
| 3.     | <b>Special Functions:</b> Power series method, Frobenious method, Legendre equation, Legendre polynomials, Bessel equation, Bessel functions of first kind, Orthogonal property.  | 08            |
| 4.     | <b>Laplace Transforms:</b> Basic properties, Laplace transform of derivatives and integrals, Inverse Laplace transform, Differentiation and Integration of Laplace transform, Convolution theorem, Unit step function, Periodic function, Applications of Laplace transform to initial and boundary value problems.   | 08            |
| 5.     | <b>Fourier series :</b> Fourier series, Fourier Series of functions of arbitrary period, Even and odd functions, half range series, Complex form of Fourier Series, Numerical Harmonic analysis.  | 06            |
| 6.     | <b>Fourier Transforms:</b> Fourier Transforms, Transforms of derivatives and integrals, Applications to boundary value problem in ordinary differential equations (simple cases only).  | 05            |
|        | <b>Total</b>  | <b>42</b>     |

**11. Suggested Books:**

| S. No. | Name of Books/Authors Publishers  | Year of Publication/Reprint |
|--------|---|-----------------------------|
| 1.     | Advanced engineering mathematics: Kreyszig; Wiley.<br>ISBN : 978-81-265-3135-6                  | 2011                        |
| 2.     | Advanced engineering mathematics: Jain/Iyenger; Narosa.<br>ISBN: 81-7319-541-2                  | 2003                        |
| 3.     | Advanced engineering mathematics: Taneja; I K international<br>ISBN: 978-93-82332-64-0          | 2014                        |
| 4.     | Advanced engineering mathematics: Alan Jeffery; Academic Press<br>ISBN: 978-93-80501-50-5       | 2010                        |
| 5.     | Advanced engineering mathematics: Peter V. O'Neil Cengage Learning.<br>ISBN : 978-81-315-0310-2 | 2007                        |

1. Subject Code: **CO 101/102** : Course Title: **Programming Fundamentals**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory : 3 Hrs., Practical : 00
4. Relative Weight : CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00
5. Credits : 04

6. Semester : First / Second
7. Subject Area : AEC
8. Pre-requisite : NIL
9. Objective : To introduce fundamentals of Programming using C and C++, concepts of program development and object Oriented Programming.

#### 10. Details of Course

| S. No. | Contents  | Contact Hours |
|--------|---|---------------|
| 1.     | Introduction: Concepts of algorithm, flow chart, Introduction to different Programming Languages like C, C++, Java etc. Elementary Programming in C: Data types, assignment statements, Arithmetic, unary, logical, bit-wise, assignment and conditional operators, conditional statements and input/output statements. | 06            |
| 2.     | Iterative programs using loops- While, do-while, for statements, nested loops, if else, switch, break, Continue, and goto statements, comma operators. Concept of subprograms.  | 06            |
| 3.     | Array representation, Operations on array elements, using arrays, multidimensional arrays. Structures & Unions: Declaration and usage of structures and Unions. Defining and operations on strings.   | 06            |
| 4.     | Pointers: Pointer and address arithmetic, pointer operations and declarations, using pointers as function argument. File: Declaration of files, different types of files. File input/ output and usage-, File operation: creation, copy, delete, update, text file, binary file..                                       | 08            |
| 5.     | Concept of macros and pre-processor commands in C, Storage types: Automatic, external, register and static variables. Sorting and searching algorithms: selection sort, bubble sort, insertion sort, merge sort, quick sort and binary search.  | 08            |
| 6.     | Introduction to Object Oriented Programming: OOPS concepts: class, encapsulation, inheritance, polymorphism, overloading etc. C++ introduction, Concept of class, methods, constructors, destructors, inheritance.  | 08            |
|        | <b>Total</b>  | <b>42</b>     |



## 11. Suggested Books

| S. No. | Name of Books / Authors/ Publishers  | Year of Publication/Reprint |
|--------|--|-----------------------------|
| 1.     | The C Programming Language, 2nd Edition, Brian W. Kernighan, Dennis M. Ritchie, PHI, (ISBN-978-8120305960)                                 | 1988                        |
| 2.     | •Let Us C, 13 <sup>th</sup> Edition, Yashavant Kanetkar, BPB Publications, (ISBN: 978-8183331630)  | 2013                        |
| 3.     | Mastering C, Venugopal K R, Sudeep R Prasad, Edition 1, McGraw Hill Education. (ISBN- 9780070616677)                                       | 2006                        |
| 4.     | Programming in ANSI C, Sixth Edition, McGraw Hill Education (India) Private Limited (Balagurusamy) ISBN: 978-1259004612)                   | 2012                        |
| 5.     | Object Oriented Programming with C++, Sixth edition, E. Balagurusamy, McGraw Hill Education (India) Private Limited (ISBN: 978-1259029936) | 2013                        |

1. Subject Code: **ME 103/106** : Course Title: **Workshop Practice**
2. Contact Hours : L: 00 T: 00 P: 03
3. Examination Duration (Hrs.) : Theory: 00 Hrs. Practical: 03
4. Relative Weight : CWS: 00, PRS: 50, MTE: 00, ETE: 00, PRE: 50
5. Credits : 02
6. Semester : First / Second
7. Subject Area : AEC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with manufacturing shops like Carpentry, Foundry, Welding, Machining, Fitting and Smithy.

## 10. Details of Course :

| Sl. No. | Shop      | Description   | Contact Hours |
|---------|-----------|---|---------------|
| 1.      | Carpentry | Study of Different Carpentry Tools and Pattern Making of a given job (pulley/screw jack body)                                       | 03            |
| 2.      | Foundry   | Study of Different Foundry Tools and Furnaces Making a green sand mould of a given pattern (pulley/screw jack body) and its casting | 06            |
| 3.      | Welding   | Arc welding of butt joint, T-joint and lap joint Study of other welding/ joining Techniques   | 09            |

|    |           |   |           |
|----|-----------|---|-----------|
| 4. | Machining | Study of lathe, milling, drilling machine, shaper, planer and grinding machine. Demonstration of a job on lathe | 09        |
| 5. | Fitting   | Study of various fitting hand tools, marking and measuring devices<br>Preparation of a given job (box / funnel) | 09        |
| 6. | Smithy    | Study of different forming tools and power press Preparation of a given job (bolt / chisel)                     | 06        |
|    |           | <b>Total</b>  | <b>42</b> |

## Syllabus for Foundation Electives

A generalized scheme of teaching and evaluation which takes into account the diverse nature of different types of foundation elective courses is given below. The department offering the foundation elective course will propose the teaching and evaluation scheme to be used for the subject.

| Teaching and Examination Scheme |              | Credit | Hours/Week |   |   | Exam Duration (Hrs) |           | Relative Weights (%) |     |     |     |     |
|---------------------------------|--------------|--------|------------|---|---|---------------------|-----------|----------------------|-----|-----|-----|-----|
| Subject Code                    | Course Title |        | L          | T | P | Theory              | Practical | CWS                  | PRS | MTE | ETE | PRE |
| FECxx                           | ----         | 2      | 2          | 0 | 0 | 3                   | 0         | 25                   | 0   | 25  | 50  | 0   |
|                                 |              |        | 1          | 0 | 2 | 3                   | 2         | 15                   | 15  | 30  | 40  | 0   |
|                                 |              |        | 0          | 0 | 4 | 0                   | 3         | 0                    | 50  | 0   | 0   | 50  |

**Subject Code: FEC1**

**Course Title: Sports I**

### Details of Course:

| S. No. | Contents (Any Two out of 4 Components)  |
|--------|---|
| 1.     | INTRODUCTION TO PHYSICAL EDUCATION IN THE CONTEMPORARY CONTEXT (Any Two)<br>Learn and demonstrate the technique of Suryanamaskar<br>Develop Physical Fitness through Calisthenics / Aerobics / Circuit-Training / Weight-Training and demonstrate the chosen activity<br>Select any one game available in the college and learn different techniques involved in its play   |
| 2.     | CORE PHYSICAL EDUCATION-: FITNESS, WELLNESS AND NUTRITION (Any Two)<br>Measurement of Fitness Components – Leg-raise for Minimal Strength (Muscular Strength); Sit-ups Muscular Endurance); Harvard Step Test, Run and Walk Test (Cardiovascular Endurance); Sit and Reach Test (Flexibility)<br>Measuring height, weight, waist circumference and hip circumference Calculation of BMI (Body Mass Index) and Waist-Hip Ratio<br>Engage in at least one wellness programme and write a report on it.  |
| 3.     | CORE PHYSICAL EDUCATION-: POSTURE, ATHLETIC CARE AND FIRST AID (Any Two)<br>Demonstrate Stretching and Strengthening Exercises for Kyphosis, Scoliosis, Lordosis, Knock Knees, Bow Legs, Flat Foot, Back Pain and Neck Pain<br>Illustration and Demonstration of Active and Passive Exercises<br>Asanas with Therapeutic Value (Any five asanas): Karnapeedasana, Padmasana, Dhanurasana, Sarvangasana, Paschimottanasana, Chakrasana, Halasana, Matsyasana, Ardhamatsyendrasana, Usthrasana, Mayurasana, Shirshasana, Vajrasana<br>Practice P.R.I.C.E. in First Aid. |
| 4.     | SPORTS ADMINISTRATION & MANAGEMENT (Any Two)<br>Demonstration of Supervision activities in Sports Management.<br>Demonstration of skills of Management.<br>Demonstration of fixtures of various kinds in sports competitions.<br>Demonstration of technical and non-technical purchase procedure.   |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | Teaching Children Physical Education: Becoming a Master Teacher. Graham, G., Human Kinetics, Champaign, Illinois, USA.                       |
| 2.     | Concepts of Physical Fitness: Active Lifestyle for Wellness, Corbin, C. B., G. J. Welk, W. R Corbin, K. A. Welk, McGraw Hill, New York, USA. |
| 3.     | Teaching Today Health, Anspaugh, D.J., G. Ezell and K.N. Goodman, Mosby Publishers.  |
| 4.     | Drug Education Handbook on Drug Abuse in Sports, Beotra, Alka, Applied Nutrition Sciences, Mumbai  |
| 5.     | Sports Facility Management, Ammon, R., Southall, R.M. and Blair, D.A., West Virginia, USA: Fitness Information Technology Publishers         |

**Subject Code: FEC2****Course Title: Sports II****Details of Course:**

| S. No. | Contents (Any Two out of 4 Components)  |
|--------|---|
| 1.     | Sports for all (Any Two)<br>To participate in any intramural Tournaments (one team game and one Individual Game) of choice.<br>To participate/ attend at least 15 hours in Fitness training at Field or at Gymnasium.<br>Participate in at least one track and one field event on Annual Sports day.<br>To participate in Inter College Tournament  |
| 2.     | MEDIA AND CAREERS IN PHYSICAL EDUCATION (Any Two)<br>Organize an event / intramural / tournament in your college.<br>Prepare a News Report of an observed Sports competition.<br>Create a presentation on any topic from Physical Education using an audio-visual aid.<br>Demonstrate Warming-up / Conditioning / Cooling-down exercises.   |
| 3.     | MANAGEMENT OF AEROBICS & GROUP TRAINING (Any Two)<br>Measurement of Fitness Components – Leg-raise for Minimal Strength (Muscular Strength); Sit-ups (Muscular Endurance); Harvard Step Test or Run and Walk Test (Cardiovascular Endurance); Sit and Reach Test (Flexibility)<br>Measurement of Pulse Rate / Heart Rate at Radial Artery and Carotid Artery, Calculation of Target Heart Rate<br>Developing a 5-10 minute routine of aerobics with appropriate music for each component of health related physical fitness |
| 4.     | SPORTS INDUSTRY & MARKETING (Any Two)<br>Identify an issue or a trend in the sports industry: o Players in professional or college sports o Ownership<br>Marketing Plan: Environmental Factors and Product Plan Draft, Paper bibliography/works cited.<br>Sponsorship proposal<br>Developing a budget plan for an event<br>Athlete branding   |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher   |
|--------|---|
| 1.     | 7 Habits of Highly Effective People, Covey, S. , Covey Publications, USA                      |
| 2.     | Motor Learning and Control: Concepts and Applications, Magill, R.A., McGraw Hill Publication. |

|    |   |
|----|---|
| 3. | Principles and Practices of Sport Management, Masteralexis, L.P., C. Barr and M. Humms, Jones and Bartlett Publisher    |
| 4. | `Fitness through Aerobics, Bishop, J.G., Benjamin Cummings USA.   |
| 5. | Physical Activity and Health: An Interactive Approach, Brown K.M., Jones and Bartlett Publisher                         |
| 6. | Sponsorship in marketing: Effective communications through sports, arts and events, Cornwell. T.B, Routledge Publishers |
| 7. | Sports Marketing: A Practical Approach, DeGarris, L., Routledge Publishers, USA   |

**Subject Code: FEC3      Course Title: Physical Education, Health and Sports**

### Details of Course:

| S. No. | Contents (Any Two out of 4 Components)  |
|--------|---|
| 1.     | PHYSICAL EDUCATION<br>Concept of physical education, its relation with technical education, health and recreation<br>Scope and importance of physical education   |
| 2.     | HEALTH<br>Concept and factors affecting health<br>Physical fitness-Concepts and factors affecting physical fitness, sources of fitness<br>Types of physical fitness<br>Elements of fitness-speed strength, power, endurance, flexibility, agility<br>Warming up and cooling down  |
| 3.     | POSTURE<br>Concept and values of good posture<br>Causes of poor posture<br>Postural deformities, their causes and remedies  |
| 4.     | SPORTS (Practical)<br>Every student shall opt minimum of three athletics events.<br>Each student shall opt minimum one game major/minor i.e. athletics, badminton, basketball, cricket, football, table tennis, volleyball, kabaddi, Lawn Tennis, Chess<br>Participation in DTU mini marathon, annual athletics meet, physical fitness and cardio respiratory efficiency test |

### Suggested Books:

| S. No. | Name of Books/Authors/Publisher   |
|--------|---|
| 1.     | `Fitness through Aerobics, Bishop, J.G., Benjamin Cummings USA.   |
| 2.     | Physical Activity and Health: An Interactive Approach, Brown K.M., Jones and Bartlett Publisher                         |
| 3.     | Sponsorship in marketing: Effective communications through sports, arts and events, Cornwell. T.B, Routledge Publishers |
| 4.     | Sports Marketing: A Practical Approach, DeGarris, L., Routledge Publishers, USA   |

**Subject Code: FEC4****Course Title: National Service Scheme (NSS)****Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | INTRODUCTION TO NSS<br>Orientation and structure of NSS, History of Social Reforms in Modern India: Brahmo Samaj, Arya Samaj, Satya hodhak Samaj: Principles and Functions                          |
| 2.     | REGULAR ACTIVITIES<br>Distribution of working hours- association between issues and programs- community project- urban rural activities, association- modes of activity evaluation                  |
| 3.     | CONCEPT OF SOCIETY<br>Development of Indian society: Features- Division of labors and cast system in India; Features of Indian constitution; Provisions related to social integrity and development |
| 4.     | N.S.S REGULAR ACTIVITIES<br>College campus activities, N.S.S. activities in Urban and Rural areas, Role of Non-Government Organisation (NGO) in social Reforms, Red Cross, Rotary                   |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | National Service Scheme Manual, Govt. of India.                              |
| 2.     | Training Programme on National Programme scheme, TISS.                       |
| 3.     | Orientation Courses for N.S.S. programme officers, TISS.                     |
| 4.     | “Social Problems in India,” ,Ram Ahuja, Rawat Publication.                   |
| 5.     | History of Social Reforms in Maharashtra, Ed. J. Y. Bhosale, S. U. Kolhapur. |

**Subject Code: FEC5****Course Title: National Cadet Corps (NCC)****Details of Course:**

| S.No. | Contents   |
|-------|--|
| 1.    | INTRODUCTION TO NCC<br>National Integration & Awareness: Religions, Culture, Traditions and Customs of India, National Integration: Importance and Necessity, Freedom Struggle.  |
| 2.    | ADVENTURE TRAINING<br>Obstacle course, Slithering, Trekking, Cycling, Rock Climbing, Para Sailing, gliding, Scuba Diving- methods and use.   |
| 3.    | ENVIRONMENT AWARENESS & CONSERVATION: NATURAL RESOURCES<br>Conservation and Management. Water Conservation and Rainwater Harvesting  |
| 4.    | PERSONALITY DEVELOPMENT & LEADERSHIP<br>Introduction to Personality Development, Factors Influencing /Shaping Personality: Physical, Social, Physiological, Philosophical and Psychological, Self-Awareness Know yourself/ Insight, Change Your Mind Set, Communication Skills: Group Discussion / Lecturettes (Public Speaking), Leadership Traits, Types of Leadership |

**Suggested Books:**

| S.No. | Name of Books/Authors/Publisher   |
|-------|---|
| 1.    | “The Winning way, Learning from sports for managers,” - Bhogle Anita & Bhogle Harsha, Westland Publications |
| 2.    | “The leader had no title,” ,Sharma Robin, Simon and Schuster Ltd.   |

**Subject Code: FEC6****Course Title: Corporate Social Responsibilities****Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | CORPORATE SOCIAL RESPONSIBILITIES IN INDIAN CONTEXT & INTERNATIONAL<br>CSR - Definition, concepts, Approaches of CSR, overview of corporate social responsibility and corporate social accountability, SR Tools, National and International CSR activities, corporate philanthropy, drivers of CSR, difference between corporate governance, corporate philanthropy and CSR  |
| 2.     | BUSINESS ETHICS AND CORPORATE SOCIAL RESPONSIBILITY<br>Concept of business ethics – meaning, Importance and factors influencing business ethics. Corporate Governance – meaning, significance, principles and dimensions. Ethical decision – making in different culture, consumer protection, environment protection, gender issues in multiculturalism, ethics and corruption, ethics and safety. Business benefits of CSR |
| 3.     | LEGISLATIVE MEASURES OF CSR<br>Corporate, labor, stake holders, Environmental and pollution. Social Accounting, Social Auditing, SA: 8000 and Corporate Social Reporting.  |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | The business of social responsibility, Harsh Srivastava,, books for change                                     |
| 2.     | Corporate social responsibility – concepts and cases, CV. Baxi and Ajit Prasad, Excel Books                    |
| 3.     | Global strategic management, Dr. M. Mahmoudi, Deep & Deep Publications Pvt. Ltd.                               |
| 4.     | International Human resource management – Global perspective, S K. Bhatia, Deep & Deep Publications Pvt. Ltd.  |
| 5.     | Governance, Ethics and Social responsibility of business, J.P. Sharma, Ane books Ltd.                          |
| 6.     | Corporate social responsibility; doing the most good for your company, Kotler Philip and Lee Nancy, John Wiley |
| 7.     | Corporate Governance Ethics and CSR, Simpson, Justine and Taylor, John R, Kogan Page Publishers                |

**Details of Course:**

| S.No. | Contents   |
|-------|--|
| 1.    | <p>ENVIRONMENTAL STUDIES: ECOSYSTEMS, BIO-DIVERSITY &amp; ITS CONSERVATION</p> <p>The Multidisciplinary Nature of Environmental Studies Definition, scope and importance of Environmental Studies. Biotic and a biotic component of environment, need for environmental awareness.</p> <p>Ecosystems: Concept of an ecosystem, structure and function of an ecosystem, producers, consumers and decomposers, energy flow in the ecosystem, ecological succession, food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structures and function of different ecosystem</p> <p>Bio-diversity and its Conservation: Introduction to biodiversity —definition: genetic, species and ecosystem diversity, Bio-geographical classification of India, Value of biodiversity: Consumptive use, productive use, social, ethical, aesthetic and option values, Biodiversity at global, national and local levels, India as a mega-diversity nation, Hot-spots of biodiversity, Threats to biodiversity : Habitat loss, Poaching of wildlife, man wildlife conflicts, rare endangered and threatened species(RET) endemic species of India, method of biodiversity conservation: In-situ and ex-situ conservation.</p> |
| 2.    | <p>NATURAL RESOURCES: PROBLEMS &amp; PROSPECTS</p> <p>Renewable and Non-renewable Natural Resources</p> <p>Concept and definition of Natural Resources and need for their management</p> <p>Forest resources: Use and over-exploitation, deforestation, case studies, timber extraction, mining, dams and their effects on forests and tribal people.</p> <p>Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems, Water conservation, rain water harvesting, watershed management.</p> <p>Mineral resources: Uses are exploitation, environmental effects of extracting and using mineral resources, case studies.</p> <p>Food resources: World food problems, changes causes by agriculture and over-grazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.</p> <p>Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, Urban problems related to energy, case studies.</p> <p>Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.</p>                                      |
| 3.    | <p>ENVIRONMENTAL POLLUTION CONTROL</p> <p>Environmental Pollution, Definition, types, causes, effects and control measures of (a) Air pollution, (b) Water pollution, (c) Soil pollution, (d) Marine pollution, (e) Noise pollution, (f) Thermal pollution. Nuclear hazards.</p> <p>Solid waste and its management: causes, effects and control measures of urban and industrial waste.</p>  |
| 4.    | <p>Disaster Management, Social Issues, Human Population and the Environment. Social Issues, Human Population and the Environment, Sustainable development, Climate change, global warming, acid rain, ozone layer depletion, Environmental ethics: Issues and possible solutions, Consumerism and waste products, , Wasteland reclamation. Population growth, problems of urbanisation.</p>  |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher   |
|--------|---|
| 1.     | Textbook of Environmental Studies for Undergraduate Courses, E. Barucha, Universities Press (India) Pvt. Ltd. |
| 2.     | A Textbook of Environmental Studies, S. Chawla, McGraw Hill Education Private Limited.                        |



**Details of Course:**

| S.No. | Contents  |
|-------|---|
| 1.    | BASIC ISSUES & APPROACHES<br>Importance of the study of ecology and society<br>The relation between Environment and Development<br>Conceptual clarifications: social ecology; sustainable development; sustainability.<br>Approaches: Realism, Appropriate Technology, Ecofeminism  |
| 2.    | PEOPLE & NATURAL RESOURCES<br>Unequal Access and Shrinking Commons:<br>Water: depleting water resources & pollution; unequal distribution of water –(utilization of water for commercial crops, industrial use, power generation), the big dams debate.<br>Forest: Colonial policy, diverting resources for mining and other commercial and industrial use, monoculture and loss of biodiversity, rights of forest dwelling communities.<br>Land: modern technology, green revolution, biotechnology and impact on land, shrinking commons and its effects on rural poor. |
| 3.    | ENVIRONMENTAL ISSUES & PROBLEMS<br>Environmental Pollution: Air, Water, Noise, Land and Radioactive Pollution<br>Problems of urban environment (pollution, health, industrial accidents (e.g. Bhopal), occupational hazards)<br>Climate change/Global warming.  |
| 4.    | ROLE OF ENVIRONMENTAL MOVEMENTS & THE STATE<br>Environmental Movements in India – Chipko, Narmada Bachao Andolan, Chilka Lake Orissa, are some examples.  |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher   |
|--------|---|
| 1.     | Environmental Awareness, Chandna R.C, Kalyani Publishers.   |
| 2.     | Environmental Issues and Themes, Agarwal S.K, APH Publishing corporation.   |
| 3.     | Environment and social theory, Barry John, Routledge.   |
| 4.     | Ecology and Equity: The use and Abuse of Nature in contemporary India,” Gadgil, Madhav and Ramachandra Guha, OUP. |
| 5.     | Nature conservation and sustainable development in India, Gole Prakash, Rawat publications.                       |

**Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | Practice on listening and reading comprehension.  |
| 2.     | Language lab practice for group discussion and interviews.  |
| 3.     | Definition and discussion on communication & the barriers in communication with practical training to use language as a tool for sharing, discussing, handling and convincing others. |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher                                      |
|--------|--|
| 1.     | Everyday English I & II Cambridge University Press/ Foundation books |

**Details of Course:**

| S.No. | Contents   |
|-------|--|
| 1.    | Communication: A. Communication: Process, Features, Barriers<br>B. Language, Technology and Communication  |
| 2.    | Grammar and Usage<br>A. Vocabulary-Words/Word Formation, Confusing Word Pairs<br>B. Sentence Construction, Sentence Types, Direct/Indirect Speech<br>C. Punctuation, Error Spotting, Idioms and Phrases  |
| 3.    | Oral Communication<br>A. Phonetics of English, Vowels, Consonants, syllables, transcription of words and simple sentences using IPA: Speech Sounds and their articulation; phonemes, Syllable, Stress, Transcription of words and Simple Sentences<br>B. Language Lab Practice for Oral Communication: Project Presentations, Group Discussions, Debates, Interviews etc.  |
| 4.    | Written Technical Communication<br>A. Composition- Descriptive, Explanatory, Analytical and Argumentative<br>B. Writing Paragraphs ( Essay, Summary, Abstract)<br>C. Reading and Comprehension, Providing working mechanism of instruments, appliances, description of processes, their operations and descriptions; Drawing Inferences from graphs, charts, Diagrams etc. |

|    |  |
|----|--|
| 5. | <p>Texts for Appreciation and Analysis</p> <p>A. Improve your Writing by V. N. Arora and Lakshmi Chandra (OUP)</p> <p>B. Vijay Seshadri. 3 Sections (2014) or Gestures: Poetry from SAARC Countries Ed. K. Satchidanandan. Sahitya Akademi: New Delhi ISBN- 81-260-0019-8</p> <p>C. Ursula K. Leguin. The Telling, Harcourt Inc. 2000 or Animal Farm by George Orwell (1945) ISBN: 9781502492791 or Frankenstein by Mary Shelley (1818) Harper Collins India Ltd.: NOIDA ISBN: 9780007350964</p> |
|----|--|

### Suggested Books:

| S No. | Name of Books/Authors/Publisher   |
|-------|---|
| 1.    | Improve your writing by V. N. Arora and Laxmi Chandra, 2013.                                    |
| 2.    | Technical Communication: Principles and Practice by Meenakshi Raman and Sangeeta Sharma, 2014.  |
| 3.    | English Phonetics and Phonology: A practical Course by Peter Roach, Cambridge University, 2014. |
| 4.    | 3 Sections, Vijay Seshadri, Harper Collins India Ltd, India                                     |
| 5.    | The Telling, Ursula K Leguin, Harbourt Inc, 2000  |

**Subject Code: FEC11**

**Course Title: Soft Skills and Personality Development**

### Details of Course:

| S.No. | Contents  |
|-------|---|
| 1.    | Conceptual Understanding of Communication; Cognition and Re-Cognition; Types of communication: Oral, Verbal, Non-verbal, Kinesics, Interpersonal, Group and Mass Communication, Communion, Barriers to communication; Values and Belief system.   |
| 2.    | Spoken Communication; Art of debating, Elocution, Stage Anchoring, Group Discussion; Interviews; Quiz; Use of Jargon, Slangs and Vocabulary for effective Communication; Voice Modulation and Intonation; Clarity; Brevity; Articulation of thought and speech; Assertiveness; Affirmation. |
| 3.    | Written Communication, KISS rule; Resume writing; Letter writing; Taking notes; Recording minutes and preparing proceedings of meetings; Role of empathy and compassion.  |
| 4.    | Self-assessment; Self awareness; Self-esteem, Self-confidence; Perception and observation skills; Benefits of Meditation and Self-Hypnosis, Goal setting and career planning.<br>Practical: Debate, Declamation; Presentation exercises and written communication exercises.                |

### Suggested Books:

| S.No. | Name of Books/Authors/Publisher  |
|-------|--|
| 1.    | Improve Your Communication Skills, Barker. A, Kogan Page India Pvt Ltd.                        |
| 2.    | Language in Use (Upper-Intermediate), Adrian Doff and Christopher Jones, Cambridge University. |

|    |  |
|----|--|
| 3. | The Oxford Guide to Writing and Speaking, John Seely, Oxford University Press. |
| 4. | You Can Win, Shiv Khera, Macmillan Books.                                      |
| 5. | 7 Habits of Highly Effective People, Stephen Covey, Simon and Schuster         |
| 6. | Perfect Presentation, John Collin, Video Arts Marshal.                         |
| 7. | Effective Interviews, Jenny Rogers, Video arts Marshal.                        |
| 8. | Effective Leadership: Essential Manager Series, Robert Heller, DK Publishing.  |

**Subject Code: FEC12**

**Course Title: Business Communication and Presentation Skills**

**Details of Course:**

| S.No. | Contents   |
|-------|--|
| 1.    | IDENTITY MANAGEMENT COMMUNICATION<br>Face to Face Impression Management & Mediated Communication (Self Introduction & Self-Promoting– Over Stating and Under Stating – Strategies to Overcome Communicative Inhibitions – Creating Positive Self-image through words - Appearance- Verbal and Non-Verbal Manners) – Giving Polite Yet Assertive Responses – Responsive strategies to handle criticism - Accepting Failure and Declaring Success. |
| 2.    | BUSINESS PRESENTATION<br>Oral and Power Point Presentations; Preparing Successful Presentations; Assessing Audience, Making Effective Use of Visual Aids, Delivering Presentation, Using Prompts, Handling with Questions and Interruptions, Mock Presentations.   |
| 3.    | ORATORY SKILLS<br>Group Discussion, Extempore, Mock Parliament and Mock Press.   |
| 4.    | INTERVIEW MANAGEMENT<br>Resume Preparation, Types of Interviews, Preparing for Interviews, Facing Interviews, Handling Tough & Tricky Questions, Reviewing Performance, Participating in Mock Interviews.  |

**Suggested Books:**

| S.No. | Name of Books/Authors/Publisher   |
|-------|---|
| 1.    | Business Communication, Lori Harvill Moore, Bookboon  |
| 2.    | Excellence in Business Communication, John Thill, Courtland L. Bovee, Pearson Prentice Hall |

**Subject Code: FEC13**

**Course Title: Public Speaking**

**Details of Course:**

| S.No. | Contents  |
|-------|---|
| 1.    | INTRODUCTORY SPEECH<br>This is a speech of Self-Introduction based on a national newspaper or magazine article from your actual date of birth (or birth week, if using a magazine). Select an item to speak about which relates to your life in |

|    |   |
|----|---|
|    | some way. <i>Warning:</i> This assignment is about YOU - it is not about summarizing an article on the date of your birth. The other option is to bring an object and discuss how it relates to your life.  |
| 2. | <b>INFORMATIVE SPEECH</b><br>The purpose of this extemporaneous speech is to inform the audience about some person, object, process, concept or event. A full-sentence outline and bibliography are required. The use of an audience analysis survey and visual aid is optional, but recommended, except for PowerPoint.  |
| 3. | <b>PERSUASIVE SPEECH</b><br>This extemporaneous speech assignment is to persuade the audience <i>for</i> or <i>against</i> a question of policy. In addition to a full-sentence outline, audience analysis and bibliography, the use of a visual aid is highly recommended. <i>Note: PowerPoint</i> is mandatory for either the persuasive or final speech.   |
| 4. | <b>SPECIAL OCCASION SPEECH</b><br>A speech designed to fulfill the objectives of a designated special occasion. Speakers may choose from the following options: (1) an “after-dinner” speech, using an imaginary professional career as the basis for the speech; (2) a commemorative speech honoring a famous historical person or event; or (3) a “grand narrative” speech – using a narrative to tell a family story that has been passed down to you which contains a particular moral or cultural insight. The front side of one 4”x 6” index card is allowed. |
| 5. | <b>FINAL SPEECH</b><br>The student may choose either a speech to inform or to persuade. An outline (speaker’s choice), audience analysis, bibliography and visual aid are required. <i>Note: PowerPoint</i> is mandatory for at least one speech - either the persuasive or final speech.   |

### Suggested Books:

| S.No. | Name of Books/Authors/Publisher  |
|-------|--|
| 1.    | The Art of Public Speaking (Communication) Standalone Book by Stephen E. Lucas |

**Subject Code: FEC14**

**Course Title: Appreciation of Short Stories**

### Details of Course:

| S. No. | Contents  |
|--------|---|
|        | <p>Prescribed Texts</p> <p>William Carlos Williams: “The Use of Force”</p> <p>James Thurber: “The Catbird Seat”</p> <p>Ernest Hemingway: “In Another Country”</p> <p>John Henry Noyes Collier: “The Enemies</p> <p>Dylan Thomas: “Wet Saturday”</p> <p>“In Another Country”</p> <p>[Prescribed Book: Brooks, Cleanth, John Thibaut Purser, and Robert Penn An Warren. <i>Approach to Literature</i>. 5th ed.]</p> |

### Suggested Books:

| S. No. | Name of Books/Authors/Publisher                                 |
|--------|---|
| 1.     | Narratives and Narrator, Currie, Gregory.                       |
| 2.     | The Novel: Modern Essays in Criticism, Davis, Robert Marry. Ed. |
| 3.     | The Art of Fiction, Dietrich, R.F. and Roger H. Sundell.        |
| 4.     | On Literature, Miller, J. Hillis.                               |

|    |   |
|----|---|
| 5. | Studying Literature: An Introduction to Fiction and Poetry, Nayar, Pramod. K. |
| 6. | Elements of Literature , Scholes, Robert, and H. Klaus and Michael Silverman. |

**Subject Code: FEC15**

**Course Title: Appreciation of Poetry & Prose**

**Details of Course:**

| S.No. | Contents  |
|-------|---|
| 1.    | Poetry<br>Wallace Stevens: "The Emperor of Ice-Cream"<br>Thomas Hardy: "Last Words to a Dumb Friend"<br>Ben Jonson: "To the Memory of my Beloved, the Author, Mr. William<br>William Shakespeare: "Sonnet 66"<br>Geoffrey Chaucer: "The Prioress" (From <i>The Prologue</i> )<br>Robert Browning: "My Last Duchess" |
| 2.    | Essays<br>Charles Lamb: "The Two Races of Men"<br>Virginia Woolf: "The Death of the Moth"<br>Frances Bacon: "Of Studies"<br>Joseph Addison: "Female Orators"<br>Samuel Johnson: "Singularities Censured" ( <i>Adventurer No. 131. Tuesday, February</i> )   |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1      | Inside Poetry by James Reeves and Martin Seymour-Smith]                  |
| 2      | Elements of Literature by Robert Scholes, H. Klaus and Michael Silverman |

**Subject Code: FEC16**

**Course Title: Appreciation of Fiction**

**Details of Course:**

| S. No. | Contents                              |
|--------|---------------------------------------|
| 1.     | Leo Tolstoy: The Death of Ivan Ilych. |
| 2.     | D.H. Lawrence: The Man Who Died       |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher                                  |
|--------|--|
| 1.     | Narratives and Narrators. Currie, Gregory.                       |
| 2.     | The Novel: Modern Essays in Criticism. Davis, Robert Murray.Ed.  |
| 3.     | The Art of Fiction. Dietrich, R.F. and Roger H. Sundell.         |
| 4.     | An Introduction to The Study of English Literature. Hudson, W.H. |
| 5.     | On Literature. Miller, J. Hillis.                                |

|    |   |
|----|---|
| 6. | Studying Literature: An Introduction to Fiction and Poetry. Nayar, Pramod. K. |
| 7. | Elements of Literature. Scholes, Robert, and H. Klaus and Michael Silverman.  |

**Subject Code: FEC17**

**Course Title: Financial Literacy**

**Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | <b>BANKING</b><br>Definition, Role of Bank in growth of saving and Investment, Types of banks , Services offered by banks, Deposits and Loans, Types of A/c, Opening a bank A/c, How to Transact with banks, KYC norms, (A/c opening form, Address Proof), How to read bank statement, Banking products and services, Calculating Interests – Saving, FD, Simple and Compound Interest, Power of compounding Loans, Types of loans, taking a home loan, Definition of EMI, Calculation of EMI, Post office-Account and transactions, Basic of foreign Exchange, Importance and Use of Foreign Exchange, Regulator Role of RBI, mutual funds. |
| 2.     | <b>INVESTMENT</b><br>Principles of Investment – Safety, Liquidity and Return, Investment plans, Hybrid plans-Ulip, SIP and VIP of mutual funds, index funds  |
| 3.     | <b>FINANCIAL PLANNING</b><br>Meaning, Household financial health checkup, Important life stages, Medical and other Emergencies, ; Insurance, Meaning, Need and Wants, Loss protection, Life, non-life and health, Benefits of Insurance, Term plans, Social obligations Budgeting, Buying a house, Plan a vacation, Retirement planning, Price of procrastination, Market and financial instruments, Primary market, Secondary market, Financial Statement analysis  |
| 4.     | <b>SCAMS, FRAUD SCHEMES</b><br>Insider trading, Money laundering; Consumer protection and redressal mechanism, Rights of Consumers, Applicable to financial services, Filing a complaint, Complain to entity concerned, Regulators, Arbitration, Consumer courts, Govt. Websites-(PG Portals), Investor Associations, Taxes, Meaning, Need of Taxes, Types of taxes, How taxes impact income, Income, wealth and gift tax, Service tax, STT, Stamp Duty, Tax planning v/s tax evasion, Tax rates, Tax free bonds, Tax saving investment  |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | An overview of practice, research, and policy, Fed. Res. Bull. - Braunstein, Sandra, and Carolyn Welch, Financial literacy:  |
| 2.     | Smart money: The effect of education, cognitive ability, and financial literacy on financial market participation, Cole, Shawn A., and Gauri Kartini Shastry, Harvard Business School, 2009. |
| 3.     | Study material of NSE.   |
| 4.     | Personal financial planning, Cengage Learning, Gitman, joehnk and Billingsley,   |
| 5.     | Personal finance student edition, Madura Jeff, Prentice Hall PTR.  |

**Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | INTRODUCTION TO FINANCIAL STATEMENTS<br>Understanding Financial Statements – P&L, Balance Sheet, Cash Flow, Analyzing Financial Statements, Interpreting Financial Statements, Ratio Analysis |
| 2.     | BUSINESS ANALYSIS<br>Understanding Businesses, Overview of Key Industries, Revenue Drivers, Profitability Drivers/Cost Drivers  |
| 3.     | FINANCIAL FORECASTING<br>Methods of Forecasting, Balance Sheet & P&L Relationship, Understanding the Future Projections, Preparation of Forecasted Balance Sheet & Income Statement           |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | How to Read A Balance Sheet: An ILO Programmed Book, Publisher: Oxford & IBH Publishing Co Pvt Ltd |
| 2.     | Techniques of Financial Analysis, Erich A. Helfert, Jaico Publishing House                         |

**Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | Meaning of Accounting, Accountancy and Book Keeping, Objectives of Accounting, Scope of Accounting, Types of Accounting, Limitations, Basic Accounting Terms, Double Entry System of Book Keeping, GAAP (Generally Accepted Accounting Principal), Basic accounting Equations |
| 2.     | Journalizing: Classification of Accounts, Personal, Real and Nominal; Recording & posting of simple transactions only.  |
| 3.     | Preparation of Subsidiary Books: Cash Book (single column cash book) Purchase Book, Sales Book, Purchase Return, Sales Return Book, B/R and B/P Book.   |
| 4.     | Preparation of Trial Balance, Preparing the Financial Statements Trading Account, Profit and Loss Account and Balance Sheet of sole proprietary business (Without Adjustment).  |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher   |
|--------|---|
| 1.     | Financial Accounting, D.K. Goyal: Arya Publications Pvt Ltd.  |
| 2.     | An introduction to Accounting, S.N. Maheshwari: Vikas Publishing House Pvt. Ltd.  |
| 3.     | Basic Accounting: The step-by-step course in elementary accountancy, <u>Nishat Azmat</u> and <u>Andy Lymer</u> : Kindle Edition |



|    |  |
|----|--|
| 4. | "Accounting Principles",Anthony, R.N., a n d J.S. Reece, Richard D. Irwin, Inc.                |
| 5. | "Financial Accounting: Concepts and Applications", Monga, j.R., Mayoor Paper Backs, New Delhi. |
| 6. | "Advanced Accounts", Vol-I, Shukla, M.C., T.S. Grewal and S.C.Gupta, S.Chand& Co., New Delhi.  |
| 7. | "Advanced Accountancy", Vol-I,Gupta, R.L. and M. Radhaswamy, Sultan C hand & Sons, New Delhi.  |

**Subject Code: FEC20**

**Course Title: Theatre**

**Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | Concept of Acting in Indian Classical theatre. Western styles of theatre acting.  |
| 2.     | Basics of the following: Acting in Grotowski's Poor Theatre, Modern concept of Actor training with reference to Meyerhold, Bertold Brecht and Constant in Stanislavesky; Artaudian acting, Theatre of Cruelty; Theatre of Absurd. |
| 3.     | Acting for Camera –Knowledge of camera frames and movement within the confines of a frame, blocking, difference between theatre and Camera acting, Concentration.   |
| 4.     | Acting consistently for different takes, acting scenes out of order, Auditions, acting exercises. Art of Dubbing.   |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher   |
|--------|---|
| 1.     | Acting: the First Six Lessons,Boleslavsky, Richard, New York Theatre Arts.                  |
| 2.     | Respect for Acting, Hagen, Uta, Macmillan Press.  |
| 3.     | Twentieth Century Actor Training, Hodge, Alison, London and New York.                       |
| 4.     | An Actor's Work: A Student's Diary, Routledge ,Stanislavski, Konstantin,Trans. and ed. Jean |
| 5.     | The Art of Film Acting,Jeremiah Comey , Focal Press .                                       |
| 6.     | Acting (Re) Considered, Philips B Zarrilli, Routeledge                                      |
| 7.     | Acting for Film, Cathy Hassey, Allworth Press   |

**Subject Code: FEC21****Course Title: Dance****Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | <p>Basic workout</p> <p>Introduction to Hip Hop and B-Boying with a simple choreography</p> <p>Exercise like: Rolling, jumping, moving shoulders. Footwork, Floor steps, Beat knowledge.</p> <p>Freestyle combination along with House dance style.</p> <p>Expressions class: Body expressions, Face expressions.</p> <p>Introduction of Contemporary Dance. Basic exercise of Contemporary Dance. Exercise for flexibility, Floor steps, Spinning and Balancing.</p> <p>Introduction to Jazz. Basic exercise and proper routine practice.</p> |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher   |
|--------|---|
| 1.     | A Choreographer's Handbook, Jonathan Burrows, Routledge   |
| 2.     | Dance Composition: A Practical Guide to Creative Success in Dance Making, Jacqueline M. Smith-Autard, Routledge |

**Subject Code: FEC22****Course Title: Yoga****Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | Origin of Yoga & its brief development, Meaning of Yoga & its importance, Yoga as a Science of Art (Yoga Philosophy), Meaning of meditation and its types and principles.  |
| 2.     | Classification of Yoga/Types of Yoga, Hatha Yoga , Raja Yoga, Laya Yoga, Bhakti Yoga, Gyan Yoga, Karma Yoga, Asthang Yoga.   |
| 3.     | Principles of Yogic Practices, Meaning of Asana, its types and principles, Meaning of Pranayama, its types and principles, Meaning of Kriya its types and principles.  |
| 4.     | Yogic therapies and modern concept of Yoga, Naturopathy, Hydrotherapy, Electrotherapy, Messotharapy, Acupressure, acupuncture, Meaning and importance of prayer, Psychology of mantras, Different mudras during prayers. |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher   |
|--------|---|
| 1.     | The Risks and the Rewards, William Broad, The Science of Yoga: Simon and Schuster |
| 2.     | The Complete Illustrated Book of Yoga, Swami Vishnu Devananda, Harmony            |

**Subject Code: FEC23****Course Title: Digital Film Making****Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | <b>HISTORY OF CINEMA, RESEARCH &amp; SCRIPT</b><br>Early Cinema, Development of Classical Indian & Hollywood Cinema, History of Global Film including European Film (1930-present), Origin of Classical narrative cinema-Soundless film, Exploration of film and analysis of the three-part beginning, middle and end of story, Research (Finding and Collecting materials and facts related to your story. Where and How to find the materials related to your story. Things to consider before sketching down your story), Script (Scriptwriting Process and its various phases), Film Grammar for Scriptwriting.  |
| 2.     | <b>DIGITAL VIDEO CINEMATOGRAPHY: PRE-PRODUCTION</b><br>Introduction to Digital Video Cinematography<br>Cinematography, Interactivity and emotions through Cinematography,<br>Building blocks, Compositions, Lenses and Cameras, Types of lenses: Zoom Lens, Prime Lens, Types of Cameras: HD Cameras, Basics of Film Camera, Difference between, Film Camera and Digital Camera, DSLR and HDSLR Cameras, Lighting, Psychology of light, Visual Environment, Directional Effect of Light, Lighting design process, Three-point lighting, High-Key lighting, Low Key lighting, Construction of a Shot, Color, Contrast, Deep Focus, Shallow Focus, Depth of Field, Exposure, Racking focus, Frame Rate, Telephoto shot, Zoom shot. |
| 3.     | <b>DIGITAL VIDEO EDITING</b><br>Effective Editing, Principles of Video Editing, Non-Linear Editing (NLE) Concept, The Three-Point Edit, Non-Linear Editing (NLE) Techniques, working in the Timeline, Transitions, Key framing, Applying Filters, Ingesting.   |
| 4.     | <b>ADVANCED EDITING TECHNIQUES</b><br>NLE Compositing, Color Correction & Color Grading, Working on Audio, Titling   |

**Suggested Books**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | The Digital Filmmaking Handbook, Mark Brindle and Chris Jones, Quercus |

**Subject Code: FEC24****Course Title: Music****Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | Study of the following terms: - Mela (Thāt), ĀshrayRāga, Rāga, Lakshana, Shruti, Alankar, Gamak, Vadi-SamvādiAnuvādi-Vivādi, VakraSwara, Varjit-Swara. |
| 2.     | Biographies & contributions of the following: - Jaidev, MansinghTomar, Abdul Karim Khan, Tyagaraja, Pt. Bhatkhande, Pt. Ravi Shankar                   |
| 3.     | Study of following Rāgas&TālaRāga- Yaman, Jaunpuri, Khamaj. Tāla- Ektāl, Jhaptāl   |

|    |  |
|----|--|
| 4. | <p>General discussion and definition of the following: -</p> <p>a. Khyāl, MaseetKhani – Razakhani gat, Dhrupad, Tarana, Meend, Soot, Murki, Kan, Khatka, Krintan, Harmony, Melody.</p> <p>b. Writing of Bhatkhande SwarlipiPaddhati.</p> <p>c. Writing of Tālasand Compositions in Notation.</p> <p>d. Detailed study of Rāgas (Rāga- Bihag, Malkauns, Vrindavani Sarang) and comparative study of Rāgas.</p> <p>e. Essay, Shastriya Sangeet (Classical Music) &amp; Sugam Sangeet (Light Music)</p> |
| 5. | <p>Vedic Music – Samvedic Sangeet, Swara, Vadya, Bhakti, Vikār .</p> <p>General study of Natyashastra, SangeetRatnakar.</p>  |

### Suggested Books:

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | Sangeet Visharad, Vasant and Laxmi Narayan Garg, Sangeet Karyalay                    |
| 2.     | BhartiyaSangeetkaltihas, Sarat Chandra Pranjpayee and Chowbhamda ,SurbhartiPrakashan |
| 3.     | NatyaShastra - Bharat Muni   |
| 4.     | SangeetRatnakar ,Sharangdeva   |
| 5.     | Sangeet Bodh, Sharad Chandra Pranjpayee  |
| 6.     | Indian Music, Thakur Jaidev Singh, Sangeet research academy                          |
| 7.     | Mallika Part II & III, V. N. Bhatkhande, KramikPustak.                               |
| 8.     | RaagVigyan- V. N. Patwardhan,  |
| 9.     | RagvibodhaMishrabani, RaginiTrivedi, Vol. I & II                                     |

**Subject Code: FEC25      Course Title: Universal Human Values 1: Self and Family**

### Details of Course:

| S. No. | Contents  |
|--------|---|
| 1.     | Motivation and Objectives of Human Values Course, Introduction to the objectives of the course. Content and process of the course including mode of conduct. Daily life as lab for the course. Activities in the course.                      |
| 2.     | Purpose of Education How human being has a need for Knowledge, what should be the content of knowledge, how the content should be discussed in education. Complimentarily of skills and values, how the current education system falls short. |
| 3.     | Peers Pressure, Social Pressure In various dimensions of life, how do these things work. What is the way out? In the context of education, peer pressure etc. movie —Taare Zameen Par   can be used.  |
| 4.     | Concept of Competition and Excellence How competition leads to degradation of self and relationships. How excellence is the basic need of a human being. What is excellence? Movie —Fearless   can be used to discuss the concept.            |
| 5.     | Time Management: How does one deal with myriads of activities in college? Focus of the mind.  |

|     |   |
|-----|---|
| 6.  | Concept of Preconditioning. How preconditioning affects our thinking, behavior, work, relationships, society and nature. How do we develop pre-conditioning?<br>What are the various sources of preconditioning? How do we evaluate our Preconditioning? How do we come out of it?  |
| 7.  | Concept of Natural Acceptance in Human Being. What is natural acceptance? How can the concept of natural acceptance be used to evaluate our preconditioning. Universal nature of natural acceptance. Are anger, jealousy, hatred natural? How do we feel when we experience them? Which feelings are natural for a human being and which are not?   |
| 8.  | Understanding Relationships, a) Are relationships important? What is the role of relationships in our life? If relationships are important then why they are important? If they are important then why it is the case that we are not discussing them? What are the notions/conditions and factors which stop us to explore more into relationships. Relationships in family and extended family, Dealing with anger. Show film —Right Here, Right Now.<br>b) Basic expectations in relationships. Seven types of relations.<br>c) Gratitude as a universal value in relationships. Discuss with scenarios. Elicit examples from students' lives.<br>d) Nine universal values in human relationships. Trust as the founding value.<br>e) Concept of acceptance. Unconditional acceptance in relationships.<br>f) Our preconditioning affecting our relationships. Our relationships with subordinate staff, with people of opposite gender, caste, class, race. Movie —Dharm   (set in Varanasi) can be used to show the conflict between reconditioning and relationships. How relationships have the power to force a person to change his preconditioning. |
| 9.  | Concept of prosperity Material goods and knowledge of one's physical needs is essential for feeling of prosperity. What role others have played in making material goods available to me: Identifying from one's own life.  |
| 10. | Idea of Society. What is a society? What constitutes a society? What systems are needed for a society to work? What is the purpose of society and various systems which are working in it? How understanding of Human Nature is important in order to understand the purpose of Society and various social systems? And what happens when this understanding is lacking?  |
| 11. | Idea of decentralization of politics, economics, education, justice etc. Its comparison with centralized systems. The idea of Swaraj. Various social initiatives by NGOs, social organizations and other people. (If time permits)  |
| 12. | Balance in nature<br>a) Balance which already exists in nature.<br>b) How human beings are disturbing the balance. Resource depletion and pollution.<br>Our own role in wastage of electricity, water and in use of plastics. Waste management. (Show episode on city waste from Satyameva Jayate<br>c) Issues like global warming, animal extinction. Show —Story of Stuff   documentary film. —Home   film can also be used.  |

### Suggested Books:

| S. No. | Name of Books/Authors/Publisher   |
|--------|---|
| 1.     | “ The Story of Stuff,” Annie Leonard, Free Press                                    |
| 2.     | “ The Story of My Experiments with Truth, ”Mohandas Karamchand Gandhi, Beacon Press |
| 3.     | “ On Education,” J Krishnamurthy, Official repository                               |
| 4.     | “ Siddhartha,” Hermann Hesse , Bantam Books   |

|     |   |
|-----|---|
| 5.  | “ Old Path White Clouds,” ThichNhatHanh, Parallax Press                                     |
| 6.  | On Education - The Mother Aurobindo Ashram Publication                                      |
| 7.  | “ Diaries of Anne Frank ,” Anne Frank   |
| 8.  | “ Life and Philosophy of Swami Vivekananda,” G S Banhatti, Atlantic                         |
| 9.  | “ Swami Vivekananda on Himself,” Swami Vivekanand , Advaita Ashram                          |
| 10. | “ Small is Beautiful: Economics as if people mattered,” E. F Schumacher, ,HarperPereennial. |
| 11. | “ Slow is Beautiful,” Cecile Andrews ,New society publishers                                |
| 12. | “ JeevanVidya: EkParichaya,” - A.Nagaraj, Jeevan Vidya Prakashan.                           |
| 13. | “ Human Values,” - A.N. Tripathi, New Age Intl. Publishers.                                 |
| 14. | “ Rediscovering India,” - Dharampal, Other India Press                                      |
| 15. | “ Hind Swaraj or Indian Home Rule,”-Mohandas K. Gandhi, Navjeevan publication house         |
| 16. | “ India Wins Freedom,” -Maulana Abdul Kalam Azad,Stosius Inc                                |
| 17. | “ Romain Rolland “- Ramakrishna kijeervani  |
| 18. | “Vivekananda” -Romain Rolland , Advait ashram.  |
| 19. | “Gandhi” - Romain Rolland ,Srishti Publishers & Distributors.                               |
| 20. | “ Autobiography of a Yogi,” ,ParamhansaYogananda, Rider publication.                        |
| 21. | “Gandhi and Question of Science,”-Sahasrabudhe, Other India Press.                          |

**Subject Code: FEC26      Course Title: Universal Human Values 2: Self, Society and Nature**

#### **Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | In Universal Human Values 2 course, the focus is more on understanding society and nature on the basis of self and human relationships. and motivation for the course.-conditioning, and natural acceptance, existence of self and body. Identifying needs and satisfying needs of self and body. Self-observations. Handling peer pressure family. Hostel and institute as extended family. Real life examples, student relationship. Shraddha. Guidance. Goal of education, material order, plant order, animal order and human order, Salient features of each. Human being as cause of imbalance in nature. (Film “Home” can be used.), water, food, mineral resources, Pollution. Role of technology. Mutual enrichment not just recycling, on of needs of the self and needs of the body. Right utilization of resources. Understanding the purpose they try to fulfil, Recapitulation on society. Five major dimensions of human society. Fulfilment of the individual as major goal. Justice in society. Equality in human relationships as naturally acceptable. Establishment of society with abhaya (absence of fear). being through holistic education in just order. |

## Suggested Books:

| S. No. | Name of Books/Authors/Publisher   |
|--------|---|
| 1.     | "Human Values and Professional Ethics "- R R Gaur, R Sangal, G P Bagaria,Excel Books, New Delhi, 2010 |
| 2.     | "Jeevan Vidya: Ek Parichaya,"- A Nagaraj , Jeevan Vidya Prakashan, Amar kantik.                       |
| 3.     | "Human Values," -A.N. Tripathi , New Age Intl. Publishers, New Delhi, .                               |
| 4.     | "The Story of Stuff" -Annie Leonard, Simon and Schuster.  |
| 5.     | "The Story of My Experiments with Truth"-Mohandas Karamchand Gandhi, Beacon Press.                    |
| 6.     | " On Education"-J Krishnamurthy, Official repository.   |
| 7.     | "Siddhartha "- Hermann Hesse, Bantam press.   |
| 8.     | " Old Path White Clouds "- ThichNhatHanh, parallax press.   |
| 9.     | On Education - The Mother Aurobindo Ashram Publication.   |
| 10.    | Diaries of Anne Frank – Anne Frank  |
| 11.    | "Life and Philosophy of Swami Vivekananda,"-G.SBanhatti, Atlantic publisher.                          |
| 12.    | "Swami Vivekananda on Himself," -Swami Vivekananda ,Advait publication.                               |
| 13.    | "Small is Beautiful: Economics as if people mattered,"-E. F Schumacher , Harper Perennial.            |
| 14.    | "Slow is Beautiful" -Cecile Andrews ,New society publishers.  |
| 15.    | "Economy of Permanence" -J C Kumarappa,Serve seva sanghprakashan.                                     |
| 16.    | "Bharat Mein Angreji Raj" - Pandit Sunderlal  |
| 17.    | Mahatma and the Rose plant  |
| 18.    | "The Poet and the Charkha" - M.Gandhi, Mani Bhavan  |
| 19.    | "Rediscovering India" - Dharampal, other India press.   |
| 20.    | "Hind Swaraj or Indian Home Rule," -Mohandas K. Gandhi ,Navjeevan publication house.                  |
| 21.    | "Swaraj"-Arvind Kejriwal , Harper publication.  |
| 22.    | "India Wins Freedom." -Maulana Abdul Kalam Azad, Stosis Inc.  |
| 23.    | "Ramakrishna kijeemani,"- Romain Rolland , Advait Ashram.   |
| 24.    | "Vivekananda" -Romain Rolland , Advait ashram.  |
| 25.    | "Gandhi" -Romain Rolland ,Srishti Publishers & Distributors.  |
| 26.    | " Autobiography of a Yogi,"-ParamhansaYogananda, Rider publication.                                   |

**Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | Human Values and Ethics: Morals, Values, Ethics and Integrity, Need for Value Education for Engineers, Happiness, Prosperity, Harmony.                                    |
| 2.     | Code of Ethics and Professionalism: Professionalism and the Code of Ethics, Technical Education, Human Values and Coexistence, Universal Human Order, Natural acceptance. |
| 3.     | Professional Ethics and Technology: Science, Technology and Professional Ethics Engineering Ethics, Environmental Ethics, Safety, Responsibility and Rights.              |
| 4.     | Case Studies: Holistic Technologies, Eco-friendly production systems, The role of responsible engineers and technologists, Global Issues concerning Engineers.            |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | Professional Ethics, Subramanian, R, Oxford University Press, ISBN13: 978-0-19-808634-5  |
| 2.     | Professional Ethics and Human Values, Govindarajan, M. S. Natarajan, V.S. Senthil kumar PHI, ISBN: 978-81-203-4816-5                 |
| 3.     | Constitution of India and Professional Ethics, Reddy, G.B. and Mohd. Suhaib, IK International Publishing House. ISBN: 81-89866- 01-X |
| 4.     | Introduction to Engineering Ethics (2nd Ed.)Martin, Mike W. and Roland Schingzinger McGraw-Hill ISBN 978-0-07-248311-6               |

**Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | <b>INTRODUCTION</b><br>What is emotional intelligence? Its elements/characteristics/attributes and importance. How to improve emotional intelligence? What is the difference between emotional intelligence and IQ. |
| 2.     | Personal competences (Self-Awareness, Self-Management etc). Social competences (Social Awareness, Relationship Management etc).   |
| 3.     | Implications for Personal, Social, Academic, and Workplace Success.   |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher   |
|--------|---|
| 1.     | Emotional Intelligence Daniel Goleman, Available at Course era created by Indian School of Business |



**Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | The purpose of life: The right to happiness, the sources of happiness, Training the mind for happiness, Reclaiming our innate state of happiness |
| 2.     | Human warmth and compassion: A new model for intimacy, Deepening our connection to others, The value and benefits of compassion                  |
| 3.     | Transforming suffering: Facing suffering, Self-created suffering, shifting perspective, finding meaning in pain and suffering                    |
| 4.     | Overcoming obstacles: Bringing about change, dealing with anger and hatred, dealing with anxiety and building self-esteem                        |
| 5.     | Closing reflections on living a spiritual life: Basic spiritual values   |

**Suggested Books:**

| S.No. | Name of Books/Authors/Publisher   |
|-------|---|
| 1.    | The How of Happiness, by Sonja Lyubomirsky (Penguin Press, 2008)                                      |
| 2.    | Born to Be Good, by Dacher Keltner (W.W. Norton, 2009)  |
| 3.    | The Compassionate Instinct, Dacher Keltner, Jason Marsh, Jeremy Adam Smith (eds.) (W.W. Norton, 2010) |

**Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | INTRODUCTION TO NUTRACEUTICALS<br>Definitions, synonymous terms, basis of claims for a compound as a nutraceutical, regulatory issues for nutraceuticals  |
| 2.     | FUNCTIONAL FOODS<br>Definition, Relation of functional foods & Nutraceutical (FFN) to foods & drugs. Applications of herbs to functional foods. Concept of free radicals and antioxidants; Nutritive and Non-nutritive food components with potential health effects. Effect of processing on Nutrients.  |
| 3.     | FOOD AS REMEDIES<br>Nutraceuticals bridging the gap between food and drug, Nutraceuticals for cardiovascular diseases, cancer, diabetes, cholesterol management, obesity, joint pain, immune enhancement, age-related macular degeneration, endurance performance and mood disorders – compounds and their mechanisms of action, dosage levels, contraindications if any etc. |
| 4.     | ANTI-NUTRITIONAL FACTORS PRESENT IN FOODS<br>Types of inhibitors present in various foods and how they can be inactivated. General idea about role of probiotics and prebiotics as nutraceuticals. Recent advances in techniques & feeding of substrates. Assessment of nutritional status and Recommended Daily allowances.  |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher   |
|--------|---|
| 1.     | Dietary supplements and functional foods/ Geoffrey P. Webb/ Blackwell Publishing, 2006.                                 |
| 2.     | Bioprocesses and Biotechnology for Functional Foods and Nutraceuticals/ Neeser, JR and German, BJ. Marcel Dekker, 2004. |
| 3.     | Handbook of Nutraceuticals and Functional Foods/ Robert E.C. 2 <sup>nd</sup> Ed./Wildman, 2006.                         |

**Subject Code: FEC31****Course Title: Food Chemistry****Details of Course:**

| S.No. | Contents   |
|-------|--|
| 1.    | INTRODUCTION OF FOOD CHEMISTRY<br>Introduction to major food components(water, proteins, carbohydrates, oil and fat) and their importance, prescribed daily intake of each constituent, coloring and flavoring agents, preservatives                 |
| 2.    | WATER<br>Water in Food, Physical properties of water, Characteristics of potable water, Water activity, Moisture content of various foodstuff  |
| 3.    | PROTEIN<br>Amino acids: definition, Structure, Classification and properties<br>Protein: peptide bond ,structure , physical and chemical properties, Analysis , Protein content of some common animal and plant food stuff, Denaturation of proteins |
| 4.    | CARBOHYDRATE<br>Definition, Classification, Structure of monosaccharides, disaccharides, oligosaccharides and Polysaccharides, Sources of Carbohydrate, Analysis, Glycogen(animal Starch), glycosidic linkage,                                       |
| 5.    | OILS AND FATS<br>Chemical nature of Oils and Fats, classification , fatty acid composition of common Oils and Fats, Rancidity of Oils , Analysis   |
| 6.    | VITAMINS, MINERALS AND ADDITIVES<br>Introduction, Classification, Occurrence, Structure and function in brief ,Food Coloring and Flavoring agents, Food preservatives, Stabilizers   |

**Suggested Books:**

| S.No. | Name of Books/Authors/Publisher  |
|-------|--|
| 1.    | O.R. (2008) Fennema's Food Chemistry 4th Edition, Fennema, CRC Press   |
| 2.    | P. (2004) Food Chemistry 3rd Ed. (translation of fifth German edition), Belitz, H-D., Grosch, W. &Schieberle, Springer (TX545 .B3513 2004) |

**Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | BASIC CONCEPT<br>Premises, Conclusion and Arguments, Deduction and Induction, Validity, Truth and Soundness  |
| 2.     | CATEGORICAL PROPOSITIONS<br>The Components of Categorical Propositions, Quality, Quantity and Distribution, The Traditional Square of Opposition, Conversion, Obversion and Contraposition |
| 3.     | CATEGORICAL SYLLOGISMS<br>Standard Form, Mood and Figure, Rules and Fallacies ( Formal and Informal Fallacy)   |
| 4.     | PROPOSITIONAL LOGIC<br>Symbols and Translation, Truth Functions ( Logical Connectives), Truth Tables for Statements and Statement-Forms, Truth Tables for Arguments and Arguments-Forms    |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher                        |
|--------|--|
| 1.     | Introduction to Logic, Copi.I.M (2014), Pearson, India |
| 2.     | Introduction to Logic, Copi.I.M (2014), Pearson, India |

**Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | CORPORATE GOVERNANCE<br>Governance Theories and Evolution of Corporate Governance; Concept and Features of Good Governance, Corporate Board- Role of Directors, Stakeholders and their Responsibilities, Corporate Governance Issues and Consequences, Whistle-Blowing, Evaluation of Boards |
| 2.     | BUSINESS ETHICS<br>Introduction, Ethical Theories and Ethical Dilemmas in Business, Ethical Decision Making, Individual and Situational Influences on Decision Making, Ethical Conduct, Ethics in Action   |
| 3.     | CORPORATE SOCIAL RESPONSIBILITY<br>Business & Society: Concept of Corporate Social Responsibility (CSR), Evolution of CSR, Profit Maximization vs. Social Responsibility, Formulating Socially Responsive Business Strategies, Law and CSR, Major CSR Initiatives in India                   |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | Business ethics: Concepts and cases (Vol. 111). Upper Saddle River, Velasquez, M.G. and Velazquez, M., 2002. NJ: Prentice Hall |

|    |  |
|----|--|
| 2. | Business ethics: Managing corporate citizenship and sustainability in the age of globalization. Crane, A. and Matten, D., 2016. Oxford University Press. |
| 3. | Corporate Governance: Principles, Policies and Practices, Fernando, A.C., 2012. 2/e. Pearson Education India.  |

**Subject Code: FEC34      Course Title: Computer Fundamentals**

**Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | <p>Historical Evolution of Computing Systems: Overview of Data Processing, History of Computing, Computer Generations; Characteristics of Computer, Anatomy of Computer, Classification of Computers.</p> <p>Number Systems and Codes: Introduction, Number Systems and its types, and inter-conversion of Number Systems; ASCII and EBCDIC codes.</p> <p>Input and Output Devices: Concept of Input/Output, Types of Input Devices; Output Devices – Printers, Plotters and Monitors.</p>   |
| 2.     | <p>Memory and Storage Devices: Characteristics of memory systems, memory hierarchy, Types of Memory – RAM, ROM, etc.; Magnetic Disks, Magnetic Tapes, Optical Disks; Concept of Cache Memory and Virtual Memory.</p> <p>Software and Operating System Concepts: Introduction, Software Types, Language translators, System Utility Software, Application Software; Operating System – Characteristics, its functions, and its classification; User Interfaces – CUI and GUIs. DOS and Windows</p> <p>Operating systems.</p>  |
| 3.     | <p>Using Word Processing: Opening and Closing of documents, Text creation and Manipulation, Moving Around in a Document, Formatting of text, Table handling, Spell check, language setting and thesaurus, Handling Multiple Documents, Printing of word document.</p> <p>Using Spreadsheet tool: Basics of Spreadsheet; Manipulation of cells, Formulas and Functions, Editing of Spread Sheet, Page setups, header and footer, printing of Spread Sheet.</p> <p>Using Slide Presentation Tool: Basics of PowerPoint, Preparation and Presentation of Slides, Slide Show, Formatting and Clip Arts, Taking printouts of presentation / handouts</p>  |
| 4.     | <p>Communication and Networks: Data Communication, Transmission Modes, Basics of Computer networks, types of computer network - LAN, MAN, WAN; Network Topologies and Applications of Computer Networks.</p> <p>Internet Basics: Concept of Internet, Application of Internet, WWW, Web-sites and URLs, Search Engine, Using Electronic mails, Instant Messaging, Web Browsing software, Surfing the Internet.</p> <p>Social Concern: Positive and Negative Impacts of Computer Technology, Computer Crimes, Computer Virus: Definition, Types of viruses, Characteristics of viruses, anti-virus software.</p> <p>Computer Applications: Data Analysis, Sports, Research, Education, Business, Medicines &amp; Health Care, Weather Forecasting, Military</p> |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | Gill: Handbook of Computer Fundamentals, Nasib Singh ,Khanna Books Publishing Co. (P) Ltd., New Delhi, 2016.   |
| 2.     | Computer Fundamentals,P.K Sinha, BPB Publications  |
| 3.     | Computing Fundamentals and Programming in C,Nasib Singh Gill, Khanna Books Publishing Co. (P) Ltd., New Delhi. |
| 4.     | Fundamentals of Computers, V. Rajaraman, PHI   |
| 5.     | Microsoft Office – Complete Reference – BPB Publication  |
| 6.     | Introduction to Computer, Norton Peter ,McGraw-Hill.   |
| 7.     | Introduction to Computers, Leon, Alexis & Leon, Mathews,Leon Tech World.                                       |
| 8.     | Data Processing and Information Technology, C.S. French, BPB Publications                                      |

**Subject Code: FEC35      Course Title: Geography in Everyday Life**

**Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | Geography and Environment; Geography and Social Sciences; Geography and Development; Geography and Planning |
| 2.     | Geography and Governance; Geography and Globalization; Geography and Disasters; Geography and Cartography   |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | An Introduction to Human Geography. 4th edition.Daniels, Peter, Michael Bradshaw, Denis Shaw, and James Sidaway. 2012. Pearson Education Ltd. Harlow, England. |
| 2.     | Human Geography: the basics,Herod, Andrew. 2009. Routledge, New York.  |
| 3.     | Understanding Development: Issues and Debates, Hopper, Paul. 2012. Polity Press, Cambridge, UK.  |
| 4.     | Geography Development Public Policy: Select Essays of Gopal Krishan. RK Books, Kant, Surya and Nina Singh ed. 2015. New Delhi.                                 |
| 5.     | Vulnerable India, Kapur, Anu. 2010. Sage Publications, New Delhi.  |
| 6.     | Atlas of Cities. Knox, Paul. 2014. Princeton University Press.   |
| 7.     | Oxford Atlas of the World. 2015. 22nd edition. Oxford University Press.  |

**Subject Code: FEC36      Course Title: Psychology for Everyday Living**

**Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | Science of Psychology<br>Definition, Goals, Basic and Applied areas of Psychology.<br>Self<br>Nature of self, Self-Regulation and Personal Growth.  |
| 2.     | Intelligence<br>Definition; Theories: Theory of multiple intelligences, Triarchic theory, Emotional Intelligence.<br>Administration<br>Any one test of Intelligence/Emotional Intelligence. |
| 3.     | Personality<br>Definition, Theories, Trait and Type, Eysenck; Psychoanalytical, Freud<br>Humanistic: Maslow.<br>Administration: Any one objective test of Personality.                      |
| 4.     | Stress and Coping: Nature of Stress; Sources; Stress reactions; Factors that influence reactions to stress.<br>Coping with stress: Modifying environment; Altering lifestyle.               |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher                                     |
|--------|---|
| 1.     | General Psychology. Khatoon, N. (2012). Pearson: Delhi.             |
| 2      | Psychology. Baron, R.A. and Misra, G. (2016). Pearson: Delhi.       |
| 3      | Psychology. Ciccarelli, S.K. and Meyer, G.E. (2006). Pearson: Noida |

**Subject Code: FEC37      Course Title: French**

**Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | GRAMMAR AND VOCABULARY<br>Familiar expressions and basic phrases eg. Number, time, Directions etc; Tense forms, Sentence formation.                                  |
| 2.     | ORAL COMMUNICATION<br>Pronunciation, Interaction in formal situations, Presentation and Negotiation Skills.  |
| 3.     | READING SKILLS<br>Reading French language texts with basic level proficiency, finding information from paragraph and relevant answers to questions.                  |
| 4.     | WRITTEN COMMUNICATION<br>Describing events, experiences, providing reasons and explanations for opinions or decisions, Writing formal letter and drafting proposals. |

**Suggested Books: To be decided by the Instructor****Subject Code: FEC38****Course Title: Mandarin Chinese****Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | INTRODUCTION TO MANDARIN<br>Introduction to Chinese languages, history and culture; Professional communication in the 21 <sup>st</sup> C China        |
| 2.     | SPOKEN FLUENCY<br>Vocabulary, Phrases, Tones and Pronunciation; Telephone Skills; Common Phrases and Etiquettes                                       |
| 3.     | WRITTEN COMMUNICATION<br>Reading and Writing Emails, Business and Formal Letters  |
| 4.     | CROSS-CULTURAL COMMUNICATION<br>Formal Greetings and standard Expressions; sector specific terminology; Essential Presentation and negotiation Skills |

**Suggested Books: To be decided by the Instructor****Subject Code: FEC39****Course Title: Japanese****Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | Japanese Greetings; Basic sentence patterns to be applied in self-introduction, identifying things; time of the day; calendar; counting using Japanese numerical classifiers; describing things; making comparisons; talking of daily activities; kinship terms used for address and reference; seasons; giving and receiving; shopping; making requests; talking of one's likes and dislikes Objective: To introduce Japanese language at the basic level, to enable students to read and write the phonetic scripts, Hiragana and Katakana, and approx.100 Kanji, to teach some aspects of Japanese society and culture |
| 2.     | Simple conversation in situations such as describing things, making comparisons, talking of daily activities, giving and receiving of gifts, talking of illnesses and visit to a doctor, shopping, making requests, talking of one's likes and dislikes, talking on telephone etc. Objective: To enable students to comprehend and make simple conversation in different situations using basic sentence patterns.  |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher                               |
|--------|---|
| 1.     | Nihongo I, Kokusaigakuyukai, and other supplementary material |

**Subject Code: FEC40****Course Title: German****Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | Grammar and Vocabulary<br>Familiar expressions and basic phrases eg. Number, time, Directions etc; Tense forms, Sentence formation.                                  |
| 2.     | Oral Communication<br>Pronunciation, Interaction in formal situations, Presentation and Negotiation Skills.  |
| 3.     | Reading Skills<br>Reading German language texts with basic level proficiency, finding information from paragraph and relevant answers to questions.                  |
| 4.     | Written Communication<br>Describing events, experiences, providing reasons and explanations for opinions or decisions, Writing formal letter and drafting proposals. |

**Suggested Books: To be decided by Instructor****Subject Code: FEC41****Course Title: Spanish****Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | GRAMMAR AND VOCABULARY<br>Familiar expressions and basic phrases eg. Number, time, Directions etc; Tense forms, Sentence formation.                                  |
| 2.     | ORAL COMMUNICATION<br>Pronunciation, Interaction in formal situations, Presentation and Negotiation Skills.  |
| 3.     | READING SKILLS<br>Reading Spanish language texts with basic level proficiency, finding information from paragraph and relevant answers to questions.                 |
| 4.     | WRITTEN COMMUNICATION<br>Describing events, experiences, providing reasons and explanations for opinions or decisions, Writing formal letter and drafting proposals. |

**Suggested Books: To be decided by Instructor**



**Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | ENTREPRENEURSHIP<br>Concept, knowledge and skills requirement; characteristics of successful entrepreneurs; role of entrepreneurship in economic development; entrepreneurship process; factors impacting emergence of entrepreneurship.  |
| 2.     | STARTING THE VENTURE<br>Generating business idea – sources of new ideas, methods of generating ideas, opportunity recognition; environmental scanning, competitor and industry analysis; feasibility study – market feasibility, technical/operational feasibility, financial feasibility: drawing business plan. |
| 3.     | FUNCTIONAL PLANS<br>Marketing plan – marketing research for the new venture, steps in preparing marketing plan, contingency planning; organizational plan – form of ownership, designing organization structure; financial plan – cash budget, working capital.   |
| 4.     | SOURCES OF FINANCE<br>Debt or equity financing, commercial banks, venture capital; financial institutions supporting entrepreneurs; legal issues – intellectual property rights patents, trademarks, copyrights, trade secrets, licensing.  |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | Entrepreneurship, Hisrich, Robert D., Michael Peters and Dean Shepherd, Tata McGraw Hill, New Delhi    |
| 2.     | Entrepreneurship, Barringer, Brace R., and R. Duane Ireland, Pearson Prentice Hall, New Jersey (USA)   |
| 3.     | Entrepreneurship, Lall, Madhurima, and Shikha Sahai, Excel Books, New Delhi                            |
| 4.     | Entrepreneurship Development and Small Business - Charantimath, Poornima, Pearson Education, New Delhi |
| 5.     | Entrepreneurship, Kuratko, Donand and Richard Hodgetts, Cengage Learning India Pvt. Ltd., New Delhi    |

**Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | Introduction: Meaning, scope and significance of Public Administration; Wilson's vision of Public Administration; Evolution of the discipline and its present status; New Public Administration; Public Choice approach; Challenges of liberalization, Privatization, Globalization; Good Governance: concept and application; New Public Management. |
| 2.     | Evolution of Indian Administration: Kautilya's Arthashastra; Mughal administration; Legacy of British rule in politics and administration – Indianization of public services, revenue administration, district administration, local self-government.   |

|    |   |
|----|---|
| 3. | Philosophical and Constitutional framework of government: Salient features and value premises; Constitutionalism; Political culture; Bureaucracy and democracy; Bureaucracy and development.  |
| 4. | Union Government and Administration: Executive, Parliament, Judiciary – structure, functions, work processes; Recent trends; Intragovernmental relations; Cabinet Secretariat; Prime Minister’s Office; Central Secretariat; Ministries and Departments; Boards; Commissions; Attached offices; Field organizations.  |
| 5. | State Government and Administration: Union-State administrative, legislative and financial relations; Role of the Finance Commission; Governor; Chief Minister; Council of Ministers; Chief Secretary; State Secretariat; Directorates.   |
| 6. | Civil Services: Constitutional position; Structure, recruitment, training and capacity-building; Good governance initiatives; Code of conduct and discipline; Staff associations; Political rights; Grievance redressal mechanism; Civil service neutrality; Civil service activism.  |
| 7. | Rural Development & Urban Local Government: Institutions and agencies since independence; Rural development programmes: foci and strategies; Decentralization and Panchayati Raj; 73rd Constitutional amendment. Municipal governance: main features, structures, finance and problem areas; 74th Constitutional Amendment; Global local debate; New localism; Development dynamics, politics and administration with special reference to city management. |
| 8. | Law and Order Administration: British legacy; National Police Commission; Investigative agencies; Role of central and state agencies including paramilitary forces in maintenance of law and order and countering insurgency and terrorism; Criminalization of politics and administration; Police-public relations; Reforms in Police.   |
| 9. | Significant issues in Indian Administration: Values in public service; Regulatory Commissions; National Human Rights Commission; Problems of administration in coalition regimes; Citizen-administration interface; Corruption and administration; Disaster management.   |

### Suggested Books:

| S. No. | Name of Books/Authors/Publisher                                   |
|--------|---|
| 1.     | Introduction To The Constitution of India, D D BASU               |
| 2.     | Public Administration – Laxmikanth.                               |
| 3.     | New Horizons Of Public Administration – Mohit Bhattacharya.       |
| 4.     | Contemporary Debates in Public Administration – Dhameja Alka.     |
| 5.     | Indian Administration – Maheswari.                                |
| 6.     | Indian Public Administration: Institutions and Issues- R.K. Arora |
| 7.     | Public Administration and Public Affairs-Nicholas Henry           |

**Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | Introduction, Computers and its Impact in Society, Overview of Computer and Web Technology, Need for Cyber Law, Cyber Jurisprudence at International and Indian Level.  |
| 2.     | Cyber Law - International Perspectives, UN & International Telecommunication Union (ITU) Initiatives, Council of Europe - Budapest Convention on Cybercrime, Asia-Pacific Economic Cooperation (APEC), Organization for Economic Co-operation and Development (OECD), World Bank, Commonwealth of Nations |
| 3.     | Constitutional & Human Rights Issues in Cyberspace, Freedom of Speech and Expression in Cyberspace, Right to Access Cyberspace – Access to Internet, Right to Privacy, Right to Data Protection   |
| 4.     | Cyber Crimes & Legal Framework, Cyber Crimes against Individuals, Institution and State, Hacking, Digital Forgery, Cyber Stalking/Harassment, Cyber Pornography, Identity Theft & Fraud, Cyber terrorism, Cyber Defamation, Different offences under IT Act, 2000   |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | Computer Law, Chris Reed & John Angel, OUP, New York, (2007).                                      |
| 2.     | Cyber Laws, Justice Yatindra Singh, Universal Law Publishing Co, New Delhi, (2012)                 |
| 3.     | Legal Dimensions of Cyber Space, Verma S, K, Mittal Raman, Indian Law Institute, New Delhi, (2004) |
| 4.     | Cyber Law, Jonthan Rosenoer, Springer, New York, (1997).   |
| 5.     | The Information Technology Act, 2005: A Handbook, Sudhir Naib, OUP, New York, (2011)               |
| 6.     | Information Technology Act, 2000, S. R. Bhansali, University Book House Pvt. Ltd., Jaipur (2003).  |
| 7.     | Cyber Crimes and Law Enforcement, Vasu Deva, Commonwealth Publishers, New Delhi, (2003).           |

**Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | Introduction to engineering design process - problem space of engineering, engineering design process, multidisciplinary facet of design |

|    |  |
|----|--|
| 2. | Mechanism: different types of mechanisms (focus on linkages), introduction to linkage software, four bar mechanisms  |
| 3. | Platform based development – introduction to Arduino and Arduino IDE, working with LED and switches, ADC for data processing, Sensor and its types, Actuators control and Bluetooth interfacing with Arduino |
| 4. | Project Management – importance of teamwork, project life cycle, project management, different type of charts and their importance, using software tools: MS excel, Gantt project, format of project         |
| 5. | 3D printing technology   |
| 6. | Sustainability and ethics  |

### Suggested Books: To be decided by the Instructor

**Subject Code: FEC46      Course Title: Technical Communication**

### Details of Course:

| S. No. | Contents  |
|--------|---|
| 1.     | English for Professional Purposes:<br>1. Technical Communication- Methods, Strategies and Skills<br>2. Communication in Global Contexts- Social, Cultural, Political and Technical, especially in formal set up   |
| 2.     | Communication at the Workplace: Oral and Written:<br>Written Communication- Letters, Orders (Sale/Purchase) Report Writing, Technical proposals Resume, SOP, Memo, Notice, Agenda,<br>Minutes, Note Taking/Making, Oral Communication: Seminars, Conferences, Meetings, Office Etiquettes/ Netiquettes, Presenting Written Material Negotiation, Demonstration, Group Discussion, Interview |
| 3.     | Group Discussion and Report Writing:<br>Group Discussion ( Continuous assessment through the semester)<br>Minor Report Writing ( to be submitted before Mid- Semester Examination)<br>Major Report writing ( To be submitted before End Semester Examination)   |

### Suggested Books:

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | Technical Communication: Principles and Practice Raman, Meenakshi and Sangeeta Sharma, Oxford University Press, ISBN-13: 978-0-19-806529-6 |
| 2.     | Writing to Get Results, (3rd Ed) Blicq, Ron S., Lisa A. Moretto, John Wiley and Sons, Inc. ISBN 0-7803-6020-6                              |
| 3.     | Effective Technical Communication: A Guide for Scientists and Engineers , Mitra, Barun K. OUP: Delhi ISBN-13: 978-0-19-568291-5            |

|    |  |
|----|--|
| 4. | Personality Development and Soft Skills, Mitra, Barun K. New Delhi:Oxford University Press.ISBN-9780198060017                          |
| 5. | The Essence of Effective Communication, Ludlow, Ron and Fergus Panton. Prentice Hall: PHI. ISBN-81-203-0909-X                          |
| 6. | Advanced Technical Communication, Gupta, Ruby. Foundation Books, CUP. ISBN 978-81-7596-733-5   |
| 7. | Soft Skills: Enhancing Employability, Rao, M.S. Connecting Campus with Corporate ISBN: 978-93-80578-38-5                               |
| 8. | Developing Communication Skills (2nd Ed), Mohan, Krishna and Meera Bannerji, Macmillan Publishers India Ltd. ISBN 13: 978=0230-63843-3 |

**Subject Code: FEC47**

**Course Title: Values Driven Leadership**

#### **Details of Course:**

| S. No. | Contents  |
|--------|---|
| 1.     | INTRODUCTION AND RESOLVING CONFLICTS OF VALUES WITHIN AND BETWEEN OTHER STAKEHOLDERS<br>Introduction to Concepts like Morals, Values, Ethics, Trust, Integrity, Justice, Fairness, Character, Civility and Community, Conflicts, Stakeholders, Issues of Conflicts, Resolving Conflicts of Values within and between other Stakeholders |
| 2.     | WORKFORCE DIVERSITY AND CORPORATE SOCIAL RESPONSIBILITY<br>Diversity, Types of Diversity, Benefits of Workforce Diversity, Corporate Social Responsibility, Milton Friedman's Approach, Companies Act and Corporate Social Responsibility   |
| 3.     | MANAGING VALUES THROUGH INCENTIVES AND INFORMAL MECHANISMS<br>Managing Values, Incentives, Material Incentives, Informal Mechanisms, Managing Values through Incentives and Informal Mechanisms   |
| 4.     | SPEAKING THE TRUTH AND VALUES BASED MARKETING<br>Truth, Unethical Behavior, Situations where Truth is dangerous for the organization, Importance of Speaking the Truth, Ethical implications of Marketing Values; Importance of Values Based Marketing, Thomas Donaldson's Ethical Algorithm  |
| 5.     | BUILDING SOCIAL CAPITAL<br>Social Capital, Constituents of Social Capital, Importance of Social Capital for an Organization, Use Organizational Intellectual Capital to Create Value  |

#### **Suggested books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | Values-Driven Leadership by Peter Evans, Doug Hargreaves, Tilde University Press, ISBN-13:9780734610867                            |
| 2.     | From Values to Action: The Four Principles of Values-Based Leadership, Jossey-Bass; 1 edition, John Wiley                          |
| 3.     | The Power of Character in Leadership: How Values, Morals, Ethics, and Principles Affect Leaders, Whitaker House; Alternate edition |

**Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | Origin of Life and Evolution; Recent developments in biology; Computers in biology   |
| 2.     | Basics of Cell; Structure and function of Prokaryotic and Eukaryotic cells and its manipulation  |
| 3.     | Introduction to ecology; Environmental biology; Mitigation of pollution using biotechnology; Sustainable energy management; Biodiesel; Electric Vehicles |
| 4.     | Physiology of biological system; Genetics and Immunology; Health and disease; Medicinal Plants   |
| 5.     | Applications of biotechnology in human nutrition, biopharmaceuticals and industry; bioethics   |

**Suggested Books:**

| S. No. | Name of Books/Authors/Publisher  |
|--------|--|
| 1.     | Molecular Biology of the Cell by B. Alberts, D. Bray, J. Lewis, M. Roff, K. Roberts and J.D. Watson. Publisher: Garland Publishing Company (2008). |
| 2.     | Biochemistry, 5th Ed, J. L. Tymoczko, J. M. Berg and L. Stryer, W. H. Freeman & Co, 2002.  |
| 3.     | Lehninger Principles of Biochemistry, D. L. Nelson and M. M. Cox, Macmillan Worth, 2000.   |
| 4.     | Molecular Biology of the Gene, 4th Ed, N. Hopkins, J. W. Roberts, J. A. Steitz, J. Watson and A. M. Weiner, Benjamin Cummings, (1987)              |
| 5.     | Cell in Development and Inheritance by E.B. Wilson. Publisher: MacMilan (2007)   |
| 6.     | Kuby Immunology by T.J. Kindt, B.A. Osborne and R.A. Goldsby. W.H. Freeman. (2006)   |

**Details of Course:**

| S. No. | Contents   |
|--------|--|
| 1.     | Representing the observed, Representing concept- Sketching for ideation, Mimetic Imagery and Abstraction, Memory and imagination, object representation, representing nature, figure drawing.                  |
| 2.     | One point, two point, and three point perspective, Grid based Drawing, Migration of forms and Image manipulation, Metamorphosis through form, color and structure,   |
| 3.     | Basics of Rendering - Shading, filling areas, shading a cube, cylinder, and sphere, basics of shadows on cube and cylinder Shading corners, cones, sphere, combined shapes, different materials and vignettes. |
| 4.     | Exposure and demonstration to Illustration and Image making software<br>Vector illustrations, Digital sketching.   |
|        | <b>Total</b>   |

## Suggested Books

| S.No. | Name of Authors / Books / Publishers   |
|-------|--|
| 1.    | Betty Edwards, New Drawing on the Right Side of the Brain2002  |
| 2.    | T. C. Wang, Pencil Sketching, John Wiley & Sons1997  |
| 3.    | Wily Pogany, The Art of Drawing, Madison Books1996   |
| 4.    | R. Kasprin, Design Media – Techniques for water colour, pen and ink, pastel and coloured markers, John Wiley & Son1999 |
| 5.    | D. K. Francis Ching, Design Drawing, John Wiley & Sons, 1998   |

**Subject Code: FEC50      Course Title: Tinkering & Elements of Design**

## Details of Course:

| S.No. | Contents  | Contact weeks |
|-------|---|---------------|
| 1.    | What is tinkering? Product tear down, act of disassembling, Exercises in lateral thinking; Exercises in creative problem solving;                         | 3             |
| 2.    | Exercises in craftsmanship; Problem identification in the real world. Understand Links, Mechanism, structure and its applications                         | 3             |
| 3.    | How to find creative solutions by doing; How to inculcate the habit of making; introduction to the maker and DIY communities;                             | 4             |
| 4.    | Building simple models using off-the-shelf mechanical, electrical and electronics DIY kits; Building working solutions to perceived problems in the world | 4             |
|       | <b>Total</b>  | <b>14</b>     |

## Books Recommended

| S.No. | Name of Authors / Books / Publishers  |
|-------|---|
| 1.    | Garratt J. Design and Technology, Cambridge University Press1996                        |
| 2.    | Edward de Bono, How to Have Creative Ideas: 62 exercises to develop the mind, RHUK,2014 |
| 3.    | Don Norman, The Design of Everyday Things, Basic Books,2014                             |
| 4.    | Edward de Bono, Lateral Thinking, Penguin UK,2010                                       |

**Details of Course:**

This course is designed as practical course and therefore no regular classes will be conducted. However, few classes will be conducted on following topics: Starting small business, planning, organizing, and managing human resources. Additionally, few motivational lectures in the form of success stories will be conducted for the students.

A group of maximum two students who registers for this course will be given an initial seed money upto Rs 10,000/- to start a small business. This will help students in realizing their entrepreneurship potential. The student will submit a Business Plan in the first week of the commencement of academic session. A group of maximum two (02) students can register for this elective at the beginning of I-III semester. The registered student/team should conceptualize a business idea and submit a proposal in the prescribed format in the office of Dean (UG) within 1<sup>st</sup> week of commencement of semester registration. A Mentor Committee, comprising of (i) Chairperson(s) (ii) A faculty member/course coordinator and (iii) External expert will approve/reject proposals based on the merits and expected outcome of the proposal.

The same committee may also assign the maximum possible grades for the course. The student shall submit a detailed project report at the end semester for evaluation.

The University will not be responsible for loss beyond the seed money. However, the profit will be divided proportionally.

**Reference book:**

Small Business Management an Entrepreneur's Guidebook by Byrd Megginson, McGraw-Hill, Irwin. ISBN 978-0-07-802909-7.

**Details of Course:**

The students shall be specifically working for “**Centre for Extension and Outreach Activities**”. The registered students shall be working in the field of Training, Coaching, Teaching, Learning and any other activity in the nearby villages, schools and community.

**इकाई 1 देवनागरी लिपि वर्तनी और वर्णमाला**

- (i) हिंदी वर्णमाला, स्वर, व्यंजन, विराम चिह्न, हिंदी वर्णमाला का रोमन में परिचय
- (ii) हिंदी पढ़ना, लिखना, छोटे शब्द और वाक्य बनाना, मुख्य फूलों, फलों, सब्जियों, त्योहारों, रंगों, अनाजों, खेलों, ऋतुओं के नाम, हिंदी-गिनती, परिभाषिक शब्दावली सूची (100 शब्द - 50 हिंदी- अंग्रेज़ी, 50 अंग्रेज़ी -हिंदी)
- (iii) अनेक शब्दों के लिए एक शब्द, विलोम शब्द, पर्यायवाची शब्द, समानार्थी शब्द, स्त्रीलिंग शब्द, पुल्लिंग शब्द
- (iv) मुहावरे लोकोक्तियाँ 25-25 की सूची



## इकाई -२: हिंदी वार्ता लाप

अपना एवं राज्य / देश का परिचय, मेरा परिवार, किसी दुकानदार से बातचीत, किसी कार्यालय (बैंक, पोस्टऑफिस विश्वविद्यालय इत्यादि के कर्मचारी / अधिकारी से बातचीत, किसी अस्पताल में बातचीत, मोबाइल / टेलीफोन पर बातचीत, किसी रेस्टोरेंट / मॉल / होटल आदि में बातचीत, किसी दर्शनीय स्थल पर बातचीत, भारतीय या स्वदेशी मौसम विषयक बातचीत, मेट्रो / रेल / हवाई यात्रा विषयक अनुभव पर बातचीत

इकाई-३ : हिंदी चलचित्र : प्रदर्शन के माध्यम से व्याहारिक हिंदी का ज्ञान

इकाई-४: समाज, शिक्षा और संस्कृति (लेखनकला)

- i) किसी पर्व / उत्सव के विषय में लेखन, किसी नगर / देश के दर्शनीय स्थलों का लिखित परिचय, राज्य / देश के सांस्कृतिक वर्णन, विश्व के प्रतिष्ठित व्यक्ति / व्यक्तियों का परिचय, किसी फिल्म का कथानक / कहानी
- ii) संवाद - लेखन - शिक्षक से संवाद, माता-पिता से संवाद, मित्र, डॉक्टर, लैब्रियन से संवाद, पर्यटन- गाइड से बातचीत

## प्रस्तावित पुस्तक :-

1. स्वयं हिंदी सीखें : प्रोफेसर बीजगन्नाथन
2. अंग्रेजी – हिंदी शब्द कोष : फादर का मिलबुल्के
3. अंग्रेजी – हिंदी शब्द कोष : डॉक्टर भोलानाथ तिवारी, श्री महेंद्र चतुर्वेदी
4. मानक बर्तनी : केंद्रीय हिंदी निदेशालय, मानव शंसाधन विकाश मंत्रालय
5. वार्तालाप तथा देवनागरी लिपि: डॉक्टर विकाश शर्मा, श्रीमती कंचन सेठी
6. वृहत हिंदी कोष : केंद्रीय हिंदी निदेशालय
7. बेसिक हिंदी कोर्स फॉर फोरेनेर्स : केंद्रीय हिंदी इंस्टिट्यूट, आगरा, उत्तर प्रदेश

Subject Code: FEC 54

Course Title: “Negotiation and Leadership”

### Details of Course:

| S. No. | Contents  | Contact weeks |
|--------|---|---------------|
| 1.     | <b>Negotiation Fundamentals</b> Key concepts and core vocabulary of negotiation process, deal-making and dispute resolution, Assumptions and biases that are barriers to effective negotiation, Collaborative approaches, risk & opportunities to achieve win-win outcomes                                  |               |
| 2.     | <b>Negotiation Canvas</b> Introduction of framework for negotiation preparation and how to use it, Elements of negotiation canvas i.e relationship, alternatives, legitimacy, options, interests among others, Difference between position and interests  |               |
| 3.     | <b>Managing critical moments</b> <ul style="list-style-type: none"><li>• Types of negotiation approaches used by negotiators</li><li>• Critical moments that can make or break the deal</li><li>• How to identify these critical moments</li></ul> Strategies to manage critical moments in the negotiation |               |

|    |   |           |
|----|---|-----------|
| 4. | <b>Effective Communication and Relationship Building</b><br>Role of communication and relationship in negotiation, Understanding the other party's psychology to understand their interests, build trust and improve the scope of the negotiation, Unconditionally constructive behaviours, Methods of building trust, and empathy, Overcoming communication barriers, difficult behaviours and information asymmetry |           |
| 5. | <b>Discovering, creating and claiming value</b><br>Methods of value discovery during negotiation, How is value divided and claimed between the negotiating parties?, What are the trade-offs, mutual gains and contingencies?, Concept of distributive bargaining, equitable solutions, and ZOPA (zone of possible agreement), Biases and enemies of value creation   |           |
| 6. | <b>Complex Negotiations</b><br>Strategies for negotiations are not straightforward, involve several issues, include multiple stakeholders, and /or involve powerful parties, Hofstede's Culture dimensions, Dealing with people with difficult behaviours.  |           |
| 7. | <b>Managing Alternatives</b><br>Concept of BATNA (Best Alternative to Negotiated Agreement), Methods to evaluate alternative options/offers, Management of one's alternatives and other party's alternatives during negotiation.  |           |
| 8. | <b>Legitimacy and Building Commitment</b><br>When to say yes to agreed terms, and when to walk away, Criteria for decision-making on negotiated terms, Assessment of the legitimacy of negotiated terms, Leading all parties to commit to the negotiated agreement, Steps from plan to execution  |           |
|    | <b>Total</b>  | <b>14</b> |

## Books Recommended

| S.No. | Name of Authors / Books / Publishers  |
|-------|---|
| 1.    | Getting to Yes: <i>Negotiating Agreement Without Giving in</i> by Roger Fisher, William L. Ury, and Bruce Patton. Penguin Books                                   |
| 2.    | Difficult Conversations: How to Discuss what matters most by Douglas Stone, Bruce Patton, Sheila Heen. Penguin Books  |
| 3.    | Value Negotiation: <i>How to Finally Get the Win-Win Right</i> by Horacio Falcão. Pearson Education   |
| 4.    | <b>Articles</b><br>1. <u>The Seven Myths of Win-Win Negotiations</u> , by Horacio Falcão<br>2. <u>Control the Negotiation before it begins</u> by Deepak Malhotra |

**Subject Code: FEC55 Course Title: Fostering Social Responsibility and Community**

**Engagement**

**Details of Course**

| Unit No. | Course Content   |
|----------|--|
| 1.       | <b>Appreciation of Rural Society</b><br>Rural lifestyle, rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of “soul of India lies in villages” (Gandhi) rural infrastructure                                  |
| 2.       | <b>Understanding rural economy &amp; livelihood</b><br>Agriculture, Farming, landownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets  |
| 3.       | <b>Rural Institutions</b><br>Traditional rural organizations, self-help groups, Panchayti Raj Institutions (Gram Sabha, Gram panchayat, Standing Committees), local civil society, local administration  |
| 4.       | <b>Rural Development Programme</b><br>History of rural development in India, current national programmes, Sarva Shiksha Abhiyaan, Beti Bachao, Beti Padhao, Ayushman Bharat, Swachh Bharat, PM Awas Yojna, Skill India, Gram Panchayat Decentralised Planning, NRLM, MNREGA etc. |

**Subject Code: FEC 56 Course Title: Universal Human Values: Understanding Harmony**  
**Syllabus**

|  |
|--|
| <b>Introduction to Value Education</b><br><br>Understanding Value Education, Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, Right Understanding, Relationship and Physical Facility, Happiness and Prosperity – Current Scenario, Method to Fulfill the Basic Human Aspirations |
| <b>Harmony in the Human Being</b><br><br>Understanding Human being as the Co-existence of the Self and the Body, Distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health                  |
| <b>Harmony in the Family and Society</b><br><br>Harmony in the Family – the Basic Unit of Human Interaction, Values in Human-to-Human Relationship, 'Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Understanding Harmony in the Society, Vision for the Universal Human Order.                                   |
| <b>Harmony in the Nature/Existence</b><br><br>Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, and The Holistic Perception of Harmony in Existence.  |

### Implications of the Holistic Understanding – a Look at Professional Ethics

Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis for Humanistic Education, Humanistic Constitution and Universal Human Order, Competence in Professional Ethics, Holistic Technologies, Production Systems and Management Models- Typical Case Studies, Strategies for Transition towards Value-based Life and Profession.

#### READINGS:

The Textbook : ***A Foundation Course in Human Values and Professional Ethics***, R R Gaur, R Asthana, G P Bagaria, 2<sup>nd</sup> Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-47-1

**The Teacher's Manual:** Teachers' Manual for *A Foundation Course in Human Values and Professional Ethics*, R R Gaur, R Asthana, G P Bagaria, 2<sup>nd</sup> Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-53-2

#### Reference Books

1. Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
2. Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
3. The Story of Stuff (Book).
4. The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi
5. Small is Beautiful - E. F. Schumacher.
6. Slow is Beautiful - Cecile Andrews
7. Economy of Permanence - J. C. Kumarappa
8. Bharat Mein Angreji Raj - Pandit Sunderlal
9. Rediscovering India - by Dharampal
10. Hind Swaraj or Indian Home Rule - by Mohandas K. Gandhi
11. India Wins Freedom - Maulana Abdul Kalam Azad
12. Vivekananda - Romain Rolland (English)
13. Gandhi - Romain Rolland (English)

## 2. FEC-57 "LEADERSHIP MASTERY THROUGH SELF MANAGEMENT"

### Syllabus

Discovering oneself, Healthy life style, Time Management, Befriending stress, peak performance, Situational awareness, Peaceful conversation, Heartful conversation, Silence is the language of heart, Science and Art behind meditation (Habits change, observation, Rejuvenation), Evolution through meditation, Live light and Live right, The power of pause, Transform your relationship, Character and life style. Detox Practices. (Removal of anger, fear, stress and addictions). Power of self Discipline.

### Reference

1. Designing Destiny By Kamlesh D Patel, Westland Publication, Chennai
2. The Way of the Heart, Spiritual Hierarchy Publication Trust, Kolkata
3. A Cognitive Approach to Situation Awareness: Theory and Application by Sébastien Tremblay
4. The Upside of Stress Kelly McGonigal
5. No Excuses! The Power of Self-Discipline for Success in Your Life by Brian Tracy and Gildan Media, LLC
6. Peak Performance: Elevate Your Game, Avoid Burnout, and Thrive with the New Science of Success by Brad Stulberg, Steve Magness, et al.
7. Eat. Sleep. Move. Breathe: The Beginner's Guide to Living A Healthy Lifestyle by Lars Thstrup, Jennifer Pfliegerhaa, et al. | Nov 3, 2020
8. Atomic Habits: An Easy & Proven Way to Build Good Habits & Break Bad Ones by James Clear | Oct 16, 2018
9. Peaceful Conversations - Preventing Conflict in Communication: Across cultures, In the workplace, Among family & friends by Gail Nemetz Robinson PhD | Mar 7, 2017



**ANNEXURE 1B**  
**Scheme of Teaching**  
**and Examination**  
**B.Tech. Under Continuing Education**

## Preamble

The University offers 4 B.Tech. Programs under Continuing Education in disciplines given in Table-1.

**Table-1 B.Tech. under Continuing Education**

| S.No. | Academic Program   | Code | Department                              |
|-------|--|------|---|
| 1.    | B.Tech. under Continuing Education Civil Engineering                       | CE   | Civil Engineering                       |
| 2.    | B.Tech. under Continuing Education Electrical Engineering                  | EE   | Electrical Engineering                  |
| 3.    | B.Tech. under Continuing Education Electronics & Communication Engineering | EC   | Electronics & Communication Engineering |
| 4.    | B.Tech. under Continuing Education Mechanical Engineering                  | ME   | Mechanical Engineering                  |

### Structure of B.Tech. under Continuing Education

Structure of four year B.Tech. under Continuing Education comprises of courses divided in seven distinct areas, namely: Departmental Core (DCC), Departmental Elective (DEC), Generic Elective Courses (GEC), Allied Engineering (AEC), Applied Sciences and Mathematics (ASC), Humanities, Social Sciences and Management (HMC) and Open Electives(OEC).Credits of Credits of different curricular components are given in Table 2.The broad structure of B.Tech. under Continuing Education Program is given in Table 3.

**Table 2 Credits of different curricular components**

| CURRICULAR COMPONENTS  |  | Credits      |
|--|--|--------------|
| <b>(a) Departmental Core Courses (DCC)</b>   |  |              |
| i.   | Core Courses                               | 60-64        |
| ii.  | Engineering Analysis and Design            | 04           |
| iii.   | B.Tech. under Continuing Education Project | 12           |
|  | <b>Total</b>                               | <b>76-80</b> |
| <b>(b) Humanities, Social Sciences and Management Courses (HMC)</b>  |  |              |
| i.   | Humanities and Social Sciences             | 05           |
| ii.  | Management Studies                         | 03           |
| iii.   | Professional Ethics and Human Values       | 02           |
|  | <b>Total</b>                               | <b>10</b>    |
| <b>(c) Allied Engineering Courses (AEC)</b>  |  | <b>08</b>    |
| <b>(d) Open Elective Course (OEC)/ Departmental Elective Courses (DEC)/ Generic Elective courses (GEC)</b> |  | <b>32-28</b> |
| <b>Grand Total</b>   |  | <b>126</b>   |

**Table-3 Program Structure for B.Tech. Under Continuing Education**

**FIRST YEAR**

| First Semester  |                                 |           |          |
|-----------------|---------------------------------|-----------|----------|
| S.No.           | Subject                         | Credits   | Category |
| 1.              | Allied Engineering Course-1     | 4         | AEC      |
| 2.              | Department Core Course-1        | 4         | DCC      |
| 3.              | Engineering Analysis and Design | 4         | DCC      |
| 4.              | Communications Skills           | 2         | HMC      |
|                 | <b>Total</b>                    | <b>14</b> |          |
| Second Semester |                                 |           |          |
| S.No.           | Subject                         | Credits   | Category |
| 1.              | Allied Engineering Course-2     | 4         | AEC      |
| 2.              | Department Core Course-2        | 4         | DCC      |
| 3.              | Department Core Course-3        | 4         | DCC      |
| 4.              | Management Studies Course       | 3         | HMC      |
|                 | <b>Total</b>                    | <b>15</b> |          |

**SECOND YEAR**

| Third Semester  |                                      |           |          |
|-----------------|--------------------------------------|-----------|----------|
| S.No.           | Subject                              | Credits   | Category |
| 1.              | Department Core Course-4             | 4         | DCC      |
| 2.              | Department Core Course-5             | 4         | DCC      |
| 3.              | Department Core Course-6             | 4         | DCC      |
| 4.              | Humanities & Social Science Course   | 3         | HMC      |
|                 | <b>Total</b>                         | <b>15</b> |          |
| Fourth Semester |                                      |           |          |
| S.No.           | Subject                              | Credits   | Category |
| 1.              | Department Core Course-7             | 4         | DCC      |
| 2.              | Department Core Course-8             | 4         | DCC      |
| 3.              | Department Core Course-9             | 4         | DCC      |
| 4.              | Professional Ethics and Human Values | 2         | HMC      |
|                 | <b>Total</b>                         | <b>14</b> |          |



### THIRD YEAR

| Fifth Semester |  |           |          |
|----------------|--|-----------|----------|
| S.No.          | Subject  | Credits   | Category |
| 1.             | Department Core Course                             | 4         | DCC      |
| 2.             | Department Core Course/Department Elective Course  | 4         | DCC/DEC  |
| 3.             | Department Elective Course                         | 4         | DCC/DEC  |
| 4.             | Open Elective Course                               | 3         | OEC      |
|                | <b>Total</b>                                       | <b>15</b> |          |
| Sixth Semester |  |           |          |
| S.No.          | Subject  | Credits   | Category |
| 1.             | Department Core Course                             | 4         | DCC      |
| 2.             | Department Elective Course/ Department Core Course | 4         | DEC/ DCC |
| 3.             | Department Elective Course                         | 3         | DEC      |
| 4.             | Department Elective Course                         | 4         | DEC      |
|                | <b>Total</b>                                       | <b>15</b> |          |

### FOURTH YEAR

| Seventh Semester |  |           |          |
|------------------|--|-----------|----------|
| S.No.            | Subject                                    | Credits   | Category |
| 1.               | Department Core Course                     | 4         | DCC      |
| 2.               | Department Core Course                     | 4         | DCC      |
| 3.               | Department Elective Course                 | 3         | DEC      |
| 4.               | Department Elective Course                 | 4         | DEC      |
| 5.               | B.Tech. Project                            | 4         | DCC      |
|                  | <b>Total</b>                               | <b>19</b> |          |
| Eighth Semester  |  |           |          |
| S.No.            | Subject                                    | Credits   | Category |
| 1.               | Department Core Course-4                   | 4         | DCC      |
| 2.               | Department Elective Course                 | 4         | DEC      |
| 3.               | Department Elective Course                 | 3         | DEC      |
| 4.               | B.Tech. Project (Contd. From VII semester) | 8         | DCC      |
|                  | <b>Total</b>                               | <b>19</b> |          |

## Course Coding

A course is identified by a course code designated by a string of alpha-numeric characters and a course title. In a course code, first letter 'C' imply continuing education the next two letters of the string indicate the Academic Department/Program code offering the course and the last three numbers designate particular course number.

## Course Number

For all the courses, the first digit corresponds to the level (year) at which a course is normally offered. The last two digits denote the number of the course, which will usually be odd for courses offered in the Odd Semester and even for courses in the Even Semester. For example, the course, "Network Analysis and Synthesis, offered to Electrical Engineering students in second year Odd Semester' is numbered as CEE101.

Some examples are given below '**CHU-101 Communication Skills**' refers to a course offered by the Department of Humanities to the students of first year of the B.Tech. under Continuing Education programs and is offered in the Odd semester, similarly '**CCE-102Engineering Mechanics**' refers to a course offered by the Department of Civil Engineering to the students of first year of the B.Tech. under Continuing Education programs and is offered in the even semester

| S. No. | Teaching Scheme |                       |              |         | Contact Hours/Week |   |   | Exam Duration (HR) |   | Relative Weights |     |     |     |     |
|--------|-----------------|-----------------------|--------------|---------|--------------------|---|---|--------------------|---|------------------|-----|-----|-----|-----|
|        | Subject Code    | Course Title          | Subject Area | Credits | L                  | T | P | TH                 | P | CWS              | PRS | MTE | ETE | PRE |
| 1.     | CHU-101         | Communication Skills  | HMC          | 2       | 2                  | 0 | 0 | 3                  | 0 | 25               | 0   | 25  | 50  | --  |
| 2.     | CCE-102         | Engineering Mechanics | DCC          | 4       | 3                  | 0 | 2 | 3                  | 0 | 15               | 25  | 20  | 40  | --  |

## B.Tech. Under Continuing Education

### Civil Engineering

#### I Year

| First Semester  |              |   |              |        |                    |   |   |                   |           |                      |     |     |     |     |
|-----------------|--------------|---|--------------|--------|--------------------|---|---|-------------------|-----------|----------------------|-----|-----|-----|-----|
| Teaching Scheme |              |   |              |        | Contact Hours/Week |   |   | Exam Duration (h) |           | Relative Weights (%) |     |     |     |     |
| S. No.          | Subject Code | Course Title                            | Subject Area | Credit | L                  | T | P | Theory            | Practical | CWS                  | PRS | MTE | ETE | PRE |
| 1.              | CEC-105      | Basic Electronics & Instrumentation     | AEC          | 4      | 3                  | 0 | 2 | 3                 | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CCE-101      | Civil Engineering Basics & Applications | DCC          | 4      | 3                  | 1 | 0 | 3                 | 0         | 25                   | 0   | 25  | 50  | -   |
| 3.              | CCE-103      | Engineering Analysis Design             | DCC          | 4      | 3                  | 0 | 2 | 3                 | 0         | 15                   | 25  | 20  | 40  | -   |
| 4.              | CHU-101      | Communication Skills                    | HMC          | 2      | 2                  | 0 | 0 | 3                 | 0         | 25                   | 0   | 25  | 50  | -   |
| Total           |              |   |              | 14     | 11                 | 1 | 4 |                   |           |                      |     |     |     |     |
| Second Semester |              |   |              |        |                    |   |   |                   |           |                      |     |     |     |     |
| 1.              | CEN-102      | Environmental Engineering+--            | AEC          | 4      | 3                  | 0 | 2 | 3                 | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CCE-102      | Engineering Mechanics                   | DCC          | 4      | 3                  | 0 | 2 | 3                 | 0         | 15                   | 25  | 20  | 40  | -   |
| 3.              | CCE-104      | Fluid Mechanics                         | DCC          | 4      | 3                  | 1 | 0 | 3                 | 0         | 25                   | 0   | 25  | 50  | -   |
| 4.              | CMG-02       | Fundamentals of Management              | HMC          | 3      | 3                  | 0 | 0 | 3                 | 0         | 25                   | 0   | 25  | 50  | -   |
| Total           |              |   |              | 15     | 12                 | 1 | 4 |                   |           |                      |     |     |     |     |

## II Year

| Third Semester  |              |                                      |              |        |                    |   |   |                   |           |                      |     |     |     |     |
|-----------------|--------------|--------------------------------------|--------------|--------|--------------------|---|---|-------------------|-----------|----------------------|-----|-----|-----|-----|
| Teaching Scheme |              |                                      |              |        | Contact Hours/Week |   |   | Exam Duration (h) |           | Relative Weights (%) |     |     |     |     |
| S. No.          | Subject Code | Course Title                         | Subject Area | Credit | L                  | T | P | Theory            | Practical | CWS                  | PRS | MTE | ETE | PRE |
| 1.              | CCE-201      | Mechanics of Solids                  | DCC          | 4      | 3                  | 0 | 2 | 3                 | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CCE-203      | Engineering Survey                   | DCC          | 4      | 3                  | 0 | 2 | 3                 | 0         | 15                   | 25  | 20  | 40  | -   |
| 3.              | CCE-205      | Soil Mechanics                       | DCC          | 4      | 3                  | 0 | 2 | 3                 | 0         | 15                   | 25  | 20  | 40  | -   |
| 4.              | CHU-201      | Professional Ethics and Human Values | HMC          | 2      | 2                  | 0 | 0 | 3                 | 0         | 25                   | 0   | 25  | 50  | -   |
| Total           |              |                                      |              | 14     | 11                 | 0 | 6 |                   |           |                      |     |     |     |     |
| Fourth Semester |              |                                      |              |        |                    |   |   |                   |           |                      |     |     |     |     |
| 1.              | CCE-202      | Hydraulics & Hydraulic Machines      | DCC          | 4      | 3                  | 0 | 2 | 3                 | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CCE-204      | Analysis of Determinate Structures   | DCC          | 4      | 3                  | 0 | 2 | 3                 | 0         | 15                   | 25  | 20  | 40  | -   |
| 3.              | CCE-206      | Design of RCC Structures             | DCC          | 4      | 3                  | 0 | 2 | 3                 | 0         | 15                   | 25  | 20  | 40  | -   |
| 4.              | CHU-202      | Engineering Economics                | HMC          | 3      | 3                  | 0 | 0 | 3                 | 0         | 25                   | 0   | 25  | 50  | -   |
| Total           |              |                                      |              | 15     | 12                 | 0 | 6 |                   |           |                      |     |     |     |     |

### III Year

| Fifth Semester  |              |                                      |              |           |                    |            |            |                      |           |                      |      |       |       |     |
|-----------------|--------------|--------------------------------------|--------------|-----------|--------------------|------------|------------|----------------------|-----------|----------------------|------|-------|-------|-----|
| Teaching Scheme |              |                                      |              |           | Contact Hours/Week |            |            | Exam Duration (hrs.) |           | Relative Weights (%) |      |       |       |     |
| S. No.          | Subject Code | Course Title                         | Subject Area | Cr        | L                  | T          | P          | Theory               | Practical | CWS                  | PRS  | MTE   | ETE   | PRE |
| 1.              | CCE-301      | Analysis of Indeterminate Structures | DCC          | 4         | 3                  | 1          | 0          | 3                    | 0         | 25                   | -    | 25    | 50    | -   |
| 2.              | CCE-303      | Geotechnical Engineering             | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 15   | 30    | 40    | -   |
| 3.              | CCE-3xx      | Departmental Elective-1              | DEC/GEC      | 4         | 3                  | 0/1        | 2/0        | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| 4.              | ----         | Open Elective                        | OEC          | 3         | 3                  | 0          | 0          | 3                    | 0         | 25                   | 0    | 25    | 50    | -   |
|                 | <b>Total</b> |                                      |              | <b>15</b> | <b>12</b>          | <b>1/0</b> | <b>4/6</b> |                      |           |                      |      |       |       |     |
| Sixth Semester  |              |                                      |              |           |                    |            |            |                      |           |                      |      |       |       |     |
| 1.              | CCE-302      | Transportation Engineering           | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 2.              | CCE-3xx      | Department Elective -2               | DEC/GEC      | 4         | 3                  | 0/1        | 2/0        | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| 3.              | CCE-3xx      | Department Elective -3               | DEC/GEC      | 4         | 3                  | 0/1        | 2/0        | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| 4.              | CCE-3xx      | Department Elective -4               | DEC/GEC      | 4         | 3                  | 0/1        | 2/0        | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
|                 | <b>Total</b> |                                      |              | <b>16</b> | <b>12</b>          | <b>2/0</b> | <b>2/6</b> |                      |           |                      |      |       |       |     |

## IV Year

| Seventh Semester                   |              |  |              |           |                    |            |            |                      |           |                      |      |       |       |     |
|------------------------------------|--------------|--|--------------|-----------|--------------------|------------|------------|----------------------|-----------|----------------------|------|-------|-------|-----|
| Teaching Scheme                    |              |  |              |           | Contact Hours/Week |            |            | Exam Duration (hrs.) |           | Relative Weights (%) |      |       |       |     |
| S. No.                             | Subject Code | Course Title   | Subject Area | Cr        | L                  | T          | P          | Theory               | Practical | CWS                  | PRS  | MTE   | ETE   | PRE |
| 1.                                 | CCE-401      | Design of Steel Structures                             | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 2.                                 | CCE-403      | Water Resources Engineering                            | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 3.                                 | CCE-4xx      | Department Elective -5                                 | DEC          | 4         | 3                  | 0/1        | 2/0        | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| 4.                                 | CCE-4xx      | Department Elective -6                                 | DEC          | 4         | 3                  | 0/1        | 2/0        | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| 5.                                 | CCE-405      | *B. Tech. Project                                      |              | 4         |                    |            |            |                      |           |                      |      |       |       |     |
| <b>Total</b>                       |              |  |              | <b>20</b> | <b>12</b>          | <b>1/0</b> | <b>4/6</b> |                      |           |                      |      |       |       |     |
| *To be done at their place of work |              |  |              |           |                    |            |            |                      |           |                      |      |       |       |     |
| Eighth Semester                    |              |  |              |           |                    |            |            |                      |           |                      |      |       |       |     |
| 1.                                 | CCE-402      | Construction Technology & Management                   | DCC          | 4         | 3                  | 1          | 0          | 3                    | 0         | 25                   | -    | 25    | 50    | -   |
| 2.                                 | CCE-4xx      | Department Elective -7                                 | DEC/GEC      | 4         | 3                  | 0/1        | 2/0        | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| 3.                                 | CCE-4xx      | Department Elective -8                                 | DEC/GEC      | 4         | 3                  | 0/1        | 2/0        | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| 4.                                 | CCE-406      | *B. Tech. Project (Continued from 7 <sup>th</sup> Sem) |              | 8         |                    |            |            |                      |           |                      |      |       |       |     |
| <b>Total</b>                       |              |  |              | <b>20</b> | <b>9</b>           | <b>1/0</b> | <b>2/4</b> |                      |           |                      |      |       |       |     |
| *To be done at their place of work |              |  |              |           |                    |            |            |                      |           |                      |      |       |       |     |

## List of Departmental Elective Courses

| S.NO | Subject Code | Subject  | Elective NO. |
|------|--------------|--|--------------|
| 1.   | CCE305       | Mechanics of Materials   | DEC-1        |
| 2.   | CCE307       | Advanced geo-technical engineering                                   |              |
| 3.   | CCE309       | Environmental Engineering Design                                     |              |
| 4.   | CCE311       | Photogrammetry and astronomy   |              |
| 5.   | CCE304       | Earthquake Technology  | DEC-2        |
| 6.   | CCE306       | Rock engineering   |              |
| 7.   | CCE308       | Solid Waste Management & Air Pollution Control                       |              |
| 8.   | CCE310       | Application of geo-informatics remote sensing and GIS in engineering |              |
| 9.   | CCE312       | Disaster Management  | DEC-3        |
| 10.  | CCE314       | Geo-technical processes  |              |
| 11.  | CCE316       | Water Power Systems & Design   |              |
| 12.  | CCE318       | Tunnel, ports and harbor engineering                                 |              |
| 13.  | CCE320       | Matrix methods of structural analysis                                | DEC-4        |
| 14.  | CCE322       | Analysis & Design of Underground Structures                          |              |
| 15.  | CCE324       | Computational Hydraulics   |              |
| 16.  | CCE326       | Traffic and transportation planning                                  |              |
| 17.  | CCE405       | Advanced design of concrete structures                               | DEC-5        |
| 18.  | CCE407       | Interaction behavior of soil structure                               |              |
| 19.  | CCE409       | Water Resources Management   |              |
| 20.  | CCE411       | Transportation safety and environment                                |              |
| 21.  | CCE413       | Finite element method for 2-D structures                             | DEC-6        |
| 22.  | CCE415       | Soil Dynamics  |              |
| 23.  | CCE417       | Hydraulic structures and flood control works                         |              |
| 24.  | CCE419       | Advanced transportation engineering                                  |              |
| 25.  | CCE404       | Advanced design of steel structures                                  | DEC-7        |
| 26.  | CCE406       | Computational Geo-mechanics  |              |
| 27.  | CCE408       | Advanced Fluid Mechanics   |              |
| 28.  | CCE410       | Construction and design aspects in transportation engineering        |              |
| 29.  | CCE412       | Design of bridges  | DEC-8        |
| 30.  | CCE414       | Geo-environmental and geo-hazard engineering                         |              |
| 31.  | CCE416       | Ground water and seepage   |              |
| 32.  | CCE418       | Traffic Engineering  |              |

## B.Tech. Under Continuing Education

### Electrical Engineering

#### I Year

| First Semester  |              |   |              |           |                    |          |          |                      |           |                      |     |     |     |     |
|-----------------|--------------|---|--------------|-----------|--------------------|----------|----------|----------------------|-----------|----------------------|-----|-----|-----|-----|
| Teaching Scheme |              |   |              |           | Contact Hours/Week |          |          | Exam Duration (hrs.) |           | Relative Weights (%) |     |     |     |     |
| S. No.          | Subject Code | Course Title  | Subject Area | Cr        | L                  | T        | P        | Theory               | Practical | CWS                  | PRS | MTE | ETE | PRE |
| 1.              | CMA-101      | Engineering Mathematics                             | AEC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CEE-101      | Network Analysis & Synthesis                        | DCC          | 4         | 3                  | 1        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
| 3.              | CEE-103      | Engineering Analysis & Design                       | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 4.              | CHU-101      | Communication Skills                                | HMC          | 2         | 2                  | 0        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
|                 | <b>Total</b> |   |              | <b>14</b> | <b>11</b>          | <b>1</b> | <b>4</b> |                      |           |                      |     |     |     |     |
| Second Semester |              |   |              |           |                    |          |          |                      |           |                      |     |     |     |     |
| 1.              | CEC-102      | Electronic Devices and Circuits                     | AEC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CEE-102      | Electromechanical Energy Conversion and Transformer | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 3.              | CEE-104      | Electromagnetic Field Theory                        | DCC          | 4         | 3                  | 1        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
| 4.              | CMG-102      | Fundamentals of Management                          | HMC          | 3         | 3                  | 0        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
|                 | <b>Total</b> |   |              | <b>15</b> | <b>12</b>          | <b>1</b> | <b>4</b> |                      |           |                      |     |     |     |     |



## II Year

| Third Semester  |              |   |              |           |                    |          |          |                      |           |                      |     |     |     |     |
|-----------------|--------------|---|--------------|-----------|--------------------|----------|----------|----------------------|-----------|----------------------|-----|-----|-----|-----|
| Teaching Scheme |              |   |              |           | Contact Hours/Week |          |          | Exam Duration (hrs.) |           | Relative Weights (%) |     |     |     |     |
| S. No.          | Subject Code | Course Title                                      | Subject Area | Cr        | L                  | T        | P        | Theory               | Practical | CWS                  | PRS | MTE | ETE | PRE |
| 1.              | CEE-201      | Digital Circuits and System                       | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CEE-203      | Control Systems                                   | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 3.              | CEE-205      | Asynchronous and Synchronous Machines             | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 4.              | CHU-201      | Professional Ethics and Human Values              | HMC          | 2         | 2                  | 0        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
|                 | <b>Total</b> |   |              | <b>14</b> | <b>11</b>          | <b>0</b> | <b>6</b> |                      |           |                      |     |     |     |     |
| Fourth Semester |              |   |              |           |                    |          |          |                      |           |                      |     |     |     |     |
| 1.              | CEE-202      | Power Transmission and Distribution               | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CEE-204      | Instrumentation and Measurement                   | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 3.              | CEE-206      | Microprocessors and Microcontrollers Applications | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 4.              | CHU-202      | Engineering Economics                             | HMC          | 3         | 3                  | 0        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
|                 | <b>Total</b> |   |              | <b>15</b> | <b>12</b>          | <b>0</b> | <b>6</b> |                      |           |                      |     |     |     |     |

### III Year

| Fifth Semester  |              |                            |              |           |                    |            |            |                      |           |                      |      |       |       |     |
|-----------------|--------------|----------------------------|--------------|-----------|--------------------|------------|------------|----------------------|-----------|----------------------|------|-------|-------|-----|
| Teaching Scheme |              |                            |              |           | Contact Hours/Week |            |            | Exam Duration (hrs.) |           | Relative Weights (%) |      |       |       |     |
| S. No.          | Subject Code | Course Title               | Subject Area | Cr        | L                  | T          | P          | Theory               | Practical | CWS                  | PRS  | MTE   | ETE   | PRE |
| 1.              | CEE-301      | Power Electronics          | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 2.              | CEE-303      | Power Systems and Analysis | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 3.              | CEE-3xx      | Department Elective-1      | DEC/GEC      | 4         | 3                  | 1/0        | 0/2        | 3                    | 0         | 25/15                | 0/25 | 25/20 | 50/40 | -   |
| 4.              | -----        | Open Elective              | OEC          | 3         | 3                  | 0          | 0          | 3                    | 0         | 25                   | 0    | 25    | 50    | -   |
|                 | <b>Total</b> |                            |              | <b>15</b> | <b>12</b>          | <b>1/0</b> | <b>4/6</b> |                      |           |                      |      |       |       |     |
| Sixth Semester  |              |                            |              |           |                    |            |            |                      |           |                      |      |       |       |     |
| 1.              | CEE-302      | Renewable Energy Systems   | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 2.              | CEE-3xx      | Department Elective-2      | DEC/GEC      | 4         | 3                  | 1/0        | 0/2        | 3                    | 0         | 25/15                | 0/25 | 25/20 | 50/40 | -   |
| 3.              | CEE-3xx      | Department Elective-3      | DEC/GEC      | 3         | 3                  | 0          | 0          | 3                    | 0         | 25                   | 0    | 25    | 50    | -   |
| 4.              | CEE-3xx      | Department Elective-4      | DEC/GEC      | 4         | 3                  | 1/0        | 0/2        | 3                    | 0         | 25/15                | 0/25 | 25/20 | 50/40 | -   |
|                 | <b>Total</b> |                            |              | <b>15</b> | <b>12</b>          | <b>2/0</b> | <b>2/6</b> |                      |           |                      |      |       |       |     |

## IV Year

| Seventh Semester |              |  |              |           |                    |            |            |                      |           |                      |      |       |       |     |
|------------------|--------------|--|--------------|-----------|--------------------|------------|------------|----------------------|-----------|----------------------|------|-------|-------|-----|
| Teaching Scheme  |              |  |              |           | Contact Hours/Week |            |            | Exam Duration (hrs.) |           | Relative Weights (%) |      |       |       |     |
| S. No.           | Subject Code | Course Title   | Subject Area | Cr        | L                  | T          | P          | Theory               | Practical | CWS                  | PRS  | MTE   | ETE   | PRE |
| 1.               | CEE-401      | Utilization of Electrical Energy                           | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 2.               | CEE-403      | Electric Drives  | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 3.               | CEE-4xx      | Department Elective-5                                      | DEC/GEC      | 3         | 3                  | 0          | 0          | 3                    | 0         | 25                   | 0    | 25    | 50    | -   |
| 4.               | CEE-4xx      | Department Elective-6                                      | DEC/GEC      | 4         | 3                  | 1/0        | 0/2        | 3                    | 0         | 25/15                | 0/25 | 25/20 | 50/40 | -   |
| 5.               | CEE-405      | *B. Tech. Project  |              | 4         | -                  | -          | -          |                      |           |                      |      | 40    | 60    |     |
| <b>Total</b>     |              |  |              | <b>19</b> | <b>12</b>          | <b>1/0</b> | <b>4/6</b> |                      |           |                      |      |       |       |     |
| Eighth Semester  |              |  |              |           |                    |            |            |                      |           |                      |      |       |       |     |
| 1.               | CEE-402      | Switchgear and Protection                                  | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 2.               | CEE-4xx      | Department Elective-7                                      | DEC/GEC      | 4         | 3                  | 1/0        | 0/2        | 3                    | 0         | 25/15                | 0/25 | 25/20 | 50/40 | -   |
| 3.               | CEE-4xx      | Department Elective-8                                      | DEC/GEC      | 3         | 3                  | 0          | 0          | 3                    | 0         | 25                   | 0    | 25    | 50    | -   |
| 4.               | CEE-304      | *B. Tech Project (continued from 7 <sup>th</sup> semester) |              | 8         | -                  | -          | -          |                      |           |                      |      | 40    | 60    |     |
| <b>Total</b>     |              |  |              | <b>19</b> | <b>9</b>           | <b>1/0</b> | <b>2/4</b> |                      |           |                      |      |       |       |     |

### List of Departmental Elective Courses

| S. No. | Elective Code | Title of Elective   | Elective no.           |
|--------|---------------|---|------------------------|
| 1.     | CEE-305       | Signals and Systems   | DEC 1                  |
| 2.     | CEE-307       | Power Station Practices                                       |                        |
| 3.     | CEE-309       | Special Electrical Machines                                   |                        |
| 4.     | CEE-311       | Energy Efficient Motors                                       |                        |
| 5.     | CEE-313       | Linear Integrated Circuits                                    |                        |
| 6.     | CEE-315       | Digital Control and State Variable Analysis                   |                        |
| 7.     | CEE-304       | Power System Operation and Control                            | DEC 2, DEC-3 and DEC 4 |
| 8.     | CEE-306       | Power System Optimization                                     |                        |
| 9.     | CEE-308       | Power Electronic Applications to Power Systems                |                        |
| 10.    | CEE-310       | Electrical Energy Storage Systems                             |                        |
| 11.    | CEE-312       | Switched Mode Power Supplies                                  |                        |
| 12.    | CEE-314       | VLSI Design   |                        |
| 13.    | CEE-316       | Communication Systems   |                        |
| 14.    | CEE-318       | Data Communication and Computer Networks                      |                        |
| 15.    | CEE-320       | Digital System Design   |                        |
| 16.    | CEE-322       | Design of Electrical Machines                                 |                        |
| 17.    | CEE-324       | Advanced Topics in Electrical Machines                        |                        |
| 18.    | CEE-326       | DSP Applications to Electromechanical Systems                 |                        |
| 19.    | CEE-328       | AI and Expert Systems   |                        |
| 20.    | CEE-405       | Design, Estimation & Costing of Industrial Electrical Systems | DEC-5 and DEC 6        |
| 21.    | CEE-407       | Power System Modeling & Simulation                            |                        |
| 22.    | CEE-409       | Solar Photovoltaic and Wind Energy Conversion                 |                        |
| 23.    | CEE-411       | Power System Reliability                                      |                        |
| 24.    | CEE-413       | Pulse Width Modulation for Power converters                   |                        |
| 25.    | CEE-415       | SCADA & Energy Management Systems                             |                        |
| 26.    | CEE-417       | Advanced Analog Circuit Design                                |                        |

|     |         |   |                 |
|-----|---------|---|-----------------|
| 27. | CEE-419 | Computer Architecture                               |                 |
| 28. | CEE-421 | HVDC  |                 |
| 29. | CEE-406 | Power System Dynamics & Stability                   |                 |
| 30. | CEE-406 | Distribution Systems Analysis & Control             | DEC-7 and DEC 8 |
| 31. | CEE-408 | Restructured Power Systems                          |                 |
| 32. | CEE-410 | Power System Planning                               |                 |
| 33. | CEE-412 | High Voltage Engineering                            |                 |
| 34. | CEE-414 | Distributed Generation                              |                 |
| 35. | CEE-416 | Grid Integration of Renewable Energy Sources        |                 |
| 36. | CEE-418 | Selected Topics in Power Electronics                |                 |
| 37. | CEE-420 | Power Quality                                       |                 |
| 38. | CEE-422 | Energy Auditing, Energy Efficiency and Conservation |                 |
| 39. | CEE-424 | Flexible AC Transmission Systems                    |                 |
| 40. | CEE-426 | Micro Grid and Smart Grid                           |                 |

**B.Tech. Under Continuing Education**  
**Electronics & Communication Engineering**

**I Year**

| First Semester  |              |   |              |           |                    |          |          |                      |           |                      |     |     |     |     |
|-----------------|--------------|---|--------------|-----------|--------------------|----------|----------|----------------------|-----------|----------------------|-----|-----|-----|-----|
| Teaching Scheme |              |   |              |           | Contact Hours/Week |          |          | Exam Duration (hrs.) |           | Relative Weights (%) |     |     |     |     |
| S. No.          | Subject Code | Course Title                                | Subject Area | Cr        | L                  | T        | P        | Theory               | Practical | CWS                  | PRS | MTE | ETE | PRE |
| 1.              | CEE-107      | Electronic Instrumentation and Measurements | AEC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CEC-101      | Analog Electronics – I                      | DCC          | 4         | 3                  | 1        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
| 3.              | CEC-103      | Engineering Analysis & Design               | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 4.              | CHU-101      | Communication Skills                        | HMC          | 2         | 2                  | 0        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
| <b>Total</b>    |              |   |              | <b>14</b> | <b>11</b>          | <b>1</b> | <b>4</b> |                      |           |                      |     |     |     |     |
| Second Semester |              |   |              |           |                    |          |          |                      |           |                      |     |     |     |     |
| 1.              | CEE-106      | Electro-Magnetics                           | AEC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CEC-102      | Digital Design – I                          | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 3.              | CEC-104      | Signals & Systems                           | DCC          | 4         | 3                  | 1        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
| 4.              | CMG-102      | Principles of Management                    | HMC          | 3         | 3                  | 0        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
| <b>Total</b>    |              |   |              | <b>15</b> | <b>12</b>          | <b>1</b> | <b>4</b> |                      |           |                      |     |     |     |     |

## II Year

| Third Semester  |              |                                      |              |           |                    |          |          |                      |           |                      |     |     |     |     |
|-----------------|--------------|--------------------------------------|--------------|-----------|--------------------|----------|----------|----------------------|-----------|----------------------|-----|-----|-----|-----|
| Teaching Scheme |              |                                      |              |           | Contact Hours/Week |          |          | Exam Duration (hrs.) |           | Relative Weights (%) |     |     |     |     |
| S. No.          | Subject Code | Course Title                         | Subject Area | Cr        | L                  | T        | P        | Theory               | Practical | CWS                  | PRS | MTE | ETE | PRE |
| 1.              | CEC-201      | Analog Electronics – II              | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CEC-203      | Digital Design – II                  | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 3.              | CEC-205      | Communication Systems                | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 4.              | CHU-201      | Professional Ethics and Human Values | HMC          | 2         | 2                  | 0        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
| <b>Total</b>    |              |                                      |              | <b>14</b> | <b>11</b>          | <b>0</b> | <b>6</b> |                      |           |                      |     |     |     |     |
| Fourth Semester |              |                                      |              |           |                    |          |          |                      |           |                      |     |     |     |     |
| 1.              | CEC-202      | Digital Communication                | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CEC-204      | Linear Integrated Circuits           | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 3.              | CEC-206      | VLSI Design                          | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 4.              | CHU-202      | Engineering Economics                | HMC          | 3         | 3                  | 0        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
| <b>Total</b>    |              |                                      |              | <b>15</b> | <b>12</b>          | <b>0</b> | <b>6</b> |                      |           |                      |     |     |     |     |

### III Year

| Fifth Semester  |              |                           |              |    |                    |     |     |                      |           |                      |      |       |       |     |
|-----------------|--------------|---------------------------|--------------|----|--------------------|-----|-----|----------------------|-----------|----------------------|------|-------|-------|-----|
| Teaching Scheme |              |                           |              |    | Contact Hours/Week |     |     | Exam Duration (hrs.) |           | Relative Weights (%) |      |       |       |     |
| S. No.          | Subject Code | Course Title              | Subject Area | Cr | L                  | T   | P   | Theory               | Practical | CWS                  | PRS  | MTE   | ETE   | PRE |
| 1.              | CEC-301      | Digital Signal Processing | DCC          | 4  | 3                  | 0   | 2   | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 2.              | CEC-3XX      | Departmental Elective-1   | DEC/GEC      | 4  | 3                  | 1/0 | 0/2 | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| 3.              | CEC-3XX      | Departmental Elective-2   | DEC/GEC      | 4  | 3                  | 1/0 | 0/2 | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| 4.              | ---          | Open Elective             | OEC          | 3  | 3                  | 0   | 0   | 3                    | 0         | 25                   | 0    | 25    | 50    | -   |
| Total           |              |                           |              | 15 | 12                 | 2/0 | 2/6 |                      |           |                      |      |       |       |     |
| Sixth Semester  |              |                           |              |    |                    |     |     |                      |           |                      |      |       |       |     |
| 1.              | CEC-302      | Microwave Engineering     | DCC          | 4  | 3                  | 0   | 2   | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 2.              | CEC-304      | Embedded Systems          | DCC          | 4  | 3                  | 0   | 2   | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 3.              | CEC-3XX      | Departmental Elective -3  | DEC/GEC      | 3  | 3                  | 0   | 0   | 3                    | 0         | 25                   | 0    | 25    | 50    | -   |
| 4.              | CEC-3XX      | Departmental Elective - 4 | DEC/GEC      | 4  | 3                  | 1/0 | 0/2 | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| Total           |              |                           |              | 15 | 12                 | 1/0 | 4/6 |                      |           |                      |      |       |       |     |



## IV Year

| Seventh Semester |              |   |              |           |                    |            |            |                      |           |                      |      |        |        |     |
|------------------|--------------|---|--------------|-----------|--------------------|------------|------------|----------------------|-----------|----------------------|------|--------|--------|-----|
| Teaching Scheme  |              |   |              |           | Contact Hours/Week |            |            | Exam Duration (hrs.) |           | Relative Weights (%) |      |        |        |     |
| S. No.           | Subject Code | Course Title                            | Subject Area | Cr        | L                  | T          | P          | Theory               | Practical | CWS                  | PRS  | MTE    | ETE    | PRE |
| 1.               | CEC-401      | Information Theory & Coding             | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20     | 40     | -   |
| 2.               | CEC-403      | Wireless Communication                  | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20     | 40     | --  |
| 3.               | CEC- 4XX     | Departmental Elective Course- 5         | DEC/ GEC     | 3         | 3                  | 0          | 0          | 3                    | 0         | 25                   | 0    | 25     | 50     | --  |
| 4.               | CEC- 4XX     | Departmental Elective Course- 6         | DEC/ GEC     | 4         | 3                  | 1/0        | 0/2        | 3                    | 0         | 15/ 25               | 25/0 | 20 /25 | 40/ 50 | --  |
| 5.               | CEC- 405     | *B. Tech Project                        |              | 4         | -                  | -          | -          | -                    | -         | -                    | -    | 40     | 60     | --  |
| <b>Total</b>     |              |   |              | <b>19</b> | <b>12</b>          | <b>1/0</b> | <b>4/6</b> |                      |           |                      |      |        |        |     |
| Eighth Semester  |              |   |              |           |                    |            |            |                      |           |                      |      |        |        |     |
| 1.               | CEC-402      | Radar & Satellite Communication         | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20     | 40     | -   |
| 2.               | CEC- 4XX     | Departmental Elective Course- 7         | DEC/ GEC     | 4         | 3                  | 0/1        | 2/0        | 3                    | 0         | 15/ 25               | 25/- | 20/ 25 | 40/ 50 | --  |
| 3.               | CEC- 4XX     | Departmental Elective Course- 8         | DEC/ GEC     | 3         | 3                  | 0/1        | 2/0        | 3                    | 0         | 15/ 25               | 25/- | 20 25  | 40/ 50 | --  |
| 4.               | CEC-406      | *B. Tech Project (Contd. From VII Sem.) | DCC          | 8         | -                  | -          | -          | -                    | -         | -                    | -    | 40     | 60     | --  |
| <b>Total</b>     |              |   |              | <b>19</b> | <b>9</b>           | <b>1/0</b> | <b>2/4</b> |                      |           |                      |      |        |        |     |

\* To be done at their place of work

### List of Departmental Elective Courses

| S. NO. | SUBJECT CODE | SUBJECTS  | ELECTIVE NO. |
|--------|--------------|---|--------------|
| 1.     | CEC-305      | Semiconductor Device Electronics                      | DEC -1,DEC-2 |
| 2.     | CEC-307      | Antenna Design  |              |
| 3.     | CEC-309      | Bio – Medical Electronics & Instrumentation           |              |
| 4.     | CEC-311      | Algorithms Design and Analysis                        |              |
| 5.     | CEC-313      | Microprocessors and Interfacing                       |              |
| 6.     | CEC-315      | Computer Communication Networks                       |              |
| 7.     | CEC-317      | Operating Systems                                     |              |
| 8.     | CEC-319      | CMOS Analog Integrated Circuits                       |              |
| 9.     | CEC-321      | IC Technology   |              |
| 10.    | CEC-323      | Control Systems                                       |              |
| 11.    | CEC-308      | Analog Filter Design                                  | DEC-3, DEC-4 |
| 12.    | CEC-310      | Testing and Diagnosis of Digital System Design        |              |
| 13.    | CEC-312      | Software Defined Radio and Cognitive Radio            |              |
| 14.    | CEC-314      | RF Design   |              |
| 15.    | CEC-316      | Wireless Sensor Networks                              |              |
| 16.    | CEC-318      | RF Circuits in CMOS Technology                        |              |
| 17.    | CEC-320      | Soft Computing  |              |
| 18.    | CEC-322      | Green Technologies                                    |              |
| 19.    | CEC-324      | Nano Electronics                                      |              |
| 20.    | CEC-326      | Data Converters                                       |              |
| 21.    | CEC-328      | Speech Recognition                                    |              |
| 22.    | CEC-330      | Digital Image Processing                              |              |
| 23.    | CEC-409      | Computer Vision                                       | DEC-5, DEC-6 |
| 24.    | CEC-411      | Bio – Medical Signal and Image Processing             |              |
| 25.    | CEC-413      | Power Electronics                                     |              |
| 26.    | CEC-415      | System on Chip Design                                 |              |
| 27.    | CEC-417      | CAD for VLSI Design                                   |              |
| 28.    | CEC-419      | Memory Design   |              |
| 29.    | CEC-421      | Computer and Numerical Techniques in Electromagnetics |              |

|     |         |                                    |             |
|-----|---------|------------------------------------|-------------|
| 30. | CEC-423 | Internet and Web Technology        |             |
| 31. | CEC-425 | Mixed Signal Design                |             |
| 32. | CEC-427 | Optical Communication              |             |
| 33. | CEC-408 | Low Power VLSI Design              | DCE-7,DEC-8 |
| 34. | CEC-410 | Advance Coding Theory              |             |
| 35. | CEC-412 | Machine Learning                   |             |
| 36. | CEC-414 | EMC / EMI                          |             |
| 37. | CEC-416 | Pattern Recognition                |             |
| 38. | CEC-418 | Estimation and Detection Theory    |             |
| 39. | CEC-420 | Cloud Computing                    |             |
| 40. | CEC-422 | Robotics & Machine Vision          |             |
| 41. | CEC-424 | Fault Tolerant Computing           |             |
| 42. | CEC-426 | Distributed Computing              |             |
| 43. | CEC-428 | Neuro-Electronics                  |             |
| 44. | CEC-430 | Advance Computer Architecture      |             |
| 45. | CEC-432 | Bio – Impedance Based Measurements |             |
| 46. | CEC-434 | Fundamentals of MIMO               |             |
| 47. | CEC-436 | Advance Microwave & Antenna Design |             |

## B.Tech. Under Continuing Education Mechanical Engineering

### I Year

| First Semester  |              |                                 |              |           |                    |          |          |                      |           |                      |     |     |     |     |
|-----------------|--------------|---------------------------------|--------------|-----------|--------------------|----------|----------|----------------------|-----------|----------------------|-----|-----|-----|-----|
| Teaching Scheme |              |                                 |              |           | Contact Hours/Week |          |          | Exam Duration (hrs.) |           | Relative Weights (%) |     |     |     |     |
| S. No.          | Subject Code | Course Title                    | Subject Area | Cr        | L                  | T        | P        | Theory               | Practical | CWS                  | PRS | MTE | ETE | PRE |
| 1.              | CEE-105      | Electrical Technology           | AEC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CME-101      | Metallurgy                      | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 3.              | CME-103      | Engineering Analysis and Design | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 4.              | CHU-101      | Communication Skills            | HMC          | 2         | 2                  | 0        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
| <b>Total</b>    |              |                                 |              | <b>14</b> | <b>11</b>          | <b>0</b> | <b>6</b> |                      |           |                      |     |     |     |     |
| Second Semester |              |                                 |              |           |                    |          |          |                      |           |                      |     |     |     |     |
| 1.              | CEC-106      | Electronics                     | AEC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 2.              | CME-102      | Strength of Materials           | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
| 3.              | CME-104      | Fluid Mechanics and Machines    | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 4.              | CMG-102      | Fundamentals of Management      | HMC          | 3         | 3                  | 0        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
| <b>Total</b>    |              |                                 |              | <b>15</b> | <b>12</b>          | <b>0</b> | <b>6</b> |                      |           |                      |     |     |     |     |

## II Year

| Third Semester  |              |                                      |              |           |                    |          |          |                      |           |                      |     |     |     |     |
|-----------------|--------------|--------------------------------------|--------------|-----------|--------------------|----------|----------|----------------------|-----------|----------------------|-----|-----|-----|-----|
| Teaching Scheme |              |                                      |              |           | Contact Hours/Week |          |          | Exam Duration (hrs.) |           | Relative Weights (%) |     |     |     |     |
| S. No.          | Subject Code | Course Title                         | Subject Area | Cr        | L                  | T        | P        | Theory               | Practical | CWS                  | PRS | MTE | ETE | PRE |
| 1               | CME-201      | Thermal Engineering - I              | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 2               | CME-203      | Theory of Machines                   | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 3               | CME-205      | Production Technology - I            | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 4               | CHU-201      | Professional Ethics and Human Values | HMC          | 2         | 2                  | 0        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
|                 | <b>Total</b> |                                      |              | <b>14</b> | <b>11</b>          | <b>0</b> | <b>6</b> |                      |           |                      |     |     |     |     |
| Fourth Semester |              |                                      |              |           |                    |          |          |                      |           |                      |     |     |     |     |
| 1               | CME-202      | Thermal Engineering - II             | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 2               | CME-204      | Production Technology – II           | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 3               | CME-206      | Instrumentation                      | DCC          | 4         | 3                  | 0        | 2        | 3                    | 0         | 15                   | 25  | 20  | 40  | -   |
| 4               | CHU-202      | Engineering Economics                | HMC          | 3         | 3                  | 0        | 0        | 3                    | 0         | 25                   | 0   | 25  | 50  | -   |
|                 | <b>Total</b> |                                      |              | <b>15</b> | <b>12</b>          | <b>0</b> | <b>6</b> |                      |           |                      |     |     |     |     |

### III Year

| Fifth Semester  |              |                                    |              |           |                    |            |            |                      |           |                      |      |       |       |     |
|-----------------|--------------|------------------------------------|--------------|-----------|--------------------|------------|------------|----------------------|-----------|----------------------|------|-------|-------|-----|
| Teaching Scheme |              |                                    |              |           | Contact Hours/Week |            |            | Exam Duration (hrs.) |           | Relative Weights (%) |      |       |       |     |
| S. No.          | Subject Code | Course Title                       | Subject Area | Cr        | L                  | T          | P          | Theory               | Practical | CWS                  | PRS  | MTE   | ETE   | PRE |
| 1.              | CME-301      | Heat Transfer                      | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 2.              | CME-303      | Refrigeration and Air Conditioning | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 3.              | CME-3xx      | Department Elective-I              | DEC/GEC      | 4         | 3                  | 1/0        | 0/2        | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| 4.              | ---          | Open Elective                      | OEC          | 3         | 3                  | 0          | 0          | 3                    | 0         | 25                   | 0    | 25    | 50    | -   |
| <b>Total</b>    |              |                                    |              | <b>15</b> | <b>12</b>          | <b>2/0</b> | <b>4/6</b> |                      |           |                      |      |       |       |     |
| Sixth Semester  |              |                                    |              |           |                    |            |            |                      |           |                      |      |       |       |     |
| 1.              | CME-302      | Production Management              | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 2.              | CME-3xx      | Department Elective-2              | DEC/GEC      | 4         | 3                  | 1/0        | 0/2        | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| 3.              | CME-3xx      | Department Elective-3              | DEC/GEC      | 3         | 3                  | 0          | 0          | 3                    | 0         | 25                   | 0    | 25    | 50    | -   |
| 4.              | CME-3xx      | Department Elective-4              | DEC/GEC      | 4         | 3                  | 1/0        | 0/2        | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| <b>Total</b>    |              |                                    |              | <b>15</b> | <b>12</b>          | <b>2/0</b> | <b>2/6</b> |                      |           |                      |      |       |       |     |

## IV Year

| Seventh Semester |              |   |              |           |                    |            |            |                      |           |                      |      |       |       |     |
|------------------|--------------|---|--------------|-----------|--------------------|------------|------------|----------------------|-----------|----------------------|------|-------|-------|-----|
| Teaching Scheme  |              |   |              |           | Contact Hours/Week |            |            | Exam Duration (hrs.) |           | Relative Weights (%) |      |       |       |     |
| S. No.           | Subject Code | Course Title  | Subject Area | Cr        | L                  | T          | P          | Theory               | Practical | CWS                  | PRS  | MTE   | ETE   | PRE |
| 1.               | CME-401      | Flexible Manufacturing Systems                        | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 2.               | CME-403      | Machine Design  | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 3.               | CME-4xx      | Department Elective-5                                 | DEC/GEC      | 3         | 3                  | 0          | 0          | 3                    | 0         | 25                   | 0    | 25    | 50    | -   |
| 4.               | CME-4xx      | Department Elective-6                                 | DEC/GEC      | 4         | 3                  | 1/0        | 0/2        | 3                    |           | 15/25                | 25/0 | 20/25 | 40/50 |     |
| 5.               | CME-405      | *B. Tech Project                                      |              | 4         | -                  | -          | -          | 3                    | 0         |                      |      | 40    | 60    |     |
| <b>Total</b>     |              |   |              | <b>19</b> | <b>12</b>          | <b>2/0</b> | <b>4/6</b> |                      |           |                      |      |       |       |     |
| Eighth Semester  |              |   |              |           |                    |            |            |                      |           |                      |      |       |       |     |
| 1.               | CME-402      | Total Quality Management                              | DCC          | 4         | 3                  | 0          | 2          | 3                    | 0         | 15                   | 25   | 20    | 40    | -   |
| 2.               | CME-4xx      | Department Elective-7                                 | DEC/GEC      | 4         | 3                  | 1/0        | 0/2        | 3                    | 0         | 15/25                | 25/0 | 20/25 | 40/50 | -   |
| 3.               | CME-4xx      | Department Elective-8                                 | DEC/GEC      | 3         | 3                  | 0          | 0          | 3                    | 0         | 25                   | 0    | 25    | 50    | -   |
| 4.               | CME-404      | *B. Tech Project (continued from 7 <sup>th</sup> sem) |              | 8         | -                  | -          | -          |                      |           |                      |      | 40    | 60    |     |
| <b>Total</b>     |              |   |              | <b>19</b> | <b>9</b>           | <b>1/0</b> | <b>2/4</b> |                      |           |                      |      |       |       |     |

\*To be done at their place of work

### List of Departmental Elective Courses

| S.No. | Subject Code | Subject                         | Elective no. |
|-------|--------------|---------------------------------|--------------|
| 1.    | CME-305      | Operations Research             | DEC -1       |
| 2.    | CME-307      | Advanced Machining Process      |              |
| 3.    | CME-304      | Power Plant Engineering         | DEC -2       |
| 4.    | CME -306     | Non-Conventional Energy Sources |              |
| 5.    | CME-308      | I.C. Engines                    | DEC-3        |
| 6.    | CME-310      | Alternative Fuels Technology.   |              |
| 7.    | CME-312      | Tool Engineering                | DEC -4       |
| 8.    | CME-314      | Supply Chain Management         |              |
| 9.    | CME-405      | Product Design and Development  | DEC -5       |
| 10.   | CME-407      | Computer Aided Manufacturing    |              |
| 11.   | CME-409      | Mechatronics                    | DEC -6       |
| 12.   | CME-411      | Robotics & Automation.          |              |
| 13.   | CME-406      | Automobile Engineering          | DEC -7       |
| 14.   | CME -408     | Gas Dynamics and Jet Propulsion |              |
| 15.   | CME-410      | Mechanical Vibrations           | DEC-8        |
| 16.   | CME-412      | Material management             |              |



### List of Open Elective Courses B.Tech. under Continuing Education

| S.No. | SUBJECT CODE | SUBJECTS                                      |
|-------|--------------|---|
| 1.    | CCO351       | Enterprise & Java Programming                 |
| 2.    | CCO353       | E-commerce & ERP                              |
| 3.    | CCO355       | Cryptography & Information Security           |
| 4.    | CCO357       | Operating System                              |
| 5.    | CCO359       | Intellectual Property Rights & Cyber Laws     |
| 6.    | CCO361       | Database Management System                    |
| 7.    | CEC351       | Mechatronics                                  |
| 8.    | CEC353       | Computer Vision                               |
| 9.    | CEC355       | Embedded System                               |
| 10.   | CEC 357      | Digital Image Processing                      |
| 11.   | CEC359       | VLSI Design                                   |
| 12.   | CEE351       | Power Electronic Systems                      |
| 13.   | CEE353       | Electrical Machines and Power Systems         |
| 14.   | CEE355       | Instrumentation Systems                       |
| 15.   | CEE357       | Utilization of Electrical Energy              |
| 16.   | CEE359       | Non-conventional Energy Systems               |
| 17.   | CEE361       | Embedded Systems                              |
| 18.   | CEN351       | Environmental Pollution & E- Waste Management |
| 19.   | CEN353       | Occupational Health & Safety Management       |
| 20.   | CEN355       | GIS & Remote Sensing                          |
| 21.   | CEP351       | Physics of Engineering Materials              |
| 22.   | CEP353       | Nuclear Security                              |
| 23.   | CHU351       | Econometrics                                  |
| 24.   | CMA351       | History Culture & Excitement of Mathematics   |
| 25.   | CME351       | Power Plant Engineering                       |
| 26.   | CME353       | Renewable Sources of Energy                   |
| 27.   | CME355       | Combustion Generated Pollution                |
| 28.   | CME357       | Thermal System                                |
| 29.   | CME359       | Refrigeration & Air Conditioning              |
| 30.   | CME361       | Industrial Engineering                        |
| 31.   | CME363       | Product Design & Simulation                   |
| 32.   | CME365       | Computational fluid dynamics                  |
| 33.   | CME367       | Finite Element Methods                        |
| 34.   | CME369       | Total Life Cycle Management                   |

|     |         |   |
|-----|---------|---|
| 35. | CME371  | Value Engineering                                 |
| 36. | CMG351  | Fundamentals of Financial Accounting and Analysis |
| 37. | CMG353  | Fundamentals of Marketing                         |
| 38. | CMG355  | Human Resource Management                         |
| 39. | CMG357  | Knowledge and Technology Management               |
| 40. | CPE351  | Advance Machining Process                         |
| 41. | CPE 353 | Supply Chain Management                           |
| 42. | CPE355  | Work Study Design                                 |
| 43. | CPE357  | Product Design & Simulation                       |
| 44. | CPE359  | Total Life Cycle Management                       |
| 45. | CPE361  | Total Quality Management                          |
| 46. | CPT361  | High Performance Polymers                         |
| 47. | CPT363  | Separation Technology                             |
| 48. | CPT365  | Non-Conventional Energy                           |
| 49. | CPT367  | Polymer Waste Management                          |
| 50. | CPT369  | Nanotechnology in Polymers                        |
| 51. | CPT371  | Applications of Polymer Blends and Composite      |
| 52. | CIT 351 | Artificial Intelligence and Machine Learning      |
| 53. | CIT 353 | Data Structures and Algorithms                    |
| 54. | CIT 355 | Communication and Computing Technology            |
| 55. | CIT 357 | Internet and Web Programming                      |
| 56. | CIT 359 | Java Programming                                  |

# Academic Departments

## DEPARTMENT OF APPLIED CHEMISTRY

The Department of Applied Chemistry holds the foundation of the reputation of Delhi Technological University as it is one of the core disciplines of DTU founded at the time of its inception in 1941. The department offers undergraduate, post-graduate and doctoral (Ph.D.) programs. The department is committed towards higher education and research in the areas of Chemistry, Chemical Engineering & Polymer Technology. It is well interconnected with other disciplines of the University, with frequent research in collaboration. It strives to cater to the society and industries with updated knowledge of Chemical and Polymer Sciences. Henceforth, with the realization of the importance of Chemicals, and especially polymers, that find applications in almost all spheres of our lives and also serve as raw material/ feedstock to a number of industries, the department initiated a two-year MTech. (Polymer Technology) program in 1986 and a four-year undergraduate program, BTech. (Polymer Science and Chemical Technology) in 1998. Looking into the broader perspective for the students, the department is starting B.Tech. in Chemical Engineering from the academic year 2020-21. Experienced faculty and advanced analytical equipment like FTIR, DSC, TGA, HPLC, Electro-Spinning, DMA, UTM, Rotational Rheometer etc. with up-to-date curriculum, infrastructure and services account for the excellent track record of the department in research and innovation. The department strives to provide a thrill of a corporate R&D environment for its students to cater them with the required industrial knowledge.

Department offers various under graduate and post graduate courses in Chemical Engineering, Polymer Technology and Applied Chemistry Fields. The syllabus has been designed to bridge the gap between academia and industries. The main areas of research & teaching include Reaction Engineering, Chemical Engineering Thermodynamics, Heat & Mass Transfer, Petroleum refining, Polymer Blends/Alloys, Membrane Technology, Electrochemistry, Rubber Technology, Fibre Technology, Biomaterials and more. Equipped with state-of-the-art labs including Chemical Reaction Engineering Lab, Fluid Mechanics Lab, Heat and Mass Transfer Lab, Instrumentation & Control Lab, Polymer Testing Lab, Polymer Characterization Lab, Polymer Processing Lab, Computer-Aided Design Lab, Material Science Lab and Chemical Technology Lab. The department equips technocrats with strong knowledge of applied chemistry and traditional & advanced analytical technologies. The department of Applied Chemistry is one among the most active department of DTU, courtesy of our students who have shown overwhelming support by steering departmental fest 'TATVA' and societies; IChE and ACS, all by their own. This has surged the network of the department including major research-based entities across the world. The department has also undertaken and accomplished numerous research and industrial projects funded by AICTE, CSIR, UGC, DRDO, DST, BARC, etc. Fostering R&D pursuits, as well as vital national and international collaborations, have been established in several fields. The department has collaborations with reputed national and international industries, institutes and universities. Our students possess the required industrial skills from R&D to Product Managing. A good number of our graduates, every year, enrol into higher studies from institutes like Stanford University, Cambridge University, Georgia Institute of Technology, Nanyang Technological University, NYU, Carnegie Mellon, Cornell, TU DELFT and more. A large number of our alumni have successfully found their niche in India and abroad with companies such as Accenture, Dow, IOCL, Google, Reliance, ExxonMobil and many more.

### Programs offered:

Under graduate Program – B.Tech. Chemical Engineering

Post graduate Program – M.Tech. Polymer Technology

Doctoral Program – Ph.D. in Chemistry & Chemical Engineering disciplines

## DEPARTMENT OF APPLIED MATHEMATICS

Mathematics is the base of all engineering as well as technological branches. A sound knowledge of mathematical tools makes a technocrat to excel in his/her profession. In fact the “Industrial Mathematics”, a branch of Applied Mathematics, which is relevant for contemporary technological problems, is not only the queen of all sciences but is also the mother of all technologies.

The Department of Applied Mathematics offers courses to undergraduate and postgraduate students of various engineering disciplines. The syllabi have been designed in the areas of Applied Mathematics, Computational techniques, Statistics and operations research to impart sound knowledge of various mathematical tools and their applications in the engineering disciplines.

To keep pace with the growing technologies which are resulting in more and more complex phenomena requiring high precision result, the department of Applied Mathematics offered a 4 year B. Tech. course in Mathematics and Computing from the academic session 2011-2012. The aim of this program is to train the students in all the fundamentals of Mathematics & Computer Science with emphasis on computational techniques providing fusion of Mathematics with Computer Science. The scope of the course will cover the fields such as Computer Science, Engineering Computations, Financial Computations, Optimization Techniques and of course a profound knowledge of the Mathematics. The prospect of the course lies in the core engineering industries, software field and the financial sectors. The course will also make a sound foundation for the students willing to pursue Higher education in the discipline of engineering, Finance, Computational Mathematics, as well as Management. The students will be trained in such a way that graduate would be able to take up jobs in academia or industry or pursue higher studies. The response of the students is quite impressive.

The Department of Applied Mathematics is well equipped with computer lab and competent faculty with diversified specialization.

## DEPARTMENT OF APPLIED PHYSICS

Department of Applied Physics is a major department of Delhi Technological University providing cutting edge research, innovation and education in the emerging areas of science and technology. The objective of the department is to create future generations of skilled Engineers and Scientists by providing quality education through cutting edge technologies and innovative teaching techniques so as to make them well equipped to face present and future challenges and their overall sustainable professional growth. The department offers following academic programme:

### **Academic Programmes Offered:**

1. Under Graduate Programme: B.Tech. in Engineering Physics
2. Post Graduate Programmes: (i) M.Sc. in Physics, (ii) M.Tech. in Nano Science and Technology, (iii) M.Tech. in Microwave and Optical Communication Engineering (in association with Department of Electronics and Communication Engineering)
3. Doctoral Programme.

The Programme B.Tech. in Engineering Physics is designed for students who have an interest in and an aptitude for both engineering and physics ranging from system oriented thinking to problem solving skills. The B.Tech Engineering Physics degree offered to the students has major in Electronics and minor in Nano Science and Technology, Nuclear Engineering, Photonics, Robotics, Plasma Physics and Space and Atmospheric Sciences.

Engineering Physics couples both the pure sciences and engineering, making it possible for students to have a wide interest in the application of modern physics to technology and new product development, without losing close interaction with “Core Subjects”. The course prepares students to tackle complex problems in multidisciplinary areas that are at the forefront of technology, such as electronics & communication, solid state devices, quantum optics and photonics, communication, material science, nanotechnology and other engineering fields that require a very solid background in physics. It is essentially an inter-disciplinary undertaking, interacting with mathematics, computer science, electronics engineering, mechanical and other disciplines. Engineering Physicists have the flexibility to adapt to changing technological requirements and the ability to make meaningful contributions to modern interdisciplinary research and developments.

The PG programmes of the Department has been designed in a manner which blend demanding coursework with cutting-edge research to prepare graduates for jobs in academia, industry, and government labs. Our programs emphasize core academic competency and research excellence. The courses are designed and taught by our internationally reputed academics carrying out cutting-edge research in diverse areas.

The department also offer doctoral programme in various fields, including experimental Condensed Matter Physics, Microelectronic Devices (Modeling and Simulation), Plasma Physics, Nanotechnology, Fiber Optics and Optical Communication, Energy Storage and Conversion Devices, Carbon Nano Materials, Solar Cells modeling and simulation, Fluorescence Spectroscopy, two dimensional ultrathin materials for energy harvesting etc.

The department has well-qualified and motivated faculty which is highly dedicated towards teaching and making every possible effort for providing the students creative and stimulating environment required for their complete professional development. Moreover, faculty members of the applied physics department are actively involved in R & D in various fields. They have published research work in high impact factor, peer reviewed international journals and have been authored many books relevant to academics and research. The faculty of the Applied Physics Department has been awarded consecutively maximum research excellence award from the last three years. In addition, they have acquired patents for their research work. Besides, the faculty members have several National and International collaborations for R & D activities. The department has numerous ongoing Sponsored Research/Consultancy Projects.

The department takes immense interest in conducting various professional activities, such as, organizing national and international conference, workshops, seminars and expert lectures to gain knowledge of the various challenges in the area of physics. In the year 2019, the department has also organized an International Conference (CAMNP-2019), which is one of the largest conferences (in terms of the national and international participation and funding from the government). The conference focused on developments in atomic, molecular, optical & nano science which has proved to be powerful science supporting many other areas of science & technology including industrial technology, information technology, energy, global change, defence, health and medical environmental, space technology, and transportation. In addition, several seminars and faculty development programmes have also been organized in the past few years covering emerging areas of Materials Science.

The department has more than 20 well established laboratories which facilitate hands on experience of the theoretically gained knowledge under various UG and PG programmes offered by the department. The department of Applied Physics also maintains advance instrumentation centre, which is a central facility of DTU, equipped with high end materials characterization equipment, such as, X-ray Diffractometer, Scanning Electron Microscope. The department has also student chapter of professional bodies namely, Society of Photo-Optical Instrumentation Engineers (SPIE) and Optical Society of America (OSA) established in DTU in the year 2004 and 2008, respectively, with

an aim to inculcate temperament of research and development among scholars and faculty members in the area of optics and photons at DTU. The department also hosts a technical society named as Deltech Engineering Physics Technological Hub (DEPTH), where several events, including Technical Paper Presentations, guest lectures, seminars, debates etc are organized. The society organizes various industrial visits to acquaint its members with breath-taking technologies along with their implementation in various industries.

## DEPARTMENT OF BIO-TECHNOLOGY

The Department of Biotechnology was established in the year 2004 with a mission to create fusion of engineering and life sciences that promotes scientific discovery and development of new technologies through research and education. The focus of the department is on basic research in modern biotechnology, molecular basis of life processes and bioinformatics. The department admits students for Bachelor of Technology (B. Tech.) in Biotechnology and Master of Technology (M. Tech.) in Bioinformatics. Besides basic and engineering sciences, the curriculum covers various subjects of Biotechnology.

Currently, the department has 10 faculty members. The department has an intake of 60 undergraduate students. The B.Tech. (Biotechnology) programme is NBA accredited. Research interest of the department are Biomaterials, Immunology, Bioprocess technology, Enzyme technology, Plant Biotechnology, Bioinformatics, Genome Informatics, Biomechanics, Stem Cell Biology, Genomics and Proteomics, Tissue culture and Drug Design. The department has sponsored projects amounting to nearly 3 crores from various agencies including ICMR, SERB, DBT and CSIR, and has developed modern research facility and infrastructure to support the teaching and research activities.

The department organized a corporate meet on Knowledge Park and a national seminar on Biotechnology & Bioengineering (2007) and national symposium on Biotechnology (NaSBI-2010) in which distinguished speakers from CSIR, DST, ICGEB, IIT, AIIMS, IGIB, JNU and renowned companies like Monsanto and Biocon delivered plenary lectures.

The department has started annual departmental magazine, ALLELE, and invites recent achievements and articles for the same.

The students of the department organize a technical festival KARYON every year. They organize several technical, biotechnology and management related events on national level. KARYON -13 witnessed the presence of several eminent speakers Ashwani Pareek (JNU), Dr Vinod Scaria (IGIB-CSIR) and Dr Anshu Bhardwaj (CSIR-OSDD).

The department has recently launched the International Journal of Biotechnology and Bioinformatics (IJABB) edited by Prof Samir K. Brahmachari (Director General, CSIR) (Editor-in-chief) and Dr Yasha Hasija (Assistant Professor, Department of Biotechnology, DTU) (Executive Editor).

### Objectives of the Department are:

- i. To provide state of art expertise in various aspects of biotechnology, ii. Develop expertise in Bioinformatics, iii. Research for the benefit of human kind to develop effective interactions with industries involved in biotechnology and bioinformatics, iv. Knowledge dissemination through seminars, symposia and short term refresher courses at national level, and v. Industrial consultancy and Industry-University partnership in Biotechnology.

## Facilities at Department

- i. A Bioreactor (10 litre capacity) fully equipped with Automatic Control along with Computer data Acquisition of Analysis Software, ii. Gas liquid chromatography, Ultrafiltration Systems, UV-Vis Spectrophotometers, Atomic Absorption Spectrophotometer, Ultracentrifuge, Refrigerated Centrifuges (low and high speed). Viscometer with PIV computer, Vertical autoclave, iii. Incubator hybridizer.

## DEPARTMENT OF CIVIL ENGINEERING

Traditionally Civil Engineering has played an important role in improving the civic life of society by harmonizing the natural resources available on the earth. The major areas in the field of Civil Engineering are design and construction of various structures like bridges, buildings, roads, tunnels & dams, developing new construction technologies, design & development of foundation systems, geotechnical engineering, transportation & traffic engineering, municipal & sanitary services, surveying, GIS & remote sensing, and hydraulics & water resources engineering. Civil Engineers have also found an important role in some newer areas like design and construction of waste containment systems, disposal of nuclear wastes, and protection of groundwater resources. In recent years Civil Infrastructure development is resulting into development of new appropriate materials. The role of specialized geotechnical engineers is vital and relevant for any structure to stand and stable on a suitably designed foundation system. Transportation engineering deals with the planning, design & construction of roads, railways, metro and mono rails, airport, dock & harbours, as well as controlling & regulating the traffic flow. Broadly a Civil Engineer is expected to do planning, research, design and construction of buildings and roads; traffic and transportation systems; irrigation and power related infrastructure, water supply and sewage disposal systems, dam and reservoirs; ports and harbours; airways and navigation; treatment of industrial & urban wastes and disaster mitigation; river linking etc.

Besides the basic and engineering sciences, the curriculum in civil engineering covers various professional subjects on structures, foundations, construction, works management and cost, transportation engineering, irrigation engineering hydraulics and earthquake technology etc.

Apart from the B.Tech. Civil Engineering program the department also offers regular M.Tech. Programs in Structural Engineering, Geotechnical Engineering and Hydraulics and Water resources engineering. The annual Intake at UG level is 120 whereas at PG level it is 59.

The B.Tech. Civil engineering program has recently been accredited by NBA for three years.

The PG programs of the department for the last 30 years, have contributed significantly to the manpower development in highly relevant areas of national importance.

The department also provides opportunity to working engineers for upgrading their qualification under Continuing Education Program on part time basis. These programs are M. Tech. in day time and B. Tech. in evening time.

The UG curriculum is broad-based and designed to introduce the students with a wide range of problems encountered by Civil Engineers. Electives, self-study courses, and independently conducted projects are offered in the pre-final year and final year to enable the students to develop additional depth in the areas of special interest to them. Survey camp and practical training, which are part of the curriculum, aim to expose the students to actual field problems. Laboratory experiments, computer aided analysis, design & drawing and the tutorial classes are held to build confidence in the students.



The department is well equipped with laboratory related to Structures, Concrete Technology Soil Mechanics, Rock Mechanics, Highway Engineering, Experimental Stress Analysis, Computational Mechanics, and Computer Aided Design, photogrammetry & GIS facilities and Fluid Mechanics & Hydraulics. The department undertakes to organize special lectures and discussion by eminent persons from the field and industry. The department has established a student chapter namely “SEM DCE Student Chapter” with the society for Experimental Mechanics, USA. The interested students are encouraged to become member of SEM DCE Students Chapter. Keeping in view the requirements of personality development of the students, the department has stated in 2009, the Society of Civil & Environmental Engineers (SCEE).

The department lays greater emphasis on the quality research and development. Excellent facilities are available to conduct research for the award of Ph.D. degree in the discipline of Civil Engineering: Structural Engineering, Structural Dynamics, Earthquake Engineering, Water Resources Engineering, Experimental Mechanics, Geotechnical Engineering and other interdisciplinary areas.

## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Computer Science and Engineering has revolutionized the way computing is done with study that spans the range from theory through programming to cutting-edge development of solutions applied across domains and offering an expansive career path. The Department of Computer Science and Engineering, established in 1989 has grown significantly in the last twenty five years. The department offers a variety of degrees for undergraduates & graduates in computing-related areas. All degree programs combine the teaching of core principles with hands-on laboratory experience, preparing students for exciting careers in industry and academia.

At undergraduate level the department offers B.Tech. in two disciplines, Computer Engineering and Software Engineering. The current intake for the same is 360 and 120 respectively. At graduate level the department offers both full-time and part-time M.Tech. degrees in disciplines of Computer Engineering and Software Engineering with an intake of 20 in each discipline for full-time and 10 in each discipline for part-time. The B.Tech. (Computer Engineering) programme has recently been accredited by NBA for 3 years.

The curriculum of the department has been designed in a way to provide the students with elementary concept learning as well as specialized current & practical engineering knowledge. Students build upon core curriculum and choose technical electives. The curriculum is further aligned with the requirements of the industries across the globe, and also with that of national and international universities. The major thrust areas are databases, software engineering, machine learning, web technologies, computer networks, information security, distributed processing, mobile communications, artificial intelligence, soft computing, and operating systems, amongst others. The students at all levels also enrich their educational experience by participating in projects & seminars and by undergoing internships & industrial training. Graduate level programs encourage both fundamental researches in computing and interdisciplinary research. Research projects in diverse areas under faculty guidance offer students a wide range of opportunities to gain experience while completing requirements for advanced degrees. The programs seek to emphasize “hands-on” experience, problem solving skills, the creative process and responsible action.

The department also offers doctorate degree (PhD) in Computer Engineering. Innovative and interdisciplinary research is conducted under the adept guidance of faculty within the department in the domains of databases & data mining, software maintenance, software quality, big-data analytics, social media mining, information security and IoT.

The Department of Computer Science & Engineering has renowned, highly productive and professionally active faculty members, many of whom serve on international journal editorial boards and are senior members of professional



organizations like ACM or IEEE. Attesting to the quality and impact of the research conducted are numerous publications by the faculty members in international/national journals/conferences covering cutting-edge research and prestigious awards won by our faculty. Several technical books have been authored by the faculty members of the department. Also, the research of faculty members is supported by various government research grants funded by AICTE, DST, UGC and CSIR.

The department takes immense interest in conducting professional activities such as organizing workshops, seminars and expert lectures to gain insight and impart awareness about the challenges in IT industry. Through professional development activities, faculty strives for excellence in teaching and contributions to the state-of-the-art. In the year 2016, an international conference technically sponsored by IEEE was organized by the department. The department has also been frequently organizing faculty development programs in the emerging fields of computing. An open access, peer reviewed journal titled “Software Engineering: An International Journal” was also started.

The department has active technical societies such as student chapter of “Computer Society of India” (CSI) and contributes significantly in professional activities undertaken by IEEE and IET student chapters of DTU. In order to channelize the tremendous potential of the students, CSI-DTU student branch organizes a technical festival named “Phoenix” which comprises of several technical events like LAN Gaming, Business Plan, Animation, Web Designing, Algorithm design etc. The department also has a society of Software Engineering (SSE-DTU) for the engineers and the researchers in the software engineering discipline. The department also had a project by the name of “Unmanned Aircraft Systems in an autonomous aerial vehicle development”, which was carried out by the multidisciplinary students of DTU in collaboration with Lockheed Martin, a U.S. company.

The department facilities host both teaching and research laboratories supported by the department’s technical staff. In the last decade, the department has developed state-of-the-art laboratories in various fields of computer science and engineering. These are: Database Management and Data Mining Lab, Software Engineering Lab, Software Design and Testing, Artificial Intelligence Lab, Computer Architecture Lab, Networking Lab, Image Processing and Multimedia Lab, Computation and Programming Lab, Operating System Lab. The Labs are equipped with latest configuration PCs & software and are completely networked.

The Department of Computer Science & Engineering firmly believes in imparting the best possible training to its students & so actively seeks research based collaboration with leading organizations. Under university industry interface at DTU the department has collaboration with Samsung Software India Private Limited. Under this association the department offers MTech graduate degree in the discipline of Software Technology for the employees of Samsung. The department also has a collaborative research program with National University of Singapore (NUS) to provide an integrated research platform to both faculty and students.

Our students are highly sought after by the software industry and many of our under-graduates and graduates hold top positions in IT industry all over the globe. The majority of our undergraduates go on to work in leading market players like Google, Yahoo, Microsoft, Amazon, Cisco, Morgan Stanley, while others get involved in start-ups, work for government agencies, or continue their education in graduate school.

The department aims to establish itself as a leader in the field of computer science and engineering by advancing the quality of research & educational opportunities in line to the mission and vision of the university.

## DEPARTMENT OF ELECTRICAL ENGINEERING

The Department of Electrical Engineering has grown significantly since its inception in 1941. The year 2016 marked the 75th year of Excellence (Platinum Jubilee) for both the university and the department in academic, research and innovation. The goal of the department is to provide quality education at undergraduate and postgraduate levels and undertake cutting edge research in various areas of Electrical Engineering. The department also aims to develop active collaboration with various industries in the power sector, energy transportation and industrial automation sector. The department has earned itself a very good reputation in the national and global academic network. Currently, the department has an annual undergraduate intake of 240 students. With effect from the current academic session the two UG programs being offered by the department have been merged. The B.Tech (EE) program offered by the department has recently been accredited by the NBA for three years under Tier-1 format. The department is also offering a B.Tech. under Continuing Education with an intake of **60** students.

At the post graduate level, the department is offering two M.Tech. programs in Control and Instrumentation and Power Systems with a combined intake of 48 students. The department is also running part time (evening) PG program in Power Electronic Systems for DMRC (under MOU) since 2012-13. In addition to the above, the department offers regular Ph. D programs in various areas of specialization in Electrical Engineering. These include Intelligent Control, Optimization, Power Quality, Renewable Energy Sources, Smart grids, Power System Operation and Control, Power System Dynamics and Stability, Flexible AC Transmission (FACTS), HVDC, Electric Drives and Hybrid Electric Vehicles.

The department currently has 17 laboratories equipped with state-of-the art equipment and latest version of latest software platforms. The laboratories are equipped with sophisticated equipment, test setups, FPGA based data acquisition systems, embedded controllers, Digital Signal Processors, Medium power Inverter-converters, various Electrical Drives, PLCs, Power analyzers, spectrum analyzers, etc to name a few. The department is involved in carrying out several sponsored R & D projects funded by national agencies like AICTE and DST. Currently, sponsored projects from the DST and the AICTE amounting to more than Rs. 2 crores are currently underway in the department. The department is also engaged in consultancies in various fields of Electrical Engineering. The department also organizes National and International Conferences, Faculty Development Programs, Workshops and Expert Lectures from time to time.

Faculty members of the department have been regularly contributing towards International and National Journals of repute like IEEE Transactions and IEEE Proceedings, IET, Journals in Electrical Engineering from Elsevier, etc. along with Proceedings of National and International Conferences. The department also generously contributes to professional activities undertaken by the IEEE and the IET Delhi chapters. Several popular technical books have been authored by the faculty members of the department. Some faculty members have acquired patents for their research. The department plans to have new laboratories for Testing, Calibration & Standardization, Photovoltaic and Energy Storage, Power Quality & Energy Conservation, Electric Drives, Industrial Automation, Bio-Instrumentation, Distribution and Automation Centre and SCADA systems.

The Department of Electrical Engineering has developed into one of the best departments of the University. The placement trend has shown that the students of the department have been successful in getting lucrative jobs based on their interests in different fields. Top global recruiters such as Fujikara, Qualcomm, Mckinsey have offered placements to the students of this department with a package of over Rs. 10 Lakh per annum. Other recruiters from core engineering and allied sectors like Thorogood, Deloitte, Vedanta group, Wipro, Tata Power, Reliance, Axtia, PWC, ZS Associates, Technip, Bechtel, L&T, United Health Group have recruited students from this department with attractive packages. This consistent placement record illustrates the commitment and contribution of this department to the success story of the University. The graduates of the department are occupying important positions in both

government as well as corporate sector with many of them having joined programs of higher studies in India and abroad.

The Department has been hosting International and national conferences, workshops and invited lecture series every year. The department has the distinction of organizing two MHRD sponsored GIAN courses in the University. The first Gian course was delivered by Prof. Saifur Rahman, Fellow IEEE and Professor of Electrical and Computer Engineering at the Advanced Research Institute, Virginia Tech, USA. The second Gian course was delivered by Prof. A.K.S. Bhat, IEEE Fellow and Professor of Electrical and Computer Engineering at the University of Victoria, Canada. It is the agenda of the department to further augment the professional activities. The students are motivated for technical and creative activities besides classroom teaching and laboratory exercises through technical fests like TROIKA, organized under the IEEE student chapter and Renaissance, organized by the IET student chapter DTU. They are also encouraged to participate in various group learning and discussion activities in addition to presentation of seminar and term paper presentations on individual basis. Emphasis is laid on computer based assignments through modelling and simulation of various Electrical Systems in well-equipped laboratories.

## **DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

The Department of Electronics and Communication Engineering has seen considerable growth since its inception in 1976. The vision of the department is to focus on the incubation of innovations in the areas of electronic design/fabrication, and communication technologies, which are needed to address the growing challenges of tomorrow. The overall aim is to harbor a sustainable, and continuously evolving scientific, technological and educational environment which is both internationally- adapted and industry-relevant. This department offers UG/PG and Ph. D. programs. Currently, the department has an annual intake of 190 students in the B.Tech. Program in Electronics and Communication Engineering. The department is also offering B.Tech. under Continuing Education with an intake of 45 students. Project and Industrial Training is an integral part of the curriculum and are carried out in frontal areas of technology. Currently the Department has 11 well equipped curriculum laboratories and 4 research laboratories. There are separate departmental project laboratories. New equipment and experimentation work leading to perfect understanding of curriculum in electronics and communication engineering lays greater emphasis on deep understanding of fundamental principles and state of art knowledge. The PG programs include M. Tech. in VLSI Design and Embedded Systems; Signal Processing and Digital Design; and Microwave and Optical Communication and. The Department has focused attention on quality research. Scholarships are available for Ph. D. programs in the area of Electronics and Communication namely VLSI, DSP, Image Processing, Micro strip antenna design, Sensor Networks, Analog and digital system design.

Faculty members of the department have been regularly contributing towards International and National Journals of repute from publishers like IEEE Transactions, IET, Wiley, Springer and Elsevier, etc. along with Proceedings of National and International Conferences. The department is also actively involved in professional activities undertaken by IEEE Delhi chapters. Several popular technical books and chapters have been authored by the faculty members of the department. Some faculty members have applied for patent for their research findings. The Department of Electronics and Communication Engineering at Delhi Technological University has developed into one of the best departments of the University. The placement trend has shown that the students of the department have been successful in getting lucrative jobs based on their interests in different fields. Top global recruiters such as Texas instruments, Synopsis, Sandisk, Qualcomm, ARM, Freescale, ST Microelectronics, TCS Digital India, Samsung, Wipro, Mentor Graphics, Airtel, BEL, CDOT, TRAI, TCIL and Wynn have offered placements to the students of this department with a package of over Rs. 16 Lakh per annum. Other recruiters from allied sectors have recruited students from this department with attractive packages. This consistent placement record illustrates the commitment and contribution of this department to the success story of the University. The graduates of the department are occupying important positions in both

government as well as corporate sector with many of them having joined programs of higher studies in India and abroad.

The Department regularly organizes seminars, workshops and training programs to keep pace with the new developments and recent trends in relevant technologies. Recently the department has organized invited lecture series in VLSI and Microwave engineering to augment industrial inputs. The department has hosted the MHRD sponsored GIAN course in the University which was delivered by Prof. Mohammad Sawan, Fellow of the Canadian Academy of Engineering, Fellow of the Engineering Institutes of Canada, Fellow of the IEEE and Professor of Microelectronics and Biomedical Engineering, Polytechnique Montreal, Canada. Apart from these activities the students are encouraged to organize and participate in various technical and social activities under the aegis of IEEE student branch and Robotics society. Technical fests are organized under the IEEE student branch (TROIKA) and Robotics society respectively. They are also encouraged to participate in various group learning and discussion activities in addition to presentation of seminar and term paper presentations on individual basis.

## DEPARTMENT OF ENVIRONMENTAL ENGINEERING

The Department of Environment Engineering has witnessed significant growth since the inception of Environmental Engineering at undergraduate (BE/ B. Tech since 1998) levels. Since then, the department strived ahead to develop a capable and well trained task force of environmental engineers. Realising the need for a strong academic and research base in the subject, the University established an independent Department of Environmental Engineering in 2012.

The Department admits student for B. Tech. programs in Environmental Engineering. The present intake is 60 in undergraduate (B.Tech.) and 20 M.Tech. (full time) course. The academic curriculum of the department is based on an amalgam of mandatory, electives, independent projects, and industrial internship. The department has a strong research infrastructure with six well equipped, state-of-art laboratories with all modern instrumentation and experimental setup. Currently, the department is actively engaged in research projects in the area of water treatment air pollution control, Bioremediation, Noise pollution control, and contaminant transport & modelling.

The department has nurtured a compatible research atmosphere and has attracted the research projects from Department of Science & Technology (DST), UGC, AICTE etc. The department is actively engaged in offering environmental consultancy service to various industries, NGOs, Govt. departments like PWD, CPWD, NDMC, MCD, DDA, and Irrigation and Flood Control Department.

In order to strengthen the academic environmental and institutional ties, the Department has collaboration with Central Pollution Control Board, National Physical Lab, Delhi Pollution Control Committee, DRDO, and La Trobe University Australia for student and faculty exchange, collaborative research projects, and training/internships. The department has held various seminars and conferences with UNESCO, University of California, AITS, Ministry of Environment & Forest, and NGOs for training and capacity building of employees and community service. The Department has impressive industry interaction and placement records with a numbers of student's places in NALCO, CPCB, Maruti, TERI, Michelin, Yamaha, GAIL, NTPC, and in various foreign Universities.

## DEPARTMENT OF HUMANITIES

The Department of Humanities offers courses in Communication Skills, English, Economics and Accountancy for engineering and management students of the university with an effort to train them for the global economic environment of the 21<sup>st</sup> century. Besides, giving them an in-depth understanding of the labour market and emerging employment trends among engineers, students are sensitized towards the specific technological needs of urban slums and rural areas and socio-economic impacts of engineering projects on the masses. A conscious effort is also made to develop effective communication and interpersonal business skills among the budding engineers. To achieve this, classroom teaching is supplemented with market survey and analysis, paper presentation, group discussion, etc.

With a view to developing professional proficiency and academic growth, the faculty members frequently participate and present their research papers in the national and international seminars and conferences. The Department also organizes seminars and invited talks for the benefits of students.

Communication skills help them in comprehending and grasping the nuances of English language. It enables them in gathering those much needed presentation skills and communication techniques which provide a competitive edge for their career. Not only does it help them in developing proficiency in English, it also makes them aware of the changing global trends and demands in the world of English language.

Economics at B.Tech, MBA and PhD. level is another attempt to sensitize the students to address the growing responsibility of engineering hubs towards urgent business needs. On the one hand, the syllabus introduces them to the labour market and emerging employment trends, on the other, efforts are made to correlate their theoretical learning with the immediate environment. The classroom teaching encompasses a range of conceptual training supplemented by market analysis, paper presentations, and group discussions that further gets enhanced by a well-equipped laboratory.

The Department of Humanities has a well-established Language Lab with the capacity of thirty students. It is a dynamic learning space for the B.Tech students. It aims to enable the students with linguistic and phonetic proficiency of English language required for their professional life. The lab is equipped with the latest software of English language and phonetics with several other learning exercises such as group discussion, model imitation, text to speech practice, etc. As such, the lab also serves as a place for motivation and overall grooming of the young students exposing them to different professional contexts where language learning plays a performative role.

## DEPARTMENT OF INFORMATION TECHNOLOGY

The Department of Information Technology endeavours to provide the thrill of a corporate R&D environment with a planned focus on industrially relevant projects and technology incubation. The curriculum defined, lays greater emphasis on design principles and development of system software for Operating Systems, Computer Networks, Database Management Systems, Malware Analysis, Artificial Intelligence, Data Mining, Computer Vision, Cloud Computing and Internet of Things (IOT). The Department has developed state-of-the-art laboratories in the various fields of Information Technology-Computer Networks Lab, Web Engineering Lab, Programming Lab, Information and Security Lab, Malware Analysis lab and Biometric Research Lab. Currently the department offers Doctorate, post-graduate & under-graduate courses. The department also has an active student chapter of Computer Society of India (CSI) and contributes significantly in professional activities undertaken by IEEE and IET students

The Delhi Technological University, offers an undergraduate course in Information Technology with an intake of 120 students every year. Also, to meet the growing demands of present day technologies a post graduate course in Information Systems is being offered. The courses are designed in a way so as to provide the students with fundamental concepts and tools related to the field. The Bachelor of Technology (IT) emphasizes on all basic subjects such as operating systems, computer architecture, software development, networking, multimedia and graphics, Internet Security and computer communications. Specialized knowledge on analysis and design of information system, mobile communication, soft computing, artificial intelligence, digital signal processing, computer vision and expert systems, web engineering is also imparted, along with various electives related to upcoming IT fields. Further, large number of publications in the International Journals of repute and conference proceedings by the undergraduate and post-graduate students is outcome of the research culture developed in the department.

The department has recently come up with the “Society for IT Engineers” (S.I.T.E) in the year 2010-2011, which aims at encouraging students to be part of active working teams in practical industrial projects and technical work, enabling them to expand intellectually so that they can make in this challenging industry and helping inculcate temperament of IT among students as professionals.

Ministry of Communications and Information Technology, Govt. of India has identified Information Security as one of the thrust areas and has entrusted the department of Information Technology, Delhi Technological University to set up an inter-ministerial working group on Information Security Education and Awareness Program. The aim is to recommend an action plan and strategy for Human Resource Development in the area of Cyber Security/Information Security, thus leading to indigenous hardware and software capabilities in the core of Information Security.

Keeping in mind our constant urge to grow and keep abreast with modern technology and ever growing concerns of the society, Department has recently conducted workshop on “Intellectual Property Rights (IPR) meets Information Technology” where the academia students and faculty alike, industry, national organizations such as FICCI and practicing IP attorneys were brought under one roof to initiate a very pertinent dialog-pertinent to all stakeholders and nation at large. The Department also has a project by the name of “Unmanned Aircraft Systems in an autonomous aerial vehicle development”, which is carried out by the multidisciplinary students of DTU in collaboration with LOCKHEED MARTIN, a U.S. company. Further, DRDO sponsored project titled “Classification and analysis of suspicious codes based on their static and dynamic features using multiple classifiers” has been started in this academic session.

The department provides well equipped and well-connected state of the art laboratories in the areas of Web engineering, computer Networking, Information Security, etc. apart from various already existing laboratories. Department of IT has starting a new laboratory named as “Biometric Lab”. Biometrics deals with physiological and behavioural data with physiological and behavioural data of human beings (or living species in broader sense), which is one of the most authentic data. It plays an important role in information security and makes thrust area for research.



The field of this lab will be largely devoted to study and develop technologies for identification of individuals using biological traits, such as those based on retinal or iris scanning, fingerprints, face recognition, voice recognition etc. Further plans for advancement and expansion of the research in the areas of information security, computer networks, optical communication, knowledge discovery in databases and other IT related fields shall be undertaken

## DEPARTMENT OF MECHANICAL ENGINEERING

The Department of Mechanical Engineering has seen considerable growth since its inception in 1941 with the intake rising from 30 to 360 (246 for Mechanical, 60 for Production & Industrial Engineering and 60 for Mechanical Engineering with specialization in Automotive Engineering). The department is fully equipped with modern facilities and labs including newly developed design centre having state of art technology to meet the current and future requirements of industry and academics. The Department also offers four years' B. Tech. Program for working Diploma Engineers with an annual intake of 60 students. The B.Tech Production and Industrial Engineering being offered by the department has recently been accredited by NBA for three years.

The department possesses modern laboratories equipped with latest experimental set-ups and research facilities for instrumentation, experimental stress analysis, strength of materials, fluid mechanics, I.C. engines, automotive engineering, robotics, heat transfer, solar energy, flexible manufacturing system, computational fluid dynamics supported by software like view-flex, CAD-CAM and I.C. engines design. Cad Lab has softwares like NX-LAD, NXCAM, AUTOCAD Inventor, Catia, Techomatix, Abaqus, Lsydyna, NX-Nartran, Hypermesh, Hyperworks, MD-ADAMS, Dynaform, MATLAB, SOLIDWORKS etc. Fluent software is available in the CFD centre. Newly developed design centre has softwares likes LS-DYNA, SOLIDWORKS, Symbols-Sonata and likely to add 3D printer (rapid prototyping) very soon. The department has developed eco-friendly technology using alternate refrigerants in the RAC lab for mitigating global warming and Ozone depletion.

Research and development is facilitated by NT enable workstations and competitive robots with digital controller. In addition; microprocessors, micro controllers, PLC, spectrum analyzer and logic analyzer are also available for students' project work. The department has a modern workshop equipped with latest machinery in Fitting, Machine shop and facility of welding shop comprising of pulse TIG, ultrasonic welding and submerged arc welding. The students are given hands on experience on CNC Milling & CNC lathe machine. Apart from these machines, EDM & wire EDM machine are also used for training of students. Most modern labs and research facilities for fluid mechanics, ID engines, automotive engineering, robotics, solar energy, flexible manufacturing system are also established in the department. Industrial Engineering lab has SPSS, Witness and Lingo 7 softwares for tackling industry relevant problems.

The department is known worldwide for its research in the area of alternative fuels; bio-origin fuels in particular. Different species of TBO and non-edible oils such as Jatropha, and Karanja are converted to biodiesel confirming to ASTM D-6751 using most modern production facilities. Centre for Advanced Studies and Research in Automotive Engineering has developed small to medium capacity bio-diesel processing units. The research projects sponsored by different government organization and industry such as Ministry of New and Renewable Energy, Govt. of India, and Petroleum Conservation Research Association, Yanmar Co. Ltd., Osaka, Japan had been completed at the Centre. An Indo-Spanis Collaborative Research Project Application of supercritical technology for the synthesis of biodiesel from nonedible oils ((Jatropha curcas and Pongamiapinnata) using heterogeneous catalysts in collaboration between Delhi Technological University and University of Murcia, Spain is under progress at the centre. The centre has also been consultant to World Bank Funded Project "Fences for Fuel." The students from the centre have participated in renowned International conferences such as SAE World Congress and presented their research findings. The centre

has most modern analytical facilities along with vast number of engines for carrying out exhaustive studies on variety of alternative fuels. The students at the centre also developed an indigenous PEM fuel cell which is first of kind in India.

The department has also carried a research project titled “Developed of Ice slurry production Technology” under research promoting scheme by AICTE. A project for production of biodiesel from waste cooking oil (generated hotels & restaurant etc) has also been awarded by Department of Health and Environment, Govt. of NCT of Delhi. The department also organizes invited lectures, conferences and short-term courses for the benefits of students and faculty members.

The Mechanical Engineering Department has an active SAE student chapter, a first in India and one of the largest student chapters in the world. This is the only student chapter which takes part almost all student vehicle design competitions of SAE like Formula Students, Mini Baja, and Super Mileage besides other international vehicle design competitions. Formula Students car developed by the students of the department participated in the international competition held at Silver Stone Circuit, U.K. in July 2012. The students of the department have taken a keen initiative in development of a solar passenger car (Solaris) which participated in South Africa Solar World Challenge 2012. The Mini Baja team participated in SAE-mini Baja-2012 at Auburn University, USA and won appreciation and accolades. The students have also participated in the competition conducted by NASA USA men paddled moon vehicle by the name MOON BAGGI and CHANDER YAN, where DTU students have won prestigious awards. The department also has ISHRAE, ASME, IMech student chapter. Under and specialized lectures are conducted regular basis.

The department has well qualified faculty members, who produce numerous publications in national/international journals of high impact factor, highlighting the emphasis on research and development. The department has made strides in percolating the research culture even among UG students besides PG students and large number of publications and patents are filed by the students. Considering the growing need to protect the environment, the students of the department are working on carbon sequestration techniques and also working on algae multiplication with a view to reduce carbon foot print. The photobioreactor developed by the department is first in India and exhaustive research work on mass propagation of algal biofuel is carried by students.

## DELHI SCHOOL OF MANAGEMENT

Delhi Technological University, well known for its excellence in the engineering disciplines, established its Business school - Delhi School of Management (DSM) in the year 2009. DSM is supported with state-of-the-art DTU infrastructure including hostels, guest houses for visiting experts, serene ambience to pursue learning, smart classrooms, computing labs, databases and well-stocked library.

The school runs a two year full time regular MBA program and a two year weekend MBA (Executive) program. The school is also extending support to various engineering departments of DTU for imparting management education to the budding engineers.

DSM provides immense opportunities for students to emerge as globally competitive future managers and leaders through its innovative and corporate needs oriented academic programs, the strength of its faculty and support services, and the range of student activities. Careful selection of students from all over India having consistent good academic record and aptitude for management ensures that the classrooms are lively, and that each student gets a challenging, competitive, and cosmopolitan atmosphere.

The curriculum is designed to meet the requirements of the present day technology intensive business functions. The students are equipped with management knowledge to deal with complex, global and dynamic business environment. The course structure comprises four semesters that are taught over a period of two years. In the first year, the students



are oriented with the fundamentals of HR, Finance, Marketing, Micro and Macro Economics along with the various aspects of business like Corporate Law, Operations, Supply Chain, IT, Knowledge Technology, etc. The second year offers plethora of opportunities wherein students can choose two specialization papers (one from technical specification and other from functional specification) from six avenues that are offered with four courses per specializations along with core papers like Strategic Management, Corporate Governance, Project Management, International Business Environment and one foreign language.

DSM also gives ample exposure to students through case-studies, course projects, and industry internships. The emphasis is on the right combination of classroom learning, hands-on experience in the corporate world and sharing the rich experience of the practitioners. In order to provide students with the required exposure, DSM brings them in close contact with the industry executives and eminent academicians through a series of lectures, sponsoring students to conferences and seminars, and facilitating their participation in papers/ case studies competitions. The students also get focused soft-skills training to enable their true inner qualities to shine through.

The various student societies of DSM provide a vibrant environment for the students by organizing events such as Marketing Quiz, Finance Quiz, Debate, Sports Quiz and various events like Cricket Premier League, Football Premier League, and Basketball Premier League by Sports Club. As in the previous years, DSM was action packed with various events featuring visiting experts from industry/academia, workshops, symposium, panel discussions peppered with student activities like B- plan Competition, National Seminar and the annual management Conclave.

To allow the students to gain on the job training and apply the classroom knowledge, an 8-week summer internship is an integral part of the curriculum. Further to make this internship effective and result oriented, every student is attached with a faculty mentor from DSM. The role of the mentor is to help the student in preparing internship schedule, identify the project, design and execute the study, e.g. data collection, data analysis and finally prepare a high quality report.

With an ideal mix of fresh and experienced candidates, the school offered one of the best talent pools for recruiters. This translated into companies from a variety of sectors showing interest in our placements. Some of the prominent recruiters were KPMG, TCS, UFLEX, Hyundai, PrintVenue, Google, Ernst and Young, KPMG Global, The Porter, IndiaMart, Godrej, Cavin Kare, Capital IQ, MARKIT and Wazir Advisors offering varied profiles to candidates such as Analyst, Marketing Strategy, Operations, Account Optimiser, Consultant, etc. Other elite profiles offered were Management Trainee, Associate Consultant, Assistant Manager, Assistant Sales Manager, Business Analyst, Project Manager, Relationship Manager and Product Manager.

MBA (Executive) program started by DSM in 2013-14 has been highly popular amongst the working Executives. It has provides an opportunity for DSM to expand its reach by targeting young Executives from both Private and Public Sector. The School also admits scholars for the PhD program in areas like Information Technology Management, Knowledge and Innovation Management, E-Governance, Financial Management, Supply Chain Management, Human Resource Management and Marketing Management.

## DEPARTMENT OF SOFTWARE ENGINEERING

The Department of Software Engineering is dedicated to produce high quality graduates and skilled software engineers/professionals who can develop high quality and cost-effective software systems.

The Discipline of Software Engineering was introduced in the year 2009. The department is currently running a B. Tech program in Software Engineering with an intake of 180, an M. Tech program in Software Engineering with an intake of 25 and offers Ph. D in the D. in the Discipline of Computer Science and Software Engineering. All the software engineering programs are well designed keeping in view of students in the design and development of the software and lays emphasis on following well defined and systematic approach for meeting the growing demands and requirements of the software industry. The curriculum is regularly updated in accordance with the latest trends, research and best practices in the software industry and academia.

The department has state of art labs consistent with industrial standards which provide a hands-on experience to the students. Paying special attention to the overall development of the students, the department also regularly conducts outreach activities for the students as a way of giving back to society. These activities allow students to interact with their external environment and constantly motivate them to positively contribute to society.

The department comprises dedicated faculty devoted and actively involved in research in the areas of software engineering, machine learning, web development, IOT and data mining. The faculty is actively involved in conducting various workshops, research seminars and short-term training programs for the students and faculty in the emerging areas.

In line with the university's vision to be a world class university in research and innovation, the department is committed to the development is committed to the development of skilled manpower and innovative software technologies in the related areas.

## UNIVERSITY SCHOOL OF MANAGEMENT & ENTREPRENEURSHIP (East Delhi Campus)

University School of Management and Entrepreneurship (East Delhi Campus) provides plethora of opportunities for students aspiring to pursue management studies and Economics from Delhi Technological University. The East Delhi Campus endeavours to provide quality education and fosters the culture of research, innovations in the emerging areas of management relevant to industry and society.

About the programmes at East Delhi Campus:

**BBA:** To provide adequate basic understanding about Management Education among the students and to prepare students to understand the business environment, this programme aims at holistic development of the students. The three years programme is structured in 6 semesters and has 120 seats.

**BA (H) Economics:** The course aims at providing in depth knowledge of Economics to the students. The programme is designed as per the varying interests and career ambitions in the emerging areas of economics. The three years programme is structured in 6 semesters and has 120 seats.

**MBA:** East Delhi Campus of the University offers MBA Business Analytics. The aim of this program is to create future business leaders who can understand and analyze the business processes analytically. The knowledge of data science will enable future managers to analyze the data and solve big data problems in the industry. The curriculum of the

program emphasizes on predictive modelling, data mining, machine learning, big data analytics, and offers many industry-relevant specializations. The two years programme is structured in 4 semesters and has 60 seats.

In line with the mission of the USME, the portfolio of professional programs has been expanded to cater to vital need for Entrepreneurship development, and fostering family enterprises through management and enterprise development, leveraging DTUs strong orientation and successful foray in the area of innovation and incubation. It is this year starting the MBA Entrepreneurship, Innovation and Venture Development and the MBA Family Business and Entrepreneurship, both with thirty seats each. The MBA Entrepreneurship, Innovation and Venture Development is a practicum mode outcome based program focused on an experiential journey in entrepreneurship and innovation leading to actual venture establishment while a similar target earning the ropes both academically and from practitioners. The focus is on preparing individuals for job creation and contributing to the economy. The MBA Family business targets participants who are associated with family enterprises in any capacity, and the program is designed as a learning journey in inculcating professional management practices across functional areas, and to help the growth of the venture, enabling business achievements in domains such as digital marketing and online business, participating in e-commerce, exposure to international business, strategic management and the like. These two programs will admit student in the academic year 2019-20.

## DEPARTMENT OF DESIGN

The strategic role of Design through innovation in enhancing national and industrial competitiveness is universally recognized and underpins the national policy of Govt. of India. The strategy to achieve this vision seeks to spotlight strengthening quality design education and usages of Design in different sectors. Design links science, technology, aesthetics, and humanistic values with the overarching goal of sustainable growth and competitiveness. Design is viewed as a driver of innovation and is recognized as a key differentiator for providing a competitive edge to products and services. It involves an integrated humanistic approach to design products, services, and systems.

The campus of Delhi Technological University is one of the most vibrant campuses, where even a first-year student is encouraged to participate in competitions by fabricating innovative real size products. University has a strong tradition of academic excellence, harnessing the power of interdisciplinary thinking, and blending academia with practice. The invaluable and lifelong alumni network of the university provides a strategic advantage to the students looking to excel in the corporate, government, and social sectors.

Department of Design, Delhi Technological University has been established to provide facilities for excellent design education, research, and training to suit the needs of the society. It envisioned pursuing excellence in design thinking, design scholarship, and Design practice for the betterment of society in a holistic manner. Delhi Technological University has taken a conscious decision with conviction to start four years Bachelor's program in Design for 10+2 passing out students. It is aimed to foster the needs of developing human resources who can transform the manufacturing and service sectors by visualizing and creating designs of products, services, and systems to meet the requirements of the competitive market. In the recent past, a lot of emphasis has been placed on innovations, creativity, Design, and development by the business houses to remain relevant in the industry by developing the ability to transform an abstract idea into everyday functional and usable products and services. The program will bring out the hidden potential of creativity and innovation of the students of this program. The program aims to delve deeper in understanding the technological, commercial, and societal context in conception, developments, and delivery of innovative products and services, and tools, techniques, and methods required in the practice of Design suitable to the environment.

The combination of a flexible curriculum, a wide array of learning opportunities, and a conducive learning environment is the hallmark of the Department of Design's Design program. The goal of the B. Des program is to develop students as innovative designers. The program provides a strong foundation in design principles and inspiration and encouragement to students who want to launch their own business or innovate in products and processes in the corporate, government, and business sectors. With an emphasis on seeing the bigger picture from a social,

technological, and business perspective, our rich curriculum and renowned faculty enable students to solve complex design problems and establish themselves as leading designers in any environment. The program has the following areas of specialization- Visual Communication, Product Design, Interaction Design, and Fashion Design.

The Department of Design will also provide newer ways of conceiving and executing innovative projects to the students of existing programs of the university. The expert faculty members from all areas of Design and Alumni Network work day and night for the welfare of the students. The department also runs M Des and Ph.D. programs.

## DEPARTMENT OF TRAINING AND PLACEMENT

The Department of Training and Placement is the backbone of any institute. From the very beginning, Delhi Technological University (Formerly Delhi College of Engineering) has laid greater emphasis on industrial training and corporate exposure. To strengthen this, the students are introduced to industrial practices through multiple summer and winter training programs in the industry as well as research institutions.

The demand for University's graduates has always been very high and in the recent years it has increased exponentially. Large numbers of students have been accepted by several foreign companies in all continents for summer and winter Training with financial assistance.

Employment of the students has always been University's major concern. The consistent placement records of the students are an indicative factor that the University is having very fruitful and meaningful relations with the corporate world.

Campus placement of graduating students DTU has always been exemplary. A large number of leading industries and organizations visit the campus each year for campus placement. The highest International salary has reached to its peak at 1.27 Cr L.P.A by UBER while the highest domestic salary has reached 38 L.P.A. BY ADOBE. The companies which visited DTU in recent years includes all major MNCs including Microsoft, Google, Facebook, Bank of America, Mckinsey, JP Morgan, Nvidia, Qualcomm etc and India's leading companies like Tata Steel, Tata Motors, Samsung, L&T and major PSUs like Indian Navy, Indian Air Force, NTPC, BPCL, IOCL, BEL, IGL and GAIL, etc. The Graduates have also received excellent higher educational opportunities in world class Universities such as Oxford, Cambridge, MIT, Harvard, Stanford, Georgia Tech, and Carnegie Mellon. DTU has surpassed the benchmark of its past achievements now that it has freedom to excel.

For the benefit of students, regular training programs, both in technical as well as in soft skills, in collaboration with industry are also organized. Initiatives are taken to train the students for Group Discussion and Interview. DTU lays great emphasis on being tech savvy and this has resulted in development of excellent infrastructural facilities for recruiters and at the same time automation of the process of placements.

## **INFRASTRUCTURE & FACILITIES**

- Estate
- NSS
- Computer Centre
- Library
- Hostels
- Canteen & Shopping Plaza
- Health Centre

## ESTATE: EXISTING INFRASTRUCTURE

The erstwhile Delhi College of Engineering, situated in a crowded locality at a small campus at Kashmere Gate of Delhi, was shifted to its present campus at Bawana Road, Delhi – 110 042 in 1996-97. While the campus plot has a size of 163.87 acres, only a part of it was constructed in the first Phase of construction keeping in mind a target student population of 3,000 at that time. Broadly the approved area utilization norms were followed as under:

- Academic: 45% (73.23 Acres)
- Residential: 25% (40.68 Acres)
- Green/Open: 15% (24.41 Acres)
- Sports/Cultural: 15% (24.41 Acres)

Accordingly, the first phase of construction which was completed around 1997-98 comprised of a total built up area of 1,58,840.41 Sq. mtr with the break-up as follows:

- Academic Area 69,146.03 Sq. m.
- Hostel Area 50,607.40 Sq. m.
- Residential Area 39,086.98 Sq. m.

The details of existing infrastructure are as under:-

(a) Land 63.87 Acres (663154.03 sqm)

(b) The total space built –

(i) Residential and Hostel 89694.38 sqm

(ii) Academic blocks 69146.03 sqm

(c) The residential accommodation for faculty members and staff are as under:-

| Sl. No. | Type                | No         | Remarks                         |
|---------|---------------------|------------|---------------------------------|
| (a)     | Type VI Residence   | 1          | Vice Chancellor's Residence     |
| (b)     | Type V Residence    | 56         | For Faculty and Senior officers |
| (c)     | Type IV Residence   | 60         | -do-                            |
| (d)     | Type III Residences | 45         | For Non-Teaching Staff          |
| (e)     | Type II Residence   | 105        | -do-                            |
| (f)     | Type I Residence    | 60         | -do-                            |
|         | <b>Total</b>        | <b>327</b> | <b>-do-</b>                     |

(d) Existing hostel accommodation:

| Sl. No.             | Boys Hostel Name             | Girls Hostel Name                    |
|---------------------|------------------------------|--------------------------------------|
| 1.                  | VVS Boys Hostel              | KCH Girls Hostel                     |
| 2.                  | JCB Boys Hostel              | SNH Girls Hostel                     |
| 3.                  | VMH Boys Hostel              | Type-III Block 1 Girls Hostel        |
| 4.                  | CVR Boys Hostel              | Type-III Block 2 Girls Hostel        |
| 5.                  | BCH Boys Hostel              | Type – II Block – 1 Girls Hostel     |
| 6.                  | HJB Boys Hostel              | Type – II Block –2,3, 4 Girls Hostel |
| 7.                  | Ramanujan Boys Hostel        | Type – II B – 5, Boys Hostel         |
| 8.                  | Aryabhata Boys Hostel        | 168                                  |
| 9.                  | Type – II B – 5, Boys Hostel | 24                                   |
| Total Accommodation | 1275                         | 445                                  |
| Grand Total         | 1720                         |                                      |

In addition to the above, 89 Boys and 256 Girls are also housed in the vacant staff quarters of Type I, Type II and Type III.

### DTU-NSS UNIT

*I slept and dreamt that life was joy.  
I woke and saw that life was service.  
I acted and behold, service was joy.*

The aim of NSS DTU Unit is to give an extended dimension to the higher education system and orient the students towards community service. Some poignant objectives of NSS DTU Unit include:

- To develop student's personality through community service
- To develop leadership qualities and democratic attitude and gain skills in mobilizing community participation.
- To identify practical solutions to problems of the community
- To develop a sense of social and civic responsibility
- To work towards building a beautiful world and spread message of environment, peace and education among today's youth.

The NSS unit has organized various activities including, Education-cum Health Camp at Govt. Senior Secondary School, Bawana, Tree Plantation Drive in association with Global Warming Reduction Centre followed by lecture series by eminent global reformers, Social Interhip Programme at PES NGO, during summer break, etc. Some volunteers also

got chance to be mentored by British Council to train underprivileged for spoken English under the “Teach India Programme” initiated by the Times of India. NSS DTU also organized a Drug Awareness Colloquium where eminent physicians from AIIMS, Delhi enlightened the young minds. Women’s Self Defence Workshop in partnership with Delhi Police and PES, participation in the Swachh Bharat Abhiyan, visits to orphanage comprises other activities. The annual NSS Special Camp, was held in the village Shikarpur, U.P. from December 25<sup>th</sup> 2014 to January 1<sup>st</sup> 2015 where the volunteers minutely understood the grievances of the rural India, set up a Solar-Lamp lit Library, mobilized the villagers about the hygiene and cleanliness and organized various other events.

The motto of NSS – “Not Me, but you” reflects the essence of democratic living and upholds the need for selfless service and appreciation of the other person’s point of view and also to show consideration for fellow human beings. It underlines that the welfare of an individual is ultimately dependent on the welfare of society as the whole. One may connect with NSS DTU Unit at [www.facebook.com/NSSDelTech](https://www.facebook.com/NSSDelTech).

## COMPUTER CENTRE

DTU has a well equipped centralized computer center to cater to the needs of high profile students and faculty in the University. It is housed, in a magnificent state-of-the-art building having specialized laboratories to provide variety of platforms and computing environment for UG, PG and Research students.

The center possesses HP ML370 , ML570 standalone servers & DL360 rack servers, Dell blade servers (power edge 1000e) and about 200 desktop computer systems of Dell computers of latest configuration (Optiplex 980/990, i5). These are working on Windows 7/8/8.1 and Linux platforms. In addition to this, the center has 4 SUN CAD workstations for research and project works.

### DTU Campus wide Network

The center is networked through high-end intelligent CISCO/Dax/Avaya/D-Link manageable switch , and possesses round the clock two leased lines of 50 Mbps (Bharti Airtel) and 1Gbps link of NKN (shared bandwidth) in different pipes for the LAN & Wi-Fi connectivity in the Library, Academic, Departments, Administrative and Hostel blocks of the campus, with internet facilities on all the nodes.

Access for internet is given to end user after secure authentication. Recently, the traffic is being monitored & controlled by full version of checkpoint (UTM).

Presently all the 200 computers are connected through LAN in its two floors providing internet access. It is providing programming facilities to all the departments of the college, predominantly COE, IT, ECE, EE, Physics and Mathematics departments.

The departments/academic/library/administrative blocks and all the hostels of DTU are interconnected through 48 core & 6 core optical fibercable(OFC) and Wi-Fi with 75 number of access points.

The present network setup satisfies the needs of the University’s rudimentary Internet connectivity and maximum resource sharing for the connected departments. To put DTU on par with IITs and reputed NITs, it is necessary to use Information Technology as the backbone for its academic, research, consultancy and administrative ventures.



## DTU Website

Computer Centre maintain DTU websites (www.dtu.ac.in, www.dce.edu), alumni portal, departments portal, library portal, faculty portal, hostel portal, student portal, DTU times portal, NPTEL portal and other related intranet web services. The DTU website is updated by this centre on daily basis. The information on the website displayed after the approval of the concerned department, faculty or administrative offices.

Computer Centre provides mail services to the university teaching communities and administrative officers. The traffic is being monitored & secure by full version of checkpoint (UTM).

## Training Programs

Besides, computer center is also used for conducting of short term training programs for staff and faculty. Further, it houses the Microsoft MSDN.

Academy with licensed Microsoft software's made available to all the faculty and students. DTU is also working as a nodal academy for information storage and management solutions through its DCE-EMC Academy that conducts training programs at the Computercenter for all the engineering institutions in North India twice every year.

Computer center also provides online examination facilities to the training and placement cell during recruitments.

### The main objectives of computer Centre for forthcoming years are:

- Extending the LANs of the departments by a canopy based wireless system so that all the buildings including academic, administrative, residential, hostel and creating hot zones throughout these areas.
- All new buildings are connected through LAN network. Further to network all faculty residences at an affordable cost and connected to the existing Wi-Fi network.
- To increase the bandwidth of the internet speed to meet the demands academic and research.
- Deploying IT based services for the workflow and academic activities and to ensure E-Governance.

## LIBRARY

A University stands for truth, reason and humanism. It helps in the progress of the society in general through **advancement of knowledge**. A university is rightly described as a community where scholars and teachers are the head, students are the body and library its heart.

Regarding library of a higher education institute the former President of India Late Dr S Radhakrishnan stated that:

*"The library is the heart of all University's work, directly so, as regards its research work, and indirectly as regards its educational work which derives its life from research work. Scientific research needs a library as well as its laboratories, while for humanistic research the library is both library and laboratory in one. Training in higher branches of learning and research is mainly a question of learning how to use the tools, and if the library tools are not there how can the student learn to use them?"*

The Central Library of Delhi Technological University acquires a prominent place among the students and faculty. Situated in the heart of the DTU a three stories centrally air-conditioned building spread over an area of 5000 square meters, it is a central place for academic and research activities. The Library has a very rich collection of print as well as electronic books and journals satisfying the information needs of the faculty and students. The total collection of books is approx 2, 13, 351 consists of 1, 42, 315 main collection, 57, 887 Book Bank, 9,057 SCP Book Bank, and 4, 092 donated books.

Keeping in view the fast changes in technology, the knowledge base of the library is updated regularly by way of adding new literature in the form of text books, reference books, reports, proceedings, abstracts and indexes, encyclopaedias, data books, standards (National and International), Journals and database on CD-ROM. Apart from adding the new literature, the basic literature is also procured for the new programs along with current one. Some new sections and services are also being started to make the library services of ISO 9001 standard.

### **General Collection:**

This section has a rich collection of appx 1, 42, 315 books having 99 thousand (appx.) unique titles, covering almost all areas of Engineering, Science and Technology and is open to all students and faculty members, from where they can grow borrow the required books as per rules.

### **Book Banks:**

The college runs a Book Bank having a collection of 57, 887 books intended to assists students, from the economically weaker sections of society, by giving text books on loan to deserving students for the whole academic semester according to the rules framed for the purpose. The college also runs a Book Bank having a collection 9057 specially meant for Scheduled Caste and Scheduled Tribe students who can borrow books from the book Bank for the whole academic semester according to the rules framed for this purpose.

### **Reference Section:**

A large number of Encyclopaedias, Handbooks, Standards, Reports, Proceedings, Abstracts and Indexes, Data Books, Standards (National and International) are available in the library.

### **Leisure reading Section:**

The library also has a collection of good books on English and Hindi Literature for leisure reading and on the other important subjects like History, Sociology and Economics, etc.

### **On-Line Databases:**

Various online databases are being subscribed like Access Engineering (McGrawHill), ACM, American Chemical Society, American Institute of Physics, American Physical Society, ASCE, ASME, ASTM, Cambridge University Press, EBSCO, Economic & Political Weekly, EMERALD MANAGEMENT XTRA, ICE, IEEE/IEL, INDIANJOURNALS, Institute of Physics, IWA, Publishing Journals, Optical Society of America, Oxford University Press, SCIEDIRECT, SIAM, SPRINGERLINK, Taylor & Francis Journal and Wiley Blackwell Publishing. These databases provide online access to approximately 36, 468 e-journals (foreign and Indian) on various disciplines to facilitate the ongoing research activities and to expand the areas of future research activities.

## On-Line Books:

Library has Access to hundreds of e-books purchased by the library.

## QUALITY ENHANCEMENT:

### CONTENT ENHANCEMENT:

- The library subscribes to **Turnitin** software to check the similarity of projects, theses etc in order to stop the plagiarism.

### LANGUAGE ENHANCEMENT:

- The library also subscribes to **Grammarly** to enhance the quality of language of projects and theses.

## Web OPAC:

The library catalogue can be access through [www.dtu.ac.in](http://www.dtu.ac.in). The library had developed an app to access the catalogue through Mobile namely **DTU Library**

## CD-ROM Access to Engineering and Scientific Data Base:

Various CD-ROM database i.e. BIS, ASTM etc. are being subscribed. Apart from these databases, library also has a good collection of books on CD-ROM and video recordings.

## Electronic Resource Centre:

The library being the member of consortia of Indian Digital Library of Engineering and Technology (INDEST) now E-Shodhsindhu and Developing Library Network (DELNET) offers various facilities of member institutions through resource sharing. A Continuous Internet search is done for identification of new resource which is subsequently made accessible through library home page.

## Institutional Repositories:

The library has developed one institutional repository using open source software. The repository can be accessed on intranet and internet. Following collections are accessible through the repository.

1. Paper of examination
2. M.E. Dissertation
3. PhD Thesis
4. Research Paper
5. News on the college
6. Prospectus
7. Annual Reports etc.

### **Library Services:**

The library services at Delhi Technological University are provided to students, staff and faculty members for updating their knowledge and supporting the research and teaching/ learning activities. These services are provided through the central library and departmental libraries.

### **Reprography Section:**

The facilities like Photocopy, Printing, Scanning, Spiral binding, Lamination etc. are provided to the students on payment basis within the premises of the library.

### **Automation of Library and Services:**

To keep pace with ongoing technological changes the library records have been computerized for making it accessible to the faculty and students at their work places which not only save the time but also make the simultaneous multiple access of information which otherwise is not possible in print formats. Well known Library Management software namely KOHA is being used for the automation of library services. Online Public Access Catalogue (OPAC) of books, Journals CDs and Videos available in the library is accessible to the users on intranet. Several useful resources on engineering and technology available on internet have been identified and links are made available on the library Web page <http://www.library.dce.edu> which includes: list of subscribed and free on-line journals/ resources/ references/ databases in Engineering, Science and Technology, list of research papers available through institutional archives.

### **Electronic Surveillance system:**

To provide the efficient management, the constant vigil is kept on the activities of staff and users through Electronic Surveillance system having a 24 hours recording facility

### **Library Manual:**

Library has prepared a manual for exposing the library activities to the new comers. This manual is provided at the time of enrolment as member of the library. This is also available on the digital library for reference.

### **Information Literacy Programme:**

Library organizes information literacy programmes under the title “explore the library” for users. These programmes consist of hands on knowledge to the participants on searching the engineering and technology literature, and the facilities available in the library.

## **HOSTELS**

DTU has 11 boys’ and 4 girls’ hostels in the campus to accommodate around 1800 boys and 800 girls. Hostel accommodation will be allotted to full-time students by the University Hostel Allotment Committee depending upon availability of seats in the hostels. Application for hostel allotment should be submitted in the prescribed form within stipulated time by the students. No ex-students shall be allotted any hostel accommodation.

**Boys Hostels (8)**

1. Bhaskaracharya Hostel
2. Sir C.V. Raman Hostel
3. Sir J.C. Bose Hostel
4. Varahmihir Hostel
5. Sir Visversvaraya Hostel
6. Type – II Block 2,3,4,5,7 Girls Hostel
7. Ramanujan Hostel
8. Homi Jehangir Bhabha Hostel
9. Dr. APJ Abdul Kalam Hostel
10. Type – II Hostel
11. Type – III Hostel

**Girls Hostels (6)**

1. Sister Nivedita Hostel
2. Kalpana Chawla Hostel
3. Virangana Laxmibai Hostel, Block-1
4. Virangana Laxmibai Hostel, Block-2

**Detail of payment for Hostel accommodation**

| Hostel Fee per semester       |                    |               |               |                |
|-------------------------------|--------------------|---------------|---------------|----------------|
| Room-Type : -                 | For Non-AC Hostels |               |               | For AC Hostels |
| Details                       | Single Seater      | Double Seater | Triple Seater | Triple Seater  |
| Hostel Room Rent              | 22000/-            | 20000/-       | 18000/-       | 18000/-        |
| Electricity & Water Charges   | 2000/-             | 2000/-        | 2000/-        | 12000/-        |
| Security & Attendant Services | 2000/-             | 2000/-        | 2000/-        | 2000/-         |
| Total (A) :-                  | 26000/-            | 24000/-       | 22000/-       | 32000/-        |
| Medical Fees                  | 1000/-             | 1000/-        | 1000/-        | 1000/-         |
| Hostel Maintenance Fee        | 3000/-             | 3000/-        | 3000/-        | 3000/-         |
| Total (B) :-                  | 4000/-             | 4000/-        | 4000/-        | 4000/-         |
| Grand Total (A+B):-           | 30000/-            | 28000/-       | 26000/-       | 36000/-        |

**Note:**

1. Fee has to be paid only after confirmation of allotment.

The allotment of accommodation to the boys and girls in the hostel will be made on the following priority, subject to availability of seats in the hostels.

i. Hostel accommodation is limited and will be allotted to full-time bonafide students of DTU. However, the applicants should satisfy the eligibility criteria for hostel allotment. After the allotment of the rooms

the allottee will be held responsible for any damage in his/her room.

ii. Hostel allotment will be provided on the basis of the category selected by the candidate during admission at Delhi Technological University. No further changes of category will be allowed.

iii. The first preference for hostel accommodation for the 1st semester of B.Tech. students will be given to the outside Delhi Category and so it may be possible that Delhi Category candidates may not get hostel accommodation.

iv. Allotment to Delhi Category students will be made as per university rules/guidelines.

v. Hostel accommodation is not mandatory.

vi. On special occasions, if a student wants to stay in a hostel with some other students not exceeding 5 days, he/she shall pay guest charges Rs.300/- per day and Rs.500/- per day for Non- AC and AC hostels respectively.

**Note:-**

1. Hostel rent is payable in advance, before the possession of the room.

2. All the hostel residents are required to vacate their rooms within a week of the last examination each year. The rooms will be re-allocated at the beginning of the academic session.

3. At any time during the program, a student may be required to pay additional deposits or fees to cover increased cost.

4. For all enquiries regarding hostel accommodation, students should contact the hostel office in Transit Hostel (Timing: 10:00 a.m. to 5:00 p.m.) during working days.

5. For details of information regarding hostel facilities, please refer hostel information Bulletin and hostel website: [hostel.dtu.ac.in](http://hostel.dtu.ac.in).

6. The students taking admission in DTU may apply for fresh hostel allotment online vide hostel website- [hostels.dtu.ac.in](http://hostels.dtu.ac.in). Also, the senior students already living in hostels/fresh applicants may also apply for hostel online.

7. All the information regarding hostel fees, rules, regulations and criteria for hostel allotment is also available on the website at [www.hostel.dtu.ac.in](http://www.hostel.dtu.ac.in).

## CANTEEN & SHOPPING PLAZA

DTU has two storey canteen building. Separate space is provided for boys & girls students and first floor is exclusively reserved for the faculty. Most modern kitchen with appropriate facilities keeping hygiene in mind have been provided in the canteen. A shopping plaza is also available in the campus where day to day need of students viz stationery, photocopy, PCO, Fax, souvenir, book and general items are available.

## HEALTH CENTRE

DTU has extended benefits of medical facilities of Directorate General of Health Services, Govt. of Delhi, to all of its employees including faculty and other staff. Under this facility employees avail OPD facilities at Delhi Health Services dispensaries situated all over Delhi and avail indoor facilities in all Govt. and empanelled private Hospitals and pathological laboratories. Further, for benefits of day-boarding and hostellers, employees and residents of the Campus, University has established an in-house Health Centre where two qualified general physicians (one for 4 hours during 01 pm to 5 pm and one for 3 hours during 9 am to 12 pm), one dentist and one ophthalmologist are providing services for 2 hours all the six days a week. Additionally, an Orthopaedician (1-3 pm: Mon. Wed and Fri), a Gynaecologist (1-4 pm: Tue and Thu) and a Psychiatrist (1-4 pm: Tue and Thu) also provide their services at university health centre. One sport medicine-cum-physiotherapy centre has also been established in Health Centre for 2 hours in all the six days.

| S. No. | Name                | Expertise                                      | Days                                   | Timing          |
|--------|---------------------|--|--|-----------------|
| 1.     | Dr. Ravi Bansal     | General Physician                              | Mon to Sat<br>(6 days in a week)       | 1 PM to 5 PM    |
| 2.     | Dr. Rajesh Singhai  | General Physician                              | Mon to Sat<br>(6 days in a week)       | 9 AM to 12 NOON |
| 3.     | Dr. Arpana Bansal   | Eye Specialist                                 | Mon, Wed and Fri<br>(3 days in a week) | 1 PM to 3 PM    |
| 4.     | Dr. Bharat B. Sethi | Dentist  | Mon, Wed and Fri<br>(3 days in a week) | 1 PM to 3 PM    |
| 5.     | Dr. Subodh Mor      | Sports Medicine- cum-<br>Physiotherapist (MPT) | Mon to Sat<br>(6 days in a week)       | 1 PM to 4 PM    |
| 6.     | Dr. Dinesh Bansal   | Orthopedician                                  | Mon, Wed and Fri<br>(3 days in a week) | 1 PM to 3 PM    |
| 7.     | Dr. Gaurav Gupta    | Psychiatrist                                   | Tue and Thu<br>(2 days in a week)      | 1 PM to 4 PM    |
| 8.     | Dr. Nishi Jha       | Gynecologist                                   | Tue and Thu<br>(2 days in a week)      | 1 PM to 4 PM    |

## ANNEXURES

- Fee Structure
- Academic Calendar
- Fee concession for economically weaker sections
- Financial Support to Students
- Ordinance relating to Maintenance of Discipline
- DTU Administration and Faculty
- Forms and Formats



## FEE STRUCTURE



### DELHI TECHNOLOGICAL UNIVERSITY

(Formerly Delhi College of Engineering)  
Shahbad Daulatpur, Main Bawana Road, Delhi-42

F.No. DTU/Reg/Uni.Adm.Com./2022-23 / 2522

Dated: 26.02.22

### Notification

**Subject: Annual Fee Structure for the students seeking admissions in the Academic Session 2022-23 at DTU.**

The Competent Authority has approved the Annual Fee structure of the following programs for the students seeking admission in the Academic Session 2022-23 :-

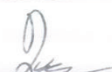
- A. Bachelor of Technology (B.Tech)
- B. Bachelor of Design (B.Des)
- C. Bachelor of Technology (B.Tech) (Lateral Entry)
- D. Bachelor of Technology (B.Tech) (Continuing Education)
- E. Bachelor of Business Administration (BBA) & B.A Economics (H)
- F. Master of Technology (M.Tech)
- G. Master of Technology (M.Tech) (Part Time)
- H. (i) Master of Business Administration (MBA)  
(ii) MBA -Family Business & Entrepreneurship  
(iii) MBA in Innovation, Entrepreneurship and Venture Development  
(iv) MBA (Business Analytics)
- I. Executive MBA
- J. M.Sc. Programme
- K. Master of Design (M.Des)
- L. Ph.D (Full Time/ Part Time)
- M. DASA Students (UG Programs)
- N. International Students (Direct Admission in UG Program)
- O. International Students (Direct Admission in PG Program)
- P. International Students (Direct Admission in Ph.D Program)
- Q. Withdrawal Policy

**(A). Bachelor of Technology (B.Tech)**

| S.No. | Particulars   | Fee in<br>AY2022-23<br>(Rs.) | Fee in<br>AY2023-24<br>(Rs.) | Fee in<br>AY2024-25<br>(Rs) | Fee in<br>AY2025-26<br>(Rs) |
|-------|---|------------------------------|------------------------------|-----------------------------|-----------------------------|
| 1.    | Tuition Fee   | 1,40,300                     | 1,47,300                     | 1,55,000                    | 1,63,000                    |
| 2.    | <b>Non Govt. Component</b>  |                              |                              |                             |                             |
| 2.1   | Student Welfare fee<br>(Co-curricular Activities, Training & Placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, Outsourcing, conference, seminar, workshop, innovative projects, skill development activities and Misc. Expenditure on unspecified items) | 20,000                       | 20,000                       | 20,000                      | 22,000                      |
| 2.2   | Facilities & Services Charges<br>(Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)  | 36,000                       | 36,000                       | 36,000                      | 36,000                      |
| 2.3   | Economically weaker section fund  | 7,000                        | 10,000                       | 10,000                      | 10,000                      |
| 2.4   | Examination fee<br>(Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.)  | 15,000                       | 15,000                       | 15,000                      | 15,000                      |
| 2.5   | Premium amount for medi-claim of student<br>(per annum)   | 700                          | 700                          | 700                         | 700                         |
|       | <b>Total</b>  | <b>2,19,000</b>              | <b>2,29,000</b>              | <b>2,36,700</b>             | <b>2,46,700</b>             |

**(B). Bachelor of Design (B.Des)**

| S.No. | Particulars   | Fee in<br>AY2022-23<br>(Rs.) | Fee in<br>AY2023-24<br>(Rs.) | Fee in<br>AY2024-25<br>(Rs) | Fee in<br>AY2025-26<br>(Rs) |
|-------|---|------------------------------|------------------------------|-----------------------------|-----------------------------|
| 1.    | Tuition Fee   | 1,40,300                     | 1,47,300                     | 1,55,000                    | 1,63,000                    |
| 2.    | <b>Non Govt. Component</b>  |                              |                              |                             |                             |
| 2.1   | Student Welfare fee<br>(Co-curricular Activities, Training & Placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, Outsourcing, conference, seminar, workshop, innovative projects, skill development activities and Misc. Expenditure on unspecified items) | 20,000                       | 20,000                       | 20,000                      | 22,000                      |
| 2.2   | Facilities & Services Charges<br>(Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)  | 36,000                       | 36,000                       | 36,000                      | 36,000                      |
| 2.3   | Economically weaker section fund  | 7,000                        | 10,000                       | 10,000                      | 10,000                      |
| 2.4   | Examination fee<br>(Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.)  | 15,000                       | 15,000                       | 15,000                      | 15,000                      |
| 2.5   | Premium amount for medi-claim of student<br>(per annum)   | 700                          | 700                          | 700                         | 700                         |
|       | <b>Total</b>  | <b>2,19,000</b>              | <b>2,29,000</b>              | <b>2,36,700</b>             | <b>2,46,700</b>             |



**(C). Bachelor of Technology (B.Tech) (Lateral Entry)**

| S.No.        | Particulars   | Fee in<br>AY2022-23<br>(Rs.) | Fee in<br>AY2023-24<br>(Rs.) | Fee in<br>AY2024-25<br>(Rs.) |
|--------------|---|------------------------------|------------------------------|------------------------------|
| 1.           | Tuition Fee   | 1,40,300                     | 1,47,300                     | 1,55,000                     |
| 2.           | <b>Non Govt. Component</b>  |                              |                              |                              |
| 2.1          | Student Welfare fee<br>(Co-curricular Activities, Training & Placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, Outsourcing, conference, seminar, workshop, innovative projects, skill development activities and Misc. Expenditure on unspecified items) | 20,000                       | 20,000                       | 20,000                       |
| 2.2          | Facilities & Services Charges<br>(Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)  | 36,000                       | 36,000                       | 36,000                       |
| 2.3          | Economically weaker section fund  | 7,000                        | 10,000                       | 10,000                       |
| 2.4          | Examination fee<br>(Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.)  | 15,000                       | 15,000                       | 15,000                       |
| 2.5          | Premium amount for medi-claim of student<br>(per annum)   | 700                          | 700                          | 700                          |
| <b>Total</b> |   | <b>2,19,000</b>              | <b>2,29,000</b>              | <b>2,36,700</b>              |

**(D). Bachelor of Technology (B.Tech) (Continuing Education)**

| S.No.        | Particulars   | Fee in<br>AY2022-23<br>(Rs.) | Fee in<br>AY2023-24<br>(Rs.) | Fee in<br>AY2024-25<br>(Rs.) | Fee in<br>AY2025-26<br>(Rs.) |
|--------------|---|------------------------------|------------------------------|------------------------------|------------------------------|
| 1.           | Tuition Fee   | 1,00,000                     | 1,00,000                     | 1,00,000                     | 1,00,000                     |
| 2.           | <b>Non Govt. Component</b>  |                              |                              |                              |                              |
| 2.1          | Student Welfare fee<br>(Co-curricular Activities, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, Outsourcing, conference, seminar, workshop, innovative projects, skill development activities and Misc. Expenditure on unspecified items) | 16,000                       | 16,000                       | 16,000                       | 16,000                       |
| 2.2          | Facilities & Services Charges<br>(Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)  | 21,000                       | 21,000                       | 21,000                       | 21,000                       |
| 2.3          | Economically weaker section fund  | 500                          | 500                          | 500                          | 1000                         |
| 2.4          | Examination fee<br>(Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.)  | 12,000                       | 12,000                       | 12,000                       | 15,000                       |
| 2.5          | Premium amount for medi-claim of student<br>(per annum)   | 500                          | 500                          | 500                          | 700                          |
| <b>Total</b> |   | <b>1,50,000</b>              | <b>1,50,000</b>              | <b>1,50,000</b>              | <b>1,53,700</b>              |



**(E). Bachelor of Business Administration (BBA) & B.A Economics (H)**

| S.No. | Particulars   | Fee in<br>AY 2022-23<br>(Rs.) | Fee in<br>AY 2023-24<br>(Rs.) | Fee in<br>AY 2024-25<br>(Rs.) |
|-------|---|-------------------------------|-------------------------------|-------------------------------|
| 1.    | Tuition Fee   | 48,800                        | 55,500                        | 58,500                        |
| 2.    | <b>Non Govt. Component</b>  |                               |                               |                               |
| 2.1   | Student Welfare Fee (Co-curricular activities, Training & placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, outsourcing, conference, seminar, workshop, innovative projects, skill development activities and, Misc. Expenditure on Unspecified Items) | 15,000                        | 15,000                        | 15,000                        |
| 2.2   | Facilities & Services Charges (Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)   | 15,000                        | 15,000                        | 15,000                        |
| 2.3   | Economically weaker section fund  | 6,000                         | 6,000                         | 6,000                         |
| 2.4   | Examination fee (Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.  | 13,000                        | 13,000                        | 15,000                        |
| 2.5   | Premium amount for mediclaim of student (per-annum)   | 700                           | 700                           | 700                           |
|       | <b>GRAND TOTAL</b>  | <b>98,500</b>                 | <b>1,05,200</b>               | <b>1,10,200</b>               |

**(F). Master of Technology (M.Tech)**

| S.No. | Particulars   | Fee in<br>AY 2022-23<br>(Rs.) | Fee in<br>AY 2023-24<br>(Rs.) |
|-------|---|-------------------------------|-------------------------------|
| 1.    | Tuition Fee   | 1,05,500                      | 1,05,500                      |
| 2.    | <b>Non Govt. Component</b>  |                               |                               |
| 2.1   | Student Welfare Fee (Co-curricular activities, Training & placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, outsourcing, conference, seminar, workshop, innovative projects, skill development activities and, Misc. Expenditure on Unspecified Items) | 18,000                        | 18,000                        |
| 2.2   | Facilities & Services Charges (Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)   | 25,000                        | 25,000                        |
| 2.3   | Economically weaker section fund  | 5,000                         | 5,000                         |
| 2.4   | Examination fee (Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.  | 12,000                        | 15,000                        |
| 2.5   | Premium amount for mediclaim of student (per-annum)   | 500                           | 700                           |
|       | <b>GRAND TOTAL</b>  | <b>1,66,000</b>               | <b>1,69,200</b>               |

**(G). Master of Technology (Part Time)**

| S.No. | Particulars   | Fee in<br>AY 2022-23<br>(Rs.) | Fee in<br>AY 2023-24<br>(Rs.) | Fee in<br>AY 2024-25<br>(Rs.) |
|-------|---|-------------------------------|-------------------------------|-------------------------------|
| 1.    | Tuition Fee   | 99,500                        | 99,500                        | 1,05,500                      |
| 2.    | <b>Non Govt. Component</b>  |                               |                               |                               |
| 2.1   | Student Welfare Fee (Co-curricular activities, Training & placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, outsourcing, conference, seminar, workshop, innovative projects, skill development activities and, Misc. Expenditure on Unspecified Items) | 20,000                        | 20,000                        | 18,000                        |
| 2.2   | Facilities & Services Charges (Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)   | 28,000                        | 28,000                        | 25,000                        |
| 2.3   | Economically weaker section fund  | 5,000                         | 5,000                         | 5,000                         |
| 2.4   | Examination fee (Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.  | 13,000                        | 13,000                        | 15,000                        |
| 2.5   | Premium amount for mediclaim of student (per-annum)   | 500                           | 500                           | 700                           |
|       | <b>GRAND TOTAL</b>  | <b>1,66,000</b>               | <b>1,66,000</b>               | <b>1,69,200</b>               |



- (H). (i) Master of Business Administration (MBA)  
(ii) MBA-Family Business & Entrepreneurship (MBA-FBE)  
(iii) MBA in Innovation, Entrepreneurship and Venture Development (MBA-IEV)  
(iv) MBA-Business Analytics (MBA-BA)

| S.No. | Particulars   | Fee in<br>AY 2022-23 (Rs.) | Fee in<br>AY 2023-24 (Rs.) |
|-------|---|----------------------------|----------------------------|
| 1.    | Tuition Fee   | 1,40,000                   | 1,47,300                   |
| 2.    | <b>Non Govt. Component</b>  |                            |                            |
| 2.1   | Student Welfare Fee (Co-curricular activities, Training & placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, outsourcing, conference, seminar, workshop, innovative projects, skill development activities and, Misc. Expenditure on Unspecified Items) | 20,000                     | 20,000                     |
| 2.2   | Facilities & Services Charges (Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)   | 30,000                     | 36,000                     |
| 2.3   | Economically weaker section fund  | 7,000                      | 10,000                     |
| 2.4   | Examination fee (Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.  | 15,000                     | 15,000                     |
| 2.5   | Premium amount for mediclaim of student (per-annum)   | 700                        | 700                        |
|       | <b>GRAND TOTAL</b>  | <b>2,12,700</b>            | <b>2,29,000</b>            |

(I). Executive MBA (EMBA)

| S.No. | Particulars   | Fee in<br>AY 2022-23 (Rs.) | Fee in<br>AY 2023-24 (Rs.) |
|-------|---|----------------------------|----------------------------|
| 1.    | Tuition Fee   | 1,85,000                   | 1,90,000                   |
| 2.    | <b>Non Govt. Component</b>  |                            |                            |
| 2.1   | Student Welfare Fee (Co-curricular activities, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, outsourcing, conference, seminar, workshop, innovative projects, skill development activities and, Misc. Expenditure on Unspecified Items) | 22,000                     | 22,000                     |
| 2.2   | Facilities & Services Charges (Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)   | 22,000                     | 36,000                     |
| 2.3   | Economically weaker section fund  | -                          | 10,000                     |
| 2.4   | Examination fee (Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.  | 12,000                     | 15,000                     |
| 2.5   | Premium amount for mediclaim of student (per-annum)   | 700                        | 700                        |
|       | <b>GRAND TOTAL</b>  | <b>2,41,700</b>            | <b>2,73,700</b>            |



**(J) M.Sc Programme**

| S.No. | Particulars   | Fee in<br>AY 2022-23 (Rs.) | Fee in<br>AY 2023-24 (Rs.) |
|-------|---|----------------------------|----------------------------|
| 1.    | Tuition Fee   | 16,000                     | 20,000                     |
| 2.    | <b>Non Govt. Component</b>  |                            |                            |
| 2.1   | Student Welfare Fee (Co-curricular activities, Training & placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, outsourcing, conference, seminar, workshop, innovative projects, skill development activities and, Misc. Expenditure on Unspecified Items) | 8,000                      | 10,000                     |
| 2.2   | Facilities & Services Charges (Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)   | 1,500                      | 1,500                      |
| 2.3   | Economically weaker section fund  | 4,000                      | 5,000                      |
| 2.4   | Examination fee (Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.  | 4,000                      | 5,000                      |
| 2.5   | Premium amount for mediclaim of student (per-annum)   | 700                        | 700                        |
|       | <b>GRAND TOTAL</b>  | <b>34,200</b>              | <b>42,200</b>              |

**(K) Master of Design (M.Des)**

| S.No. | Particulars   | Fee in<br>AY 2022-23 (Rs.) | Fee in<br>AY 2023-24 (Rs.) |
|-------|---|----------------------------|----------------------------|
| 1.    | Tuition Fee   | 1,40,300                   | 1,47,300                   |
| 2.    | <b>Non Govt. Component</b>  |                            |                            |
| 2.1   | Student Welfare Fee (Co-curricular activities, Training & placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, outsourcing, conference, seminar, workshop, innovative projects, skill development activities and, Misc. Expenditure on Unspecified Items) | 20,000                     | 20,000                     |
| 2.2   | Facilities & Services Charges (Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)   | 36,000                     | 36,000                     |
| 2.3   | Economically weaker section fund  | 7,000                      | 10,000                     |
| 2.4   | Examination fee (Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.  | 15,000                     | 15,000                     |
| 2.5   | Premium amount for mediclaim of student (per-annum)   | 700                        | 700                        |
|       | <b>GRAND TOTAL</b>  | <b>2,19,000</b>            | <b>2,29,000</b>            |

**(L) Ph.D (Full Time / Part Time)**

| S.No. | Particulars  | Fee in year of admission (Rs.) | Fee in subsequent academic years * (Rs.) |
|-------|--|--------------------------------|--|
| 1.    | The academic staff of DTU DCE staff (R.19.1) and Project staff pursuing Ph.D as in R.19.11 | 17,000                         | 7,000                                    |
| 2.    | Other Full Time / Part Time candidates   | 29,000                         | 13,000                                   |
| 3.    | Premium amount for mediclaim of student (per-annum)  | 700                            | 700                                      |

\* Fees is to be paid till the academic year in which the thesis is submitted.

**(M) DASA Students (UG)**

| S.No | Particulars   | Fee in AY 2022-23 | Fee in AY 2023-24 | Fee in AY 2024-25 | Fee in AY 2025-26 |
|------|---|-------------------|-------------------|-------------------|-------------------|
| (A)  | <b>Foreign Nationals except from SAARC and ASEAN countries</b>  |                   |                   |                   |                   |
| 1.0  | Tuition Fee   | \$8000            | \$8000            | \$8000            | \$8000            |
| 2.0  | Non Govt. Component of fee  |                   |                   |                   |                   |
| 2.1  | Student Welfare fee<br>(Co-curricular Activities, Training & Placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, Outsourcing, conference, seminar, workshop, innovative projects, skill development activities and Misc. Expenditure on unspecified items) | \$1050            | \$1100            | \$1100            | \$1100            |
| 2.2  | Facilities & Services Charges<br>(Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)  |                   |                   |                   |                   |
| 2.3  | Economically weaker section fund  |                   |                   |                   |                   |
| 2.4  | Premium amount for medi-claim of student (per annum)  |                   |                   |                   |                   |
| 2.5  | Premium amount for medi-claim of student (per annum)  |                   |                   |                   |                   |
|      | <b>Grand Total</b>  | \$9050            | \$9100            | \$9100            | \$9100            |
| (B)  | <b>Foreign Nationals from SAARC and ASEAN Countries (The candidates from Nepal and Bhutan can submit their fees in equivalent Indian Rupees. However, they will be required to get Exchange Rate Certificate from the bankers and submit the same)</b>  |                   |                   |                   |                   |
| 1.0  | Tuition Fee   | \$4000            | \$4000            | \$4000            | \$4000            |
| 2.0  | Non Govt. Component of fee  |                   |                   |                   |                   |
| 2.1  | Student Welfare fee<br>(Co-curricular Activities, Training & Placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, Outsourcing, conference, seminar, workshop, innovative projects, skill development activities and Misc. Expenditure on unspecified items) | \$1050            | \$1100            | \$1100            | \$1100            |
| 2.2  | Facilities & Services Charges<br>(Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)  |                   |                   |                   |                   |
| 2.3  | Economically weaker section fund  |                   |                   |                   |                   |
| 2.4  | Examination fee<br>(Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.)  |                   |                   |                   |                   |
| 2.5  | Premium amount for medi-claim of student (per annum)  |                   |                   |                   |                   |
|      | <b>Grand Total</b>  | \$5050            | \$5100            | \$5100            | \$5100            |



|     |   |              |              |           |           |
|-----|---|--------------|--------------|-----------|-----------|
| (C) | <b>Children of Indians workers in Gulf Countries (CIWG) through DASA</b>  |              |              |           |           |
| 1.0 | Tuition Fee   | Rs. 1,40,300 | Rs. 1,47,300 | 1,55,000  | 1,63,000  |
| 2.0 | Non Govt. Component of fee  |              |              |           |           |
| 2.1 | Student Welfare fee<br>(Co-curricular Activities, Training & Placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, Outsourcing, conference, seminar, workshop, innovative projects, skill development activities and Misc. Expenditure on unspecified items) | Rs.20,000    | Rs.20,000    | Rs.20,000 | Rs.22,000 |
| 2.2 | Facilities & Services Charges<br>(Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)  | Rs.36,000    | Rs.36,000    | Rs.36,000 | Rs.36,000 |
| 2.3 | Economically weaker section fund  | Rs.7,000     | Rs.10,000    | Rs.10,000 | Rs.10,000 |
| 2.4 | Examination fee<br>(Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.)  | Rs.15,000    | Rs.15,000    | Rs.15,000 | Rs.15,000 |
| 2.5 | Premium amount for medi-claim of student (per annum)  | Rs. 700      | Rs. 700      | Rs. 700   | Rs. 700   |
|     | <b>Grand Total</b>  | Rs. 2,19,000 | Rs. 2,29,000 | 2,36,700  | 2,46,700  |



**(N) International Students****Direct Admission for Foreign Students (UG) :**

| S.No | Particulars  | Fee in<br>AY 2022-23 | Fee in<br>AY 2023-24 | Fee in<br>AY 2024-25 | Fee in<br>AY 2025-26 |
|------|--|----------------------|----------------------|----------------------|----------------------|
| (A)  | <b>Direct Admission for Foreign Nationals: Applications routed through Govt. of India agencies/<br/>Direct Admission for Foreign Nationals: Directly applied to DTU</b>  |                      |                      |                      |                      |
| 1.0  | Tuition Fee  | \$ 5000              | \$ 5000              | \$ 5000              | \$ 5000              |
| 2.0  | Non Govt. Component of fee   |                      |                      |                      |                      |
| 2.1  | Student Welfare fee<br>(Co-curricular Activities, Training & Placement,<br>Extra Curricular Activities, Annual Gathering,<br>Students welfare, Institutional Development,<br>Outsourcing, conference, seminar, workshop,<br>innovative projects, skill development activities<br>and Misc. Expenditure on unspecified items) | \$1050               | \$1100               | \$1100               | \$1100               |
| 2.2  | Facilities & Services Charges<br>(Research initiatives, training programmes,<br>Awards, automation, facilities, entrepreneurship<br>activities and any misc. expenditure on<br>unspecified items)  |                      |                      |                      |                      |
| 2.3  | Economically weaker section fund   |                      |                      |                      |                      |
| 2.4  | Examination fee<br>(Examination Infrastructure strengthening,<br>expenditure on examination activities, confidential<br>printing etc.)   |                      |                      |                      |                      |
| 2.5  | Premium amount for medi-claim of student (per<br>annum)  |                      |                      |                      |                      |
|      | <b>Grand Total</b>   | \$6050               | \$6100               | \$6100               | \$6100               |
| (B)  | <b>Foreign Nationals from SAARC and ASEAN Countries (routed through Govt. of India<br/>Agencies) / Foreign Nationals from SAARC and ASEAN Countries (directly applied to DTU)</b>  |                      |                      |                      |                      |
| 1.0  | Tuition Fee  | \$ 2500              | \$ 2500              | \$ 2500              | \$ 2500              |
| 2.0  | Non Govt. Component of fee   |                      |                      |                      |                      |
| 2.1  | Student Welfare fee<br>(Co-curricular Activities, Training & Placement,<br>Extra Curricular Activities, Annual Gathering,<br>Students welfare, Institutional Development,<br>Outsourcing, conference, seminar, workshop,<br>innovative projects, skill development activities<br>and Misc. Expenditure on unspecified items) | \$1050               | \$1100               | \$1100               | \$1100               |
| 2.2  | Facilities & Services Charges<br>(Research initiatives, training programmes,<br>Awards, automation, facilities, entrepreneurship<br>activities and any misc. expenditure on<br>unspecified items)  |                      |                      |                      |                      |
| 2.3  | Economically weaker section fund   |                      |                      |                      |                      |
| 2.4  | Examination fee<br>(Examination Infrastructure strengthening,<br>expenditure on examination activities, confidential<br>printing etc.)   |                      |                      |                      |                      |
| 2.5  | Premium amount for medi-claim of student (per<br>annum)  |                      |                      |                      |                      |
|      | <b>Grand Total</b>   | \$3550               | \$3600               | \$3600               | \$3600               |

**(O) International Students****Direct Admission for Foreign Students (PG) :**

| S.No | Particulars   | Fee in<br>AY 2022-23 | Fee in<br>AY 2023-24 |
|------|---|----------------------|----------------------|
| (A)  | <b>Direct Admission for Foreign Nationals: Applications routed through Govt. of India agencies / Direct Admission for Foreign Nationals: Directly applied to DTU</b>  |                      |                      |
| 1.0  | Tuition Fee   | \$ 5000              | \$ 5000              |
| 2.0  | Non Govt. Component of fee  |                      |                      |
| 2.1  | Student Welfare fee<br>(Co-curricular Activities, Training & Placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, Outsourcing, conference, seminar, workshop, innovative projects, skill development activities and Misc. Expenditure on unspecified items) | \$800                | \$800                |
| 2.2  | Facilities & Services Charges<br>(Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)  |                      |                      |
| 2.3  | Economically weaker section fund  |                      |                      |
| 2.4  | Examination fee<br>(Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.)  |                      |                      |
| 2.5  | Premium amount for medi-claim of student (per annum)  |                      |                      |
|      | <b>Grand Total</b>  | <b>\$5800</b>        | <b>\$5800</b>        |
| (B)  | <b>Foreign Nationals from SAARC and ASEAN Countries (routed through Govt. of India Agencies)/ Foreign Nationals from SAARC and ASEAN Countries (directly applied to DTU)</b>  |                      |                      |
| 1.0  | Tuition Fee   | \$ 2500              | \$ 2500              |
| 2.0  | Non Govt. Component of fee  |                      |                      |
| 2.1  | Student Welfare fee<br>(Co-curricular Activities, Training & Placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, Outsourcing, conference, seminar, workshop, innovative projects, skill development activities and Misc. Expenditure on unspecified items) | \$800                | \$800                |
| 2.2  | Facilities & Services Charges<br>(Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items)  |                      |                      |
| 2.3  | Economically weaker section fund  |                      |                      |
| 2.4  | Examination fee<br>(Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.)  |                      |                      |
| 2.5  | Premium amount for medi-claim of student (per annum)  |                      |                      |
|      | <b>Grand Total</b>  | <b>\$3300</b>        | <b>\$3300</b>        |





**(P) International Students**

**Direct Admission for Foreign Students (Ph.D) :**

|      | Fee in<br>AY 2022-23 | Fee in<br>AY 2023-24 and onwards |
|------|----------------------|----------------------------------|
| Ph.D | USD 2500             | USD 1000                         |

**(Q) Withdrawal Policy**

| S.No. | Percentage of Refund<br>of aggregate fee * | Point of Time when Notice of withdrawal of<br>admission is served to HEI                   |
|-------|--|--|
| 1.    | 100%                                       | 15 days before the formally notified last date of admission.                               |
| 2.    | 80%  | Not more than 15 days after the formally notified last date<br>of admission                |
| 3.    | 50%  | More than 15 days but less than 30 days after formally<br>notified last date of admission. |
| 4.    | 00%  | More than 30 days after formally notified last date of<br>admission.                       |

**\*(Inclusive of Tuition fees and Non Govt. Component).**

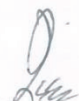
**Note:** The fee in USD will be implemented as prescribed by MHRD.

Student permitted for semester/year withdrawal as per ordinance has to pay the fees for the semester/year for which he/she has been granted withdrawal. However, he/she will not be charged the fees when he/she is completing his/her semester/year against withdrawal semester/ year.

Subject to the provisions of the Act, Statutes and Ordinances, the issues not covered in the notice or in the event of differences of interpretation, the Vice Chancellor may take a decision. The decision of the Vice Chancellor shall be final.

In special circumstances, the Vice Chancellor may approve amendment, modification, insertion or deletion which in his opinion is necessary or expedient for the smooth running of a program.

This issues with the prior approval of the Competent Authority.


  
**(Prof. Madhusudan Singh)**  
Registrar

F.No. DTU/Reg/Notifications/2019-20 / 2522

Dated: 26.02.22

Copy to :

1. PA to VC for kind information of the Hon'ble Vice Chancellor.
2. All the Deans & Heads of the Academic Department of DTU
3. Director (EDC)/HoD (USME)
4. All Associate Deans/ Associate Heads
5. Controller of Examination/ Controller of Finance/Chief Operating Officer
6. All Branch In-charges
7. Head (CC) with a request to upload the same on University website.

  
**(Prof. Madhusudan Singh)**  
Registrar



**DELHI TECHNOLOGICAL UNIVERSITY**  
(Estd. By Govt. of Delhi vide Act No. 6 of 2009)  
(Formerly Delhi College of Engineering)  
Shahbad Daulatpur, Main Bawana Road, Delhi-110042  
Tel: +91-11-27296337, Fax: +91-11-2787 1023

**ACADEMIC (UG) SECTION**

105(641) DTU/Acad-UG/2018-19 / 10886-94  
**Notification**

Dated 02/11/22

**Subject: - Academic Calendar for B. Tech (1<sup>st</sup> Semester) 2K22 Batch students for Academic Year 2022-23**

Following is the academic calendar for B. Tech (1<sup>st</sup> Semester) 2K22 Batch students for Academic Year 2022-23 duly approved by Competent Authority: -

|  |  |
|--|--|
| Orientation Program & Commencement of Online Registration  | 07.11.2022(Monday) to 11.11.2022 (Friday)  |
| Commencement of Teaching   | 14.11.2022 (Monday)                        |
| Last date of registration of the courses, addition/deletion of courses for all regular and Ex-students (except those students whose admission is confirmed later to this date) | 21.11.2022 (Monday)                        |
| Mid Term notification of shortage of attendance  | 30.12.2022(Friday)                         |
| Mid Semester Examination   | 02.01.2023 to 07.01.2023 (Monday-Saturday) |
| Teaching Ends, Display of sessional marks and shortage of attendance   | 24.02.2023 (Friday)                        |
| End Semester Theory & Practical Examination  | 27.02.2023 (Monday) onwards                |
| Grade moderation and display of grades   | 20.03.2023(Monday)                         |

*liye 2/11/22*  
(Prof. Priya Mahajan)  
Associate Dean Academic (UG)

105(641) DTU/Acad-UG/2018-19 / 10886-94

Dated 02/11/22

Copy to:

- 1) PS to the VC for kind information to the Hon'ble Vice Chancellor, DTU.
- 2) Registrar.
- 3) All Deans
- 4) All HoDs
- 5) Controller of Examination
- 6) COO & Head (CC), with a request to upload notice on DTU website and intimate the students through ERP portal.
- 7) Mr. Piyush Vaish, KNM.
- 8) Guard File.

*liye*  
(O.P Singh)  
Section Officer Academic-(UG)

*OIC*





# DELHI TECHNOLOGICAL UNIVERSITY

(Estd. By Govt. of Delhi vide Act No. 6 of 2009)

(Formerly Delhi College of Engineering)

Shahbad Daulatpur, Main Bawana Road, Delhi-110042

Tel: +91-11-27296337, Fax: +91-11-2787 1023

## ACADEMIC (UG) SECTION

105(641) DTU/Acad-UG/2018-19 / 11108-16

Dated 21/11/22

### Notification

**Subject: - Academic Calendar for B. Tech (2<sup>nd</sup> Semester) 2K22 Batch students for Academic Year 2022-23**

Following is the academic calendar for B. Tech (2<sup>nd</sup> Semester) 2K22 Batch students for Academic Year 2022-23 duly approved by Competent Authority: -

|  |  |
|--|--|
| Filling of online registration form for all regular and Ex-students                                    | 13.03.2023(Monday)                         |
| Commencement of Teaching   | 20.03.2023(Monday)                         |
| Last date of registration of the courses, addition/deletion of courses for all regular and Ex-students | 03.04.2023 (Monday)                        |
| Mid Term notification of shortage of attendance  | 12.05.2023(Friday)                         |
| Mid Semester Examination   | 15.05.2023 to 20.05.2023 (Monday-Saturday) |
| Teaching Ends, Display of sessional marks and shortage of attendance                                   | 30.06.2023 (Friday)                        |
| End Semester Theory & Practical Examination  | 03.07.2023 (Monday) onwards                |
| Summer Vacation  | 17.07.23 - 28.07.2023 (Monday -Friday)     |
| Grade moderation and display of grades   | 31.07.2023(Monday)                         |

(Prof. Priya Mahajan)

Associate Dean Academic (UG)

105(641) DTU/Acad-UG/2018-19 / 11108-16

Dated 21/11/22

Copy to:

- 1) PS to the VC for kind information to the Hon'ble Vice Chancellor, DTU.
- 2) Registrar.
- 3) All Deans
- 4) All HoDs
- 5) Controller of Examination
- 6) COO & Head (CC), with a request to upload notice on DTU website and intimate the students through ERP portal.
- 7) Mr. Piyush Vaish, KNM.
- 8) Guard File.

g/c

(O.P. Singh)

Section Officer Academic-(UG)



**DELHI TECHNOLOGICAL UNIVERSITY**  
(Estd. By Govt. of Delhi vide Act No. 6 of 2009)  
(Formerly Delhi College of Engineering)  
Shahbad Daultpur, Main Bawana Road, Delhi-110042  
Tel : +91-11-27296337, Fax : +91-11-2787 1023

**ACADEMIC (UG) SECTION**

105(641)DTU/Acad-UG//2018-19 / 14243-52

Dated 2/6/22

**Notification**

**Subject:- Academic Calendar For all UG/PG/Ph.D Programs (Odd semester) for Academic Year 2022-23**

It is to inform that the Academic Council in its 32<sup>nd</sup> meeting held on 18.05.2022 vide agenda number 32.7 considered and approved the Academic Calendar for all UG/PG/Ph.D programs (Odd Semester) for the Academic Year 2022-23 :-

|   |  |
|---|--|
| 25.07.2022 (Monday) to 05.08.2022(Friday)   | Filling of online registration forms by all students for<br>UG*- III, V and VII Semester<br>PG: I, III semester<br>PhD : Course work   |
| 01.08.2022 (Monday)   | Teaching starts for<br>UG*:III, V and VII Semester courses<br>(* Excluding B Tech 3 <sup>rd</sup> semester)<br>PG: I, III Semester.<br>PhD : Course work                       |
| 09.08.2022(Tuesday)   | Teaching starts for B. Tech 3 <sup>rd</sup> Semester students.   |
| 26.08.2022 (Friday)   | Last date of registration of the course, addition/deletion of courses for all regular and Ex- students (except those students whose admission is confirmed later to this date) |
| 23.09.2022 (Friday)   | Mid Term notification of shortage of attendance  |
| <b>MID Semester Examination 26.09.2022(Monday) to 01.10.2022 (Friday)</b>   |  |
| 18.11.2022(Friday)  | Teaching ends, Display of sessional marks and shortage of attendance   |
| <b>END Semester Theory &amp;Practical Examination 21.11.2022(Monday)onwards</b>   |  |
| 12.12.2022(Monday)  | Grade moderation & display of grades   |
| <b>Note :</b> * Separate notification shall be done for all 1 <sup>st</sup> semester students admitted after notification of this calendar. |  |

(Prof. Priya Mahajan)  
Associate Dean Academic (UG) I/C

105(641)DTU/Acad-UG//2018-19 / 14243-52

Dated 2/6/22

Copy to:

- 1) PS to the VC for kind information to the Hon'ble Vice Chancellor, DTU.
- 2) Registrar.
- 3) All HoDs
- 4) Controller of Examination:- with a request to initiate process of registration.
- 5) COO & Head (CC), with a request to upload notice on Academic (UG) portal the DTU website.
- 6) Mr. Piyush Vaish, KNM.
- 7) Chief Warden:- Request to upload on notice Board.
- 8) Notice Board.
- 9) Guard File.

(O.P Singh)  
Section Officer Academic (UG)





# DELHI TECHNOLOGICAL UNIVERSITY

(Estd. By Govt. of Delhi vide Act No. 6 of 2009)

(Formerly Delhi College of Engineering)

Shahbad Daulatpur, Main Bawana Road, Delhi-110042

Tel: +91-11-27296337, Fax: +91-11-2787 1023

## ACADEMIC (UG) SECTION

105(641) DTU/Acad-UG/2018-19/11964-72

Dated 28/12/22

### Notification

**Subject: - Academic Calendar for Even Semester, UG & PG Programs (Except 1<sup>st</sup> year B.Tech, BBA and BA(H) Eco, M.A(Eco)) Academic Year-2022-2023**

Following is the academic calendar for even semester, UG & PG programs (Except 1<sup>st</sup> year B.Tech, BBA and BA(H) Eco, M.A(Eco)) Academic Year-2022-2023 duly approved by Competent Authority: -

|  |   |
|--|---|
| Filling of online registration form for all regular and Ex-students                                    | 07.12.2022 (Wednesday)                            |
| Last date of registration of the courses, addition/deletion of courses for all regular and Ex-students | 14.12.2022 (Wednesday)                            |
| Commencement of Teaching   | 02.01.2023 (Monday)                               |
| Techfest'23/ Engifest'23/ Yuvaan'23<br>Teaching suspended (for UG & PG Students only)                  | 13.02.2023 to 19.02.2023 (Monday-Sunday)          |
| Mid Semester notification of shortage of attendance  | 03.03.2023 (Friday)                               |
| Classes in online mode (for UG&PG Students only)   | 06.03.2023 to 10.03.2023 (Monday-Friday)          |
| Mid Term Examination   | 13.03.2023 (Monday) onwards                       |
| Teaching Ends  | 28.04.2023 (Friday)                               |
| Display of sessional marks and shortage of attendance  | 02.05.2023 (Tuesday)                              |
| End Term Theory & Practical Examination  | 03.05.2023 (Wednesday) onwards                    |
| Grade moderation and display of grades   | 01.06.2023 (Thursday)                             |
| Summer Vacation (For UG students only)   | 01.06.2023 – 28.07.2023                           |
| Industrial Training/Internship   | After End Term Examination/During Summer Vacation |

*Priya Mahajan*  
(Prof. Priya Mahajan)  
Associate Dean Academic (UG)

105(641) DTU/Acad-UG/2018-19/11964-72

Dated 28/12/22

Copy to:

- 1) PS to the VC for kind information to the Hon'ble Vice Chancellor, DTU.
- 2) Registrar.
- 3) All Deans
- 4) All HoDs
- 5) Controller of Examination
- 6) COO & Head (CC), with a request to upload notice on DTU website and intimate the students through ERP portal.
- 7) Mr. Piyush Vaish, KNM.
- 8) Guard File.

*O.P Singh*  
(O.P Singh)  
Section Officer Academic-(UG)





# DELHI TECHNOLOGICAL UNIVERSITY

(Estd. By Govt. of Delhi vide Act No. 6 of 2009)

(Formerly Delhi College of Engineering)

Shahbad Daulatpur, Main Bawana Road, Delhi-110042

Tel: +91-11-27296337, Fax: +91-11-2787 1023

## ACADEMIC (UG) SECTION

105(641) DTU/Acad-UG/2018-19/12410-18


Dated 02/02/23

### Notification

**Subject: - Academic Calendar for BBA,BA(H) Eco (2<sup>ND</sup> Semester) 2K22 Batch students for Academic Year 2022-23**

Following is the academic calendar for BBA, BA(H)Eco (2<sup>nd</sup> Semester) 2K22 Batch students for Academic Year 2022-23 duly approved by Competent Authority: -

|  |  |
|--|--|
| Filling of online registration form for all regular and Ex-students                                    | 13.03.2023(Monday)                         |
| Commencement of Teaching   | 20.03.2023(Monday)                         |
| Last date of registration of the courses, addition/deletion of courses for all regular and Ex-students | 03.04.2023 (Monday)                        |
| Mid Term notification of shortage of attendance  | 12.05.2023(Friday)                         |
| Mid Semester Examination   | 15.05.2023 to 20.05.2023 (Monday-Saturday) |
| Teaching Ends, Display of sessional marks and shortage of attendance                                   | 30.06.2023 (Friday)                        |
| End Semester Theory & Practical Examination  | 03.07.2023 (Monday) onwards                |
| Summer Vacation  | 17.07.23 – 28.07.2023 (Monday –Friday)     |
| Grade moderation and display of grades   | 31.07.2023(Monday)                         |

  
(Prof. Priya Mahajan)  
Associate Dean Academic (UG)

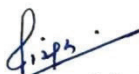
105(641) DTU/Acad-UG/2018-19 /12410-18

Dated 02/02/23

Copy to:

- 1) PS to the VC for kind information to the Hon'ble Vice Chancellor, DTU.
- 2) Registrar.
- 3) All Deans
- 4) All HoDs
- 5) Controller of Examination
- 6) COO & Head (CC), with a request to upload notice on DTU website and intimate the students through ERP portal.
- 7) Mr. Piyush Vaish, KNM.
- 8) Guard File.



  
(O.P. Singh)  
Section Officer Academic-(UG)

## FEE CONCESSION FOR STUDENTS BELONGING TO ECONOMICALLY WEAKER SECTIONS

DTU has well established guide lines for extending fee concession to the needy students with lean economical background. Applications are invited from all the desirous students; a designated Fee Concession Screening Committee interacts with those students and their parents and accordingly recommends the full or half fee concession on tuition fee to them.

All the desirous and eligible students of DTU who belongs to lower income group and wish to seek financial assistance for fee concession may submit the application online on [www.btechstudentportal.dtu.ac.in](http://www.btechstudentportal.dtu.ac.in) (portal will be active in the month of August/September). The criteria and guidelines for the fee concession and concession in hostel fee are as under:-

1. The students whose family income from all sources is less than Rs. 4,50,000/- per annum will only be eligible for fee concession. Income Certificate should be valid at the time of online application issued by SDM/1st Class Magistrate in case of others, ITR for previous financial year in case of Govt. Employee.
2. The students of 1st year and 3rd year shall deposit the University annual fee at the start of the academic session and fee concession amount will be reimbursed if he/she fulfills the criteria of fee concession. In 2nd and 4th year the student will deposit the fee as per the applicable fee concession received in 1st and 3rd year respectively.
3. First year student has to submit the copies of the all mark sheets starting from 12th class and JEE Rank Card.
4. Any student who availed fee concession in 1st year will continue to be eligible for Fee Concession in 2nd year also, similarly student availing fee concession in 3rd year will continue to be eligible for the same in 4th year also provided he/she has acquired minimum required credits for promotion from 1st year to 2nd year / 3rd year to 4th year respectively.
5. The student has to submit an undertaking duly counter signed by his/her parents on stamp paper of Rs. 10/- duly attested by public Notary that "he/she has not obtained or applied for any grant/ financial help for the same purpose from any other Ministry/ Govt. Department of India/ State, any Public/ Private Organization." The application of the candidate concealing the facts will automatically stand cancelled.
6. The student should not be involved in any indisciplinary activity (ies) in the University.
7. Copy (ies) of Death Certificate of earning parent(s).
8. Copy of award letter of Scholarship/fellowship if any, being awarded any Govt. or non-govt. organization.
9. Copy of student Bank Passbook mentioning IFSC and Bank A/C No.
10. The full fee concession may be given to the student's maximum upto five (05) % of the sanctioned intake for the particular year in the respective program or equivalent to the number of double, the half fee concession may be granted to the deserving students.
11. The full fee concession will be granted to the wards (up to two children only) of all the Group C' employees and half fee concession may be granted to the wards (up to two children only) of all the "Group B' employees of the DTU/ DCE over and above the student's maximum upto five (05) % of the sanctioned intake for the particular year.

All shortlisted students will be required to appear for personal interview by a designated Committee for which dates will be announced later on. Applications will be accepted only through online portal, hand written applications will not be accepted.

## FINANCIAL SUPPORT TO STUDENTS

### **Merit scholarship to the toppers of each branch of Bachelor of Technology.**

The merit Scholarship is awarded strictly on principle of academic merit of the candidates who satisfy the following conditions:

1. Merit scholarship shall be given only to the toppers of all branches of B Tech program (F/T) annually with the condition that the student concerned has secured 75% or above as aggregate marks or CGPA  $\geq 7.5$  in an academic year.
2. The student who has passed all the subject of the semester in one attempt.
3. The student should have a sound moral character and should not have indulged into any act of misconduct during his/her studies at the University.
4. In case of tie, all awardees will be given Rs 5000/- each.

Approval accorded during 11th meeting of Academic Council held on 24.06.2015 and confirmed by BOM vide minutes of 17th BOM, DTU held on 17.07.2015.

### **Financial Assistance to students for presenting Research Paper/Poster in National/ International Conference /Events**

This scheme is aimed at promoting research and development activities in various areas of professional education in an academic department by providing opportunity to students to interact at national and international level to update with the global changes in the concerned fields / area of specialisation.

### **Financial Assistance for Students' Innovative Projects**

To strengthen the student innovative projects and to facilitate student teams venturing for innovative projects, there is a provision for financial support for which approval is accorded during 19th meeting of Academic Council held on 16.11.2018 and confirmed by BOM vide minutes of 29th BOM, DTU held on 30.11.2018.

### **Financial assistance for students for attending internship overseas**

The scheme for financial assistance to students for attending internship overseas has been instituted keeping in view the importance of state of the art research and international exposure to students for which approval is accorded during 19th meeting of Academic Council held on 16.11.2018 and confirmed by BOM vide minutes of 29th BOM, DTU held on 30.11.2018.

## RULES FOR CHANGE OF NAME OF STUDENT IN ACADEMIC RECORDS

The Board of Management, Delhi Technological University in its 43rd meeting held on 21.05.2021 vide agenda number 43.11 approved revisions of existing rules for correction/change of name of student in academic record. Revised rules notified vide letter No. F.DTU/Order/BOM/25/2014/Vol-III/150 are as under:

There quest spertaining to change of name are divided into two categories:

### **a) Category `A'- related to Correction**

Correction in name to the extent of correction in spelling errors, factual typographical errors in the candidate's name/ surname, name of father/mother/guardian/date of birth etc. may be considered within 05 years of the declaration of results. If the request comes after 05 years the case may be considered by the Vice Chancellor on its merit.

### **b) Category `B' - related to Change**

The change in the name/ surname of candidate, date of birth, and name of father/ mother/ guardian name may be considered within 05 years of declaration of results provided the changes have been admitted by CBSE/ State Boards/Other related Boards/ Universities wherein from the qualifying examination was passed.

All such requests covered in category A and Category B may be considered within 05 years of declaration of final result of the programme to which the student was admitted to the University. If the request comes after 05 years the case may be considered by the Vice Chancellor on its merit.

Following documents need to be submitted by the students while applying:

#### **a) For category A**

- i. An application in prescribed format duly forwarded by the Head of the concerned Department.
- ii. An affidavit as per prescribed format on a non-judicial stamp paper worth Rs. 20/- (in original) executed in the court and sworn before First Class Magistrate, First Class Metropolitan Magistrate/Executive Magistrate/Sub Divisional Magistrate regarding change in name. (Original)
- iii. Self-attested copy of Roll Number issued by the University.
- iv. Fee receipt of payment of prescribed fee by the University for correction/change of name.
- v. A copy of revised certificates issued by CBSE or any other Board/ University from wherein the qualifying examination was passed bearing the corrected name/surname, name of father/mother, Date of Birth.
- vi. In case mistake is found from the University side, no fee will be charged for any correction.

**For category B:** In addition to the documents mentioned for Category `A', the student is also required to submit following document:

- i. Original copy of the Government of India Gazette, notifying the change in name.
- ii. Original copy of two newspapers (daily English/ Hindi newspaper at the national level and daily newspaper in a vernacular language circulated in the locality city), in which the desired change has been published.

- iii. Original undertaking, in prescribed format duly sworn before the Judicial Magistrate, first class Metropolitan Magistrate/ Executive Magistrate/ Sub Divisional Magistrate.

Once approved by the Competent Authority, the name of student/ father/ mother/guardian, date of birth as applicable shall be read as:-

The name after change will be read as changed name alias/nee earlier name in DTU record.

Further, the revised mark-sheet/degree/certificate shall bear the following details:

***“This mark-sheet/degree is issued subsequent to the name change of  
\_\_\_\_\_ (old name) to \_\_\_\_\_ (new name) as notified vide  
\_\_\_\_\_ dated \_\_\_\_\_”***

## **ORDINANCE-6**

### **(Maintenance of Discipline)**

**No. F.DTU/ORG/Notification/04(1)/2009.....** In exercise of the powers conferred by sub-section (2) of Section 32 of the Delhi Technological University Act, 2009 (Delhi Act 6 of 2009), the Board of Management, Delhi Technological University, hereby makes Ordinance-6 Maintenance of Discipline among students.

#### **1. Short title and Commencement:**

- (a) These Ordinance may be called the Delhi Technological University (Sixth) Ordinance, 2012.
- (b) They shall come into force with effect from the date of meeting of the Board of Management i.e. 28.12.2010

#### **2. Definitions:**

- (i). In these ordinances, unless the context otherwise requires:-
- (a). “Act”, “statutes”, “ordinance” and “regulations” mean respectively the Delhi Technological University Act, 2009 (6 of 2009), the statutes, the ordinance and the regulations of the Delhi Technological University.
- (b). “Department”, and “School” means the academic departments and schools of Delhi Technological University.
- (ii). Words and expression used, but not defined, in these ordinances shall have the meanings assigned to them in the Act and the statutes.

#### **3. Power to vest in the Vice Chancellor**

- (i). All powers relating to maintenance and enforcement of discipline among and disciplinary action against the students of the University shall vest in the Vice Chancellor.

- (ii). The Vice Chancellor may delegate all or any such of his powers, as he deems proper, to such other officers and authorities of the university as he may specify in this behalf.

#### **4. Acts of indiscipline and misconduct**

1. Without prejudice to the generality of the power to maintain and enforce discipline under this ordinance, the following shall amount to acts of indiscipline or misconduct on the part of a student of the University:-
  - (a) Physical assault, or threat to use physical force, against any member of the teaching or non-teaching staff of any Department or school of the University or against any student or the University.
  - (b) Remaining or co-curricular activity which he/ she is expected to participate in;
  - (c) Carrying of, use of or threat to use, any weapon;
  - (d) Misbehaviour, using abusive language or cruelty towards any other student, teacher or any other employee of the University.
  - (e) Use of drugs or other intoxicants except those prescribed by a qualified doctor;
  - (f) Any violation of the provisions of the Civil Rights Protection Act, 1976;
  - (g) Indulging in or encouraging violence or any conduct which involves moral turpitude;
  - (h) Any form of gambling;
  - (i) Violation of the status, dignity and honour of a student belonging to a scheduled caste or a schedule tribe.
  - (j) Discrimination against any student or a member of staff on grounds of caste, creed, language, place of origin, social and cultural background or any of them.
  - (k) Practicing casteism and untouchability in any form or inciting any other person to do so;
  - (l) Any act or gesture, whether verbal physical or otherwise verbal physical or otherwise, derogatory to women;
  - (m) Consuming tobacco, liquor or smoking;
  - (n) Any attempt at bribing or corruption of any manner or description;
  - (o) Wilful destruction of the property of the University.
  - (p) Behaving in a rowdy, intemperate or disorderly manner in the premises of the University or encouraging or inciting any other person to do so;
  - (q) Causing disruption of any manner or description of the academic functioning of the University system;
  - (r) Indulging in or encouraging any form of disruptive activity connected with tests, examinations or any other activity of the University.
  - (s) Indulging in or encouraging any form of disruptive activity connected with tests, examinations or any other activity of the University;
  - (t) (Truancy and unpunctuality;
2. The Vice Chancellor may amend or add to the list of malpractices under clauses (1)



## **5. Penalties for breach of discipline**

Without prejudice to the generality of his powers relating to the maintenance of discipline and taking such action in the interest of maintaining discipline as deemed appropriate by him.

- (1) The Vice Chancellor may in exercise of his powers aforesaid, order or direct that any student or students-
  - (a) Be expelled from the University in which case he/ she shall not be re-admitted to the University, from where his expelled; or
  - (b) Be, for a stated period, rusticated in which case he/ she not be admitted to the University till the expiry of the period of rustication; or
  - (c) Be, for a stated period expelled from the University Hostel/ hall of residence or;
  - (d) Be not, for a stated period, admitted to a course or courses of study of the University; or
  - (e) Be imposed with the fine of a specified amount of money;
  - (f) Be debarred from taking a University examination or examinations for one or more years.
- (2) The Vice Chancellor, in exercise of his powers aforesaid or on the recommendations of Board of Discipline, may also order or direct that the result of the student concerned of the examination or examinations at which he/ she has appeared, be cancelled.
- (3) The Chairman, Board of Discipline, Head of Teaching Departments and schools, Wardens of different hostels, Librarian and In-charge of any centralized facilities in the university shall have the authority to exercise disciplinary powers over students in their respective domain, in the university as may be necessary for the proper functioning of the department, hostel, library, central facility, which may include issuing warning, suspension from the classes/ hostels and/ or debarring from using the central facilities for a maximum period of one month. However, in all such cases, the final decision shall be taken by the Board of Discipline.

## **6. Ragging**

Ragging for the purpose of this ordinance, shall ordinarily mean any act, conduct or practice by which the dominant power or status of senior students is brought to bear upon the students who are in any way considered junior or inferior by the former and includes individual or collective acts or practices which:

- (a) Involve physical assault or threat to use physical force;
- (b) Violate the status, dignity and honour of students, in particular woman/ girl students and those belonging to a scheduled caste or a scheduled tribe;
- (c) Expose students to ridicule or contempt or commit an act which may lower their self-esteem; and
- (d) Entail verbal abuse, mental or physical torture, aggression, corporal punishment, harassment, trauma, indecent gesture and obscene behaviour.

### **A. What constitutes Ragging?**

Ragging constitutes one or more of the following acts:

- (a) Any conduct by any students whether by words spoken or written or by an act which has the effect of teasing, treating or handling with rudeness a fresher or any other students;

- (b) Indulging in rowdy or indisciplined activities by any student or students which causes or is likely to cause annoyance, hardship, physical or psychological harm or to raise fear or apprehension thereof in any fresher or any other student;
- (c) Asking any student to do any act which such student will not do in the ordinary course and which has the effect of causing or generating a sense of shame, or torment or embarrassment so as to adversely affect the physique or psyche of such fresher or any other student;
- (d) Any act by a senior student that prevents, disrupts or disturbs the regular academic activity of any other student or a fresher;
- (e) Exploiting the services of a fresher or any other student for completing the academic tasks assigned to an individual or a group of students;
- (f) Any act of financial extortion or forceful expenditure burden put on a fresher or any other student by students;
- (g) Any act of physical abuse including all variants of it: sexual abuse, homosexual assaults, stripping, forcing obscene and lewd acts, gestures causing bodily harm or any other danger to health or person;
- (h) Any act or abuse by spoken words, emails, post, public insults which would also include deriving perverted pleasure, vicarious or sadistic thrill from actively or passively participating in the discomfiture to fresher or any other student;
- (i) Any act that affects the mental health or self-confidence of a fresher or any other student with or without an intent to derive a sadistic pleasure or showing off power, authority or superiority by a student over any fresher or any other student.

## **B. Prohibition of Ragging**

- (a) Ragging in any form is strictly prohibited in University campus and any part of University system, as well as on public transport or at any place, public or private.
- (b) Any individual or collective act or practices of ragging constitutes gross indiscipline and shall be dealt with relevant provisions.
- (c) The Head of the Department/ school, Proctor, wardens of Hostels, Librarian, In-charge of any central facility, security officer or any faculty member of the university shall take immediate action on receipt of any information of the occurrence of ragging.
- (d) Notwithstanding anything in clause (iii) above, the Chairman, Board of Discipline may also suo-moto enquire into, any incident of ragging and make a report to the Vice Chancellor of the identity of those who have engaged in ragging and the nature of the incident.
- (e) The Chairman, Board of Discipline may also submit an initial report to VC establishing the identity of the perpetrators, of ragging and the nature of the ragging incident.
- (f) If the Head of the Department/ Schools, Proctor, Chief Warden, Librarian, In-charge-Central Facility and Chairman, Board of Discipline is satisfied that for some reason, to be recorded in writing, it is not feasible to hold such an enquiry, he/ she may so advise the Vice Chancellor accordingly.
- (g) When the Vice Chancellor is satisfied that it is not expedient to hold such an enquiry into an incident of ragging, his/ her decision shall be final.



- (h) One the receipt of a report under clause (iv) of (v) or determination by the relevant authority under clause (vi) disclosing the occurrence of ragging incidents described in clause 5 (A), the Vice Chancellor shall take appropriate penal action which may include rustication of a student or student for a specific number of year from University, debarring from appearing in University examination and/ or take any other measure as prescribed by Hon'ble Supreme Court or any Court of Law.
- (i) The Vice Chancellor may in other cases of ragging order or direct that nay student or students be expelled or be not for a stated period admitted to a course of study or in a University Examination, for one or more years or that the result of student/ students concerned in the examination in which they appeared be cancelled.
- (j) In case any students who have obtained degrees of Delhi Technological University are found guilty under this Ordinance, appropriate action for withdrawal of degrees conferred by the University shall be initiated.
- (k) For the purpose of this Ordinance, abetment to ragging whether by way of any act, practice or incitement of ragging will also amount to ragging.
- (l) All students shall be required to submit written undertaking(s) to the University in the beginning of academic session that they shall indulge into any act of ragging.

## **7. Declaration to be signed by a student**

At the time of admission, every student shall be required to sign a declaration

On oath that he/ she shall submit himself/ herself to the disciplinary jurisdiction of the Vice Chancellor and other authorities of the University.

## **8. Constitution of the Board of Discipline**

- (1) The Boards of Discipline at the level of the University shall be constituted by the Vice Chancellor as follows:-
  - (a) A Professor of the University to be nominated by the Vice Chancellor – Chairman
  - (b) Chief Warden of the University Hostels
  - (c) Two senior teachers of the University to be nominated by the Vice Chancellor, members.
  - (d) One senior lady teacher of the University to be nominated by the Vice-Chancellor, member.
  - (e) Head of the concerned department/ school and hostel warden to which the act of indiscipline of misconduct by a student or students pertains to the Chairman in case feels that input from the student(s) are required for better examination of a case may do so by calling the student(s).
  - (f) Assistant Registrar (Academic) shall be the Member Secretary of the Board of Discipline.
- (2) The members of the board including Chairman shall hold office for a period of two years and a vacancy occurring in the Board of Discipline shall be filled for the remaining period of the term of the member whose department has caused the vacancy.
- (3) Three members of the Board of discipline including the Chairman, shall form the quorum.
- (4) In the absence of the Chairman, the senior most member of the Board of Discipline shall act as the Chairman.

## **9. Functions of the Board of Discipline**

- (1) The Board of Discipline shall perform the following functions;-
  - (a) To consider matters concerning maintenance of discipline among the students in the University.
  - (b) To enquiry into the acts of indiscipline or misconduct committed by a student or students whenever such cases are referred to the Board of Discipline and to submit their findings conclusions and recommendations for the quantum of punishment under the provision of this ordinance to the Vice Chancellor or the person authorized by the Vice Chancellor in this behalf.
  - (c) To supervise and monitor the disciplinary climate prevailing in the University.
  - (d) To take preventative and precautionary steps such as issue of notices, warning, instructions etc. as the case may be, for the purpose of forestalling acts of individual or collective indiscipline, misconduct and ragging etc.
  - (e) To maintain liaison with the police authorities and the concerned departments of the Government, neighbouring institutions and the concerned authorities of the University regarding maintenance of law Chancellor from time to time.
- (2) The decision in each case shall be conveyed by the Chairman communicating the penalty or penalties, if any, imposed on a student or students.
- (3) A student or students, who are aggrieved with the penalty imposed upon them, may appeal to the vice chancellor whose decision in this regard shall be final and binding upon the parties.

## DELHI TECHNOLOGICAL UNIVERSITY ADMINISTRATION

| S. No. | NAME                    | DESIGNATION                |
|--------|-------------------------|----------------------------|
| 1.     | PROF. JAI PRAKASH SAINI | VICE CHANCELLOR            |
| 2.     | PROF.MADHUSUDAN SINGH   | REGISTRAR                  |
| 3.     | SH. KAMAL PATHAK        | CONTROLLER OF EXAMINATIONS |
| 4.     | DR. R.K. SHUKLA         | LIBRARIAN                  |

### DEANS

| S. No. | NAME                    | DESIGNATION                            |
|--------|-------------------------|--|
| 1.     | PROF. RINKU SHARMA      | DEAN ACADEMICS (PG)                    |
| 2.     | PROF. RAJESHWARI PANDEY | DEAN ACADEMICS (UG)                    |
| 3.     | PROF. PRAGATI KUMAR     | DEAN INDUSTRIAL RESEARCH DEVELOPMENT   |
| 4.     | PROF. PRAVIR KUMAR      | DEAN INTERNATIONAL AFFAIRS             |
| 5.     | PROF.AMIT SHRIVASTVA    | DEAN , OUTREACH & EXTENSION ACTIVITIES |
| 6.     | PROF. NARENDRA KUMAR II | DEAN DISCIPLINE                        |
| 7.     | PROF. S.INDU            | DEAN STUDENT WELFARE                   |
| 8.     | PROF. RAJESH ROHILLA    | DEAN ALUMNI AFFAIRS                    |

### HEAD OF THE DEPARTMENTS

| S. NO. | NAME                      | DEPARTMENT  |
|--------|---------------------------|---|
| 1.     | PROF. S.G. WARKAR         | APPLIED CHEMISTRY                                   |
| 2.     | PROF. A. S. RAO           | APPLIED PHYSICS                                     |
| 3.     | PROF. S.SIVAPRASAD KUMAR  | APPLIED MATHEMATICS                                 |
| 4.     | PROF. PRAVIR KUMAR        | BIO TECHNOLOGY                                      |
| 5.     | PROF. VINOD KUMAR         | COMPUTER SCIENCE & ENGINEERING                      |
| 6.     | PROF. V.K.MINOCHA         | CIVIL ENGINEERING                                   |
| 7.     | PROF. NARENDRA KUMAR II   | ELECTRICAL ENGINEERING                              |
| 8.     | PROF. O.P. VERMA          | ELECTRONICS AND COMMUNICATION ENGG                  |
| 9.     | PROF. HARITASH ANIL KUMAR | ENVIRONMENTAL ENGINEERING                           |
| 10.    | PROF. NAND KUMAR          | HUMANITIES  |
| 11.    | PROF. KAPIL SHARMA        | INFORMATION TECHNOLOGY                              |
| 12.    | PROF. S.K. GARG           | MECHANICAL ENGINEERING                              |
| 13.    | PROF. RUCHIKA MALHOTRA    | SOFTWARE ENGINEERING                                |
| 13.    | PROF. RAJESH ROHILLA      | TRAINING & PLACEMENT                                |
| 14.    | PROF.RANGANATH M.SINGARI  | DESIGN  |
| 15.    | DR. ARCHANA SINGH         | DELHI SCHOOL OF MANAGEMENT                          |
| 16.    | PROF. AMIT MOOKARJEE      | UNIVESTIY SCHOOL OF MANAGEMENT AND ENTREPRENURESHIP |

## LIST OF FACULTY

| DEPARTMENT OF APPLIED CHEMISTRY   |                          |                           |
|-----------------------------------|--------------------------|---------------------------|
| PROF. SUDHIR GOPALRAO WARKER(HOD) |                          |                           |
| PROFESSOR                         |                          |                           |
| PROF. RAM SINGH                   | PROF. ARCHNA RANI        | PROF. DEVENDRA KUMAR      |
| PROF. ANIL KUMAR                  | PROF. ROLI PURWAR        |                           |
| ASSISTANT PROFESSOR               |                          |                           |
| DR. SAURABH MEHTA                 | DR. RICHA SRIVASTAVA     | DR. DEENAN SANTHIYA       |
| DR. RAMINDER KAUR                 | DR. MANISH JAIN          | DR. POONAM                |
| DEPARTMENT OF APPLIED MATHEMATICS |                          |                           |
| PROF. S.SIVAPRASAD KUMAR ( HOD)   |                          |                           |
| PROFESSOR                         |                          |                           |
| PROF. ADITYA KAUSHIK              | PROF. L.N.DAS            | PROF. ANJANA GUPTA        |
| PROF. RAMESH SRIVASTAVA           | PROF. NAOKANT DEO        | PROF. SANGITA KANSAL      |
| PROF. CHANDRA PRAKASH SINGH       |                          |                           |
| ASSISTANT PROFESSOR               |                          |                           |
| DR. VIVEK KUMAR AGARWAL           | DR. NILAM                | SH. ROHIT KUMAR           |
| DR. GOONJAN JAIN                  | DR. DINESH UDAR          | MS. SUMEDHA SENIARAY      |
| MS. TRASHA GUPTA                  | MS. PAYAL                | DR. ANSHUL ARORA          |
| DR. DHIRENDRA KUMAR               | DR. JAMKHONGAM TOUTHANG  |                           |
| DEPARTMENT OF APPLIED PHYSICS     |                          |                           |
| PROF.ALLAMSRINIVASARAO (HOD)      |                          |                           |
| PROFESSOR                         |                          |                           |
| PROF.NITIN KUMAR PURI             | PROF.SURESH CHAND SHARMA | PROF.RAVINDRA KUMAR SINHA |
| PROF.RISHU CHAUJAR                | PROF. RINKU SHARMA       | PROF.VINOD SINGH          |
| PROF.VINOD SINGH                  |                          |                           |
| ASSISTANT PROFESSOR               |                          |                           |
| DR. AJEET KUMAR                   | DR. AMRISH KUMAR PANWAR  | DR. M.JAYASIMHADARI       |
| DR. RENUKA BOKOLIA                | DR. RICHA SHARMA         | SH.YOGENDER KUM. MEENA    |
| DR. YOGITA KALRA                  | DR. MOHAN SINGH MEHATA   | DR. PAWAN KUMAR TYAGI     |
| DR. BHARTI SINGH                  | DR.SARITA BAGHEL         | DR. DESHRAJ MEENA         |
| DR. MUKHTIYAR SINGH               |                          |                           |
| DEPARTMENT OF BIOTECHNOLOGY       |                          |                           |
| PROF. PRAVIR KUMAR (HOD)          |                          |                           |
| PROFESSOR                         |                          |                           |
| PROF.YASHA HASIJA                 | PROF.JAI GOPAL SHARMA    |                           |
|                                   | ASSISTANT PROFESSOR      |                           |
| DR. ASMITA DAS                    | DR. NAVNEETA BHARDWAJ    |                           |
|                                   |                          |                           |

| DEPARTMENT OF CIVIL ENGINEERING              |                                   |                                   |
|--|-----------------------------------|-----------------------------------|
| PROF. V.K.MINOCHA (HOD)                      |                                   |                                   |
| PROFESSOR                                    |                                   |                                   |
| PROF.MUNENDER KUMAR                          | PROF.S.K.SINGH                    | PROF.ASHUTOSH TRIVEDI             |
| PROF.ASHOK KUMAR GUPTA(PT)                   | PROF.NIRENDER DEV                 | PROF.K.C.TIWARI                   |
| PROF.ANIL KUMAR SAHU                         | PROF.RAKESH KUMAR                 | PROF.ALOK VERMA                   |
| PROF.NARESH KUMAR                            | PROF.AMIT KUMAR SRIVASTAVA        | PROF.AWADHESH KUMAR               |
| PROF.S. ANBU KUMAR                           | PROF.RAJU SARKAR                  | PROF.T.VIJAY KUMAR                |
| ASSOCIATE PROFESSOR                          |                                   |                                   |
| MR. G.P. AWADHIYA                            | Mr. NARAD MUNI PRASAD             | DR. SUSHEEL KUMAR                 |
| Mr. A.R.KONGAN                               | DR. SHILPA PAL                    | DR. PARDEEP KUMAR GOYAL           |
| ASSISTANT PROFESSOR                          |                                   |                                   |
| Mr. B.R.G.ROBERT                             | DR. BHARAT JHAMNANI               | SH. HRISHIKESH DUBEY              |
| DR. RITURAJ                                  |                                   |                                   |
| DEPARTMENT OF ENVIRONMENT ENGINEERING        |                                   |                                   |
| PROF. HARITASH ANIL KUMAR (HOD)              |                                   |                                   |
| ASSISTANT PROFESSOR                          |                                   |                                   |
| Ms. LOVLEEN GUPTA                            | DR. RAJEEV KUMAR MISHRA           | DR. GEETA                         |
| Sh. GOUR ANUNAY ASHOK KUMAR                  |                                   |                                   |
| DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING |                                   |                                   |
| PROF. VINOD KUMAR (HOD)                      |                                   |                                   |
| PROFESSOR                                    |                                   |                                   |
| PROF. RAJNI JINDAL                           | PROF.ANIL SINGH PARIHAR           | PROF.RAHUL KATARYA                |
| PROF.SHAILENDER KUMAR                        | PROF. MANOJ KUMAR                 |                                   |
| ASSOCIATE PROFESSOR                          |                                   |                                   |
| DR. ARUNA BHATT                              |                                   |                                   |
| ASSISTANT PROFESSOR                          |                                   |                                   |
| DR. RAJESH KUMAR YADAV                       | DR. ROHIT BENIWAL                 | MR.NIPUN BANSAL                   |
| MS.MINNI JAIN                                | DR. SANJAY KUMAR                  | DR. PRASHANT GIRIDHAR SHAMBHARKAR |
| MS. ANUKRITI KAUSHAL                         | MS.GULL KAUR                      | MS. GARIMA CHHKARA                |
| DR. RAJEEV KUMAR                             | SH. KAVINDER SINGH                | DR. ANURAG GOEL                   |
| DR. PAWAN SINGH MEHRA                        |                                   |                                   |
| DEPARTMENT OF ELECTRICAL ENGINEERING         |                                   |                                   |
| PROF. NARENDRA KUMAR(II)(HOD)                |                                   |                                   |
| PROFESSOR                                    |                                   |                                   |
| PROF. MADHUSHUDAN SINGH                      | PROF.NARENDRA KUMAR(I)            | PROF. PRAGATI KUMAR               |
| PROF. UMA NANAGIA                            | PROF. VISHAL VERMA                | PROF.MOHMMAD RIZWAN               |
| PROF.S.T.NAGARAJAN                           | PROF.J.N.RAI                      | PROF. RACHNA GARG                 |
| PROF.BHARAT BHUSHAN                          | PROF.SUMAN BHOWMICK               | PROF.ALKA SINGH                   |
| PROF.MADAN MOHAN TRIPATHI                    | PROF.MUKHTIAR SINGH               | PROF.DHEERAJ JOSHI                |
| PROF.PRIYA MAHAJAN                           | PROF.SUDARSHAN KUMAR BABU VALLURU | PROF.MINI SREEJETH K.             |

|  |                            |                              |
|--|----------------------------|------------------------------|
| PROF.VINOD KUMAR YADAV   | PROF.RAM BHAGAT            |                              |
| <b>ASSOCIATE PROFESSOR</b>                                     |                            |                              |
| MR. NEERAJ KUMAR BHAGAT  | Mr. RAMJEE LAL MEENA       | DR. DULI CHAND MEENA         |
| <b>ASSISTANT PROFESSOR</b>                                     |                            |                              |
| Dr.PREM PRAKASH  | DR. BHAVNESH JAINT         | Mr. ASHISH RAJESWAR KULKARNI |
| Mr. ANIRUDDHA BARUN KUMAR BHATTACHARYYA                        | MR. KULDEEP SINGH          | Ms. GARIMA                   |
| MS. ANKITA ARORA   | MR. HIMANSHU               | DR. ANUP KR. MANDPURA        |
| MR. SIKANDAR ALI KHAN  | MR. SAURABH MISHRA         | SH. ABHISHEK CHAUDHARY       |
| DR. PRAKASH CHITTORA   | MS. SHATAKSHI              | SH. SHREYANSH UPADHYAYA      |
| DR. MAYANK KUMAR   | SH. KRISHNA DUTT           | MS. ANUPAMA                  |
| SH. GAURAV KAUSHIK   | DR. CHAUDHRY INDRA KUMAR   | SH. ROHAN PILLAI             |
| DR. VANJARI VENKATA RAMANA                                     | DR. RAJESH KUMAR           | DR. MADAN MOHAH RAYGURU      |
| <b>DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING</b> |                            |                              |
| <b>PROF. O.P VERMA (HOD)</b>                                   |                            |                              |
| <b>PROFESSOR</b>   |                            |                              |
| PROF. RAJIV KAPOOR   | PROF. S.INDU               | PROF. ASOK DE                |
| PROF. N.S.RAGHAVA  | PROF. RAJESHWARI PANDEY    | PROF. NEETA PANDEY           |
| PROF.DINESH KUMAR  | PROF. JEEBANANDA PANDA     | PROF.RAJESH ROHILLA          |
| PROF.MAHIPAL SINGH CHOUDHARY                                   | PROF.GURJIT KAUR           | PROF.POORNIMA MITAL          |
| PROF.PRIYANKA JAIN   | PROF.ALOK KUMAR SINGH      |                              |
| <b>ASSOCIATE PROFESSOR</b>                                     |                            |                              |
| DR. RAJESH BIROK   |                            |                              |
| <b>ASSISTANT PROFESSOR</b>                                     |                            |                              |
| DR.DEVA NAND   | Mr. AVINASH RATRE          | MR. AJAI K. GUATAM           |
| DR. N.JAYANTHI   | DR. SUDIPTA MAJUMDAR       | DR. MALTI BANSAL             |
| MR. ANURAG CHAUHAN   | MR. PIYUSH TEWARI          | DR. YASHNA SHARMA            |
| MS. KRITI SUNEJA   | MR. SUMIT KUMAR KHANDELWAL | SH. PANKAJ DAHIYA            |
| SH. SACHIN DHARIWAL  | SH. ROHIT KUMAR            | SH. AKSHAY MANN              |
| SH. RAHUL THAKUR   | SH. LOKESH GAUTAM          | SH. KAUSTUBH RANJAN SINGH    |
| MS. SONAL SINGH  | DR. ANKUL PANDEY           | SH. SACHIN TARAN             |
| SH. SUMIT KALE   | DR. CHHAVI DHIMAN          | MS. LAVI TANWAR              |
| DR. SONAM REWARI   | DR. MANJEET KUMAR          | SH. VARUN SANGWAN            |
| SH. M.GANESH   | MS. DEEPIKA SIPAL          | DR. HARIKESH                 |
| MR. VINAY KUMAR  |                            |                              |
| <b>DEPARTMENT OF MECHANICAL ENGINEERING</b>                    |                            |                              |
| <b>PROF. S.K GARG(HOD)</b>                                     |                            |                              |
| <b>PROFESSOR</b>   |                            |                              |
| PROF. SAGAR MAJI   | PROF.ASHOK KUMAR MADAN     | PROF.NAVEEN KUMAR            |
| PROF.SAMSHER   | PROF.D.S.NAGESH            | PROF.REETA WATTAL            |
| PROF.VIPIN   | PROF.ATUL KUMAR AGRAWAL    | PROF.RAJ KUMAR SINGH         |
| PROF.RAMESH CHANDRA SINGH                                      | PROF.AMIT PAL              | PROF.RAJESH KUMAR            |

|   |                            |                           |
|---|----------------------------|---------------------------|
| PROF.QASIM MURTAZA                          | PROF.RANGANATHAN M.SINGARI | PROF.BHARAT BHUSHAN ARORA |
| PROF.RAJIV CHAUDHARY                        | PROF.VIJAY GAUTAM          | PROF AKHILESH ARORA       |
| PROF.GIRISH KUMAR                           |                            |                           |
| <b>ASSOCIATE PROFESSOR</b>                  |                            |                           |
| MR. VISHAV KAMAL                            | MR.P.V.RAM KUMAR           | DR. PUSHPENDRA SINGH      |
| DR. ROOP LAL                                | DR.PRAVIN KUMAR            | DR. ANIL KUMAR            |
| DR. MAHENDRA SINGH NIRANJAN                 | MR. P. K. JAIN             |                           |
| <b>ASSISTANT PROFESSOR</b>                  |                            |                           |
| DR. PARAS KUMAR                             | DR.MANJUNATH K             | DR. SANJAY KUMAR          |
| DR.KROVVIDI SRINIVAS                        | DR. NAUSHAD AHMAD ANSARI   | DR. SUSHILA RANI          |
| DR. MOHAMMAD ZUNAID                         | DR. RAGHVENDRA GAUTAM      |                           |
| <b>DEPARTMENT OF INFORMATION TECHNOLOGY</b> |                            |                           |
| PROF. KAPIL SHARMA(HOD)                     |                            |                           |
| <b>PROFESSOR</b>                            |                            |                           |
| PROF. DINESH K. VISHWAKARMA                 | PROF.SEBA SUSAN RANJAN     |                           |
| <b>ASSOCIATE PROFESSOR</b>                  |                            |                           |
| DR. VIRENDER RANGA                          |                            |                           |
| <b>ASSISTANT PROFESSOR</b>                  |                            |                           |
| DR. RITU AGARWAL                            | Ms. ANAMIKA CHAUHAN        | DR. PRIYANKA MEEL         |
| DR. JASRAJ MEENA                            | SH. RAHUL GUPTA            | MS. VARSHA SISAUDIA       |
| DR. BINDU VERMA                             |                            |                           |
| <b>DEPARTMENT OF SOFTWARE ENGINEERING</b>   |                            |                           |
| PROF.RUCHIKA MALHOTRA (HOD)                 |                            |                           |
| <b>ASSISTANT PROFESSOR</b>                  |                            |                           |
| DR. ABHILASHA SHARMA                        | DR. DIVYASHIKHA SETHIA     | MR. SANJAY PATIDAR        |
| DR. SONIKA DAHIYA                           | MR. RAHUL                  | MS. SHWETA MEENA          |
| MS. PRIYA SINGH                             | MR. RAM MURTI RAWAT        | DR. GEETANJALI GARG       |
| <b>DELHI SCHOOL OF MANAGEMENT</b>           |                            |                           |
| PROF. ARCHANA SINGH (HOD)                   |                            |                           |
| <b>PROFESSOR</b>                            |                            |                           |
| PROF.PRADEEP KUMAR SURI                     | PROF.RAJAN YADAV           |                           |
| <b>ASSOCIATE PROFESSOR</b>                  |                            |                           |
| DR. SAURABH AGARWAL                         |                            |                           |
| <b>ASSISTANT PROFESSOR</b>                  |                            |                           |
| DR. VIKAS KUMAR GUPTA                       | DR. SHIKHA N KHERA         | MS. DEEPALI MALHOTRA      |
| DR. DEEPSHREE                               | SH. CHANDAN SHARMA         | SH. MOHIT BENIWAL         |
| SH. YASHDEEP SINGH                          | SH. DHIRAJ KUMAR PAL       | MS. MEHA JOSHI            |
| DR. SONAL THUKRAL                           |                            |                           |

|                                  |                          |                         |
|----------------------------------|--------------------------|-------------------------|
| DEPARTMENT OF HUMANITIES         |                          |                         |
| PROF. NAND KUMAR (HOD)           |                          |                         |
| PROFESSOR                        |                          |                         |
| PROF. SEEMA SINGH                |                          |                         |
| ASSOCIATE PROFESSOR              |                          |                         |
| Ms. SAROJ BALA                   | DR. RAJIV RANJAN DWIVEDI |                         |
| ASSISTANT PROFESSOR              |                          |                         |
| Ms. PARINITA SINHA               |                          |                         |
| DEPARTMENT OF DESIGN             |                          |                         |
| PROF.RANGANATH. M. SINGARI (HOD) |                          |                         |
| ASSISTANT PROFESSOR              |                          |                         |
| SH.PARTHA PRATIM DAS             | SH. NEERAJ RATHEE        | MS. TARUNA SINGH        |
| SH.VARUN SINGH                   | DR.RAVINDER SINGH        |                         |
| DEPARTMENT OF USME               |                          |                         |
| PROF. AMIT MOOKERJEE (HOD)       |                          |                         |
| ASSOCIATE PROFESSOR              |                          |                         |
| DR. NIDHI MAHESHWARI             |                          |                         |
| ASSISTANT PROFESSOR              |                          |                         |
| SH. VIRENDER KUMAR               | SH. ANURAG CHATURVEDI    | MS. HARLEEN KAUR        |
| MS. PRIYA MALHOTRA               | MS.PALLAVI SETHI         | MS. VARSHA SEHGAL       |
| DR. NAVAL GARG                   | DR. DEEPTI AGGRWAL       | DR. GAGANMEET KAUR AWAL |
| MS. KUSUM LATA                   | SH. PUNEET KUMAR ARORA   | DR. RATNAM MISHRA       |
| MS. AAKANKSHA KAUSHIK            |                          |                         |



## FORMS AND FORMATS

### MINI PROJECT PROPOSAL FORMAT

|                                  |                            |   |
|----------------------------------|----------------------------|---|
| Name                             |                            |   |
| Roll Number                      |                            |   |
| Department                       |                            |   |
| Proposed Project Title           |                            |   |
| Name of proposed faculty advisor |                            |   |
| Aims of the Project              |                            |   |
| i                                | Abstract and specific aims | A one paragraph summary of the project proposal and summary of the project goals.   |
| ii                               | Introduction               | Justification for the need of the proposed project, expected outcomes and its applications. (Approx. 01 page)                                 |
| lii                              | Project Design             | Detailed description of the project design plan, methods and procedures to be used and description of final form of the product.(1 - 2 pages) |
| iv                               | Project budget             | Details of budgetary requirement and justification. (1-2 pages)   |
| v                                | Project Timeline           | Outline the anticipated dates of completion of various stages of the project  |
| v                                | References                 | List of references  |

## ENTREPRENEURSHIP AND VENTURE DEVELOPMENT

### PROPOSAL FORMAT

|                      |                            |   |
|----------------------|----------------------------|---|
| Name                 |                            |   |
| Roll Number          |                            |   |
| Department           |                            |   |
| Title of proposal    |                            |   |
| Aims of the Proposal |                            |   |
| i                    | Abstract and specific aims | A one paragraph summary of the idea and summary of the proposal goals.  |
| ii                   | Introduction               | Justification for the need of the proposed idea, expected outcomes and its uses. (Approx. 01 page)                                    |
| lii                  | Project Design             | Detailed description of the innovative idea generation, proposal planning, organizing finances and marketing strategies. (1 -2 pages) |
| iv                   | Proposal budget            | Details of budgetary requirement and justification. (1-2 pages)   |
| v                    | Proposal Timeline          | Outline the anticipated dates of completion of various stages of the proposal   |

## FORM FOR REPORTING CASES OF USE OF OR ATTEMPT TO USE UNFAIR MEANS AT THE UNIVERSITY EXAMINATION

**Note:** One sheet should be used for one candidate only, if printed forms run short, the form should be photocopied and used.

### PART - I

Name of examination .....

Name of Student ..... Roll No. ....

Complete Postal Address (Including Phone/Mobile No.).....

Subject in which the candidate is reported to have used or intended to use unfair means

Day ..... Date ..... Time .....

1. Particular of book, papers, electronic gadgets etc. found in possession of the student and submitted along with the answer sheet (all these materials should be signed by the Invigilator of examination and the student).

Name of book (if any)(a) .....

(b) .....

(c) .....

Number of leaves of books .....

Number of (a) Manuscript slips: ..... Sheets .....

Any other articles such as electronic gadget etc.

(a) .....

(b) .....

(c) .....

### PART - II

2. Statement of the student to be obtained at once in his/her own handwriting.

Were the above articles recovered from your possession? .....

Why did you keep them with you inspite of clear instructions? .....

Did you make any use of them? .....

Have you anything else to state? .....

Date ..... Time .....(Signature of Student)

Certified that this statement was made in my presence.

Certified that the candidate declined to give any statement. (Certificate not applicable should be crossed by the invigilator)]

Date ..... Time ..... (Signature of Invigilator)

Date ..... Time ..... (Signature of Superintendent)

## GUIDELINES FOR ATTENDANCE RECORDS AND PREPARATION OF LIST OF STUDENTS NOT ELIGIBLE TO APPEAR IN THE END TERM EXAMINATION

| Step   | Action  | Performa to be filled | Target Dates  |
|--------|---|-----------------------|---|
| First  | Communication form Chairman, BoS to course coordinator requesting to submit the list of students having short attendance on specified format up to prescribed date.       | ATT.1/6               | One week before the last date of display of attendance as per academic calendar |
| Second | Consolidation of the list of such students by Chairman, BOS and Notice from Chairman, BoS for short attendance.   | ATT.2/6               |   |
| Third  | Communication from AR Academic (UG) to parent/guardian of student having short attendance.  | ATT.3/6               |   |
| Fourth | Communication from Chairman, BoS to course Coordinator requesting to submit the final list of students having short attendance on specified format up to prescribed date. | ATT.4/6               |   |
| Fifth  | Preparation of list of detained students by BoS and recommendation to this effect.  | ATT.5/6               |   |
| Sixth  | Notices from Chairman, BoS regarding detainee to Students Notice Board and AR Academic (UG).  | ATT.6/6               |   |

## FROM CHAIRMAN, BOS TO COURSE COORDINATORS

DEPARTMENT OF .....

## NOTICE

## LIST OF STUDENTS HAVING SHORTAGE OF ATTENDANCE (&lt;75%)

Academic Year ..... Class .....

Semester ..... Odd/Even

Course Title ..... Course Code .....

**All Course Coordinators,**

Please inform the name(s) of UG students having less than 75% attendance (L+T+P) upto ..... (as per academic calendar) in the course of which you are the coordinator in Odd /Even Semester .....

The information may please be sent to undersigned **latest by** ..... In the proforma given below along with a photocopy of attendance record of entire class. If there is no short attendance case in your course, please write NIL in the proforma.

| S. No. | Student Enrolment / Roll Number | Name of Student | Branch | Attendance Record (L+T+P) |                  |                          |
|--------|---------------------------------|-----------------|--------|---------------------------|------------------|--------------------------|
|        |                                 |                 |        | Classes Held              | Classes Attended | Percentage of Attendance |
|        |                                 |                 |        |                           |                  |                          |
|        |                                 |                 |        |                           |                  |                          |

Signature

Name of the Course Coordinator .....

## FROM CHAIRMAN, BOS TO NOTICE BOARDS

DEPARTMENT .....

### NOTICE LIST OF STUDENTS HAVING SHORTAGE OF ATTENDANCE (<75%)

**Academic Year** ..... **Class** ..... **Semester** ..... **Odd /Even**

As per attendance Regulations in force, a student is required to have attended at least 75% of the total classes held in a subject, in order to be eligible to appear in the end-term examination of that subject. Upto ..... (as per academic calendar, the following students are having short-attendance in the courses indicated against their names. These students are advised to be extra careful and make up for the short attendance; otherwise they may be debarred from appearing in the end term examination.

| S.<br>No. | Student<br>Enrolment/<br>Roll No. | Name of Student | Branch | Course |       | Percentage of Attendance |
|-----------|-----------------------------------|-----------------|--------|--------|-------|--------------------------|
|           |                                   |                 |        | Code   | Title |                          |
|           |                                   |                 |        |        |       |                          |
|           |                                   |                 |        |        |       |                          |

Chairman, BOS

#### Copy to:

1. AR Academic (UG) to inform student's parent / guardian.
2. Students Notice Board.
3. Respective program advisors with the request to call the students and counsel them.

**NOTICE UNDER CERTIFICATE OF POSTING**

**From Assistant Registrar Academic (UG) to student's parent / guardian**  
**LIST OF STUDENTS HAVING SHORTAGE OF ATTENDANCE (<75%)**

**No:****Dated .....**

Dear Guardian / Parent,

Your ward is studying B. Tech..( .....Year ) degree course at this University.

I have to inform you that as per B. Tech. Regulations of the University governing the attendance of the students, a student is required to have at least 75% attendance in a course in a semester to be eligible to appear in the End-Term Examination of that course. But your ward is not attending the classes regularly and his / her attendance has fallen below the required level in following course(s).

| S.No. | Course |       |                          |
|-------|--------|-------|--------------------------|
|       | Code   | Title | Percentage of attendance |
|       |        |       |                          |
|       |        |       |                          |
|       |        |       |                          |

This is for your kind information. You may also kindly advise your ward to be regular in attending the classes and bring his/her attendance to the required level failing which he / she will not be allowed to appear in the examinations.

Yours truly,

**AR Academic (UG)**

## FROM CHAIRMAN, BOS TO NOTICE BOARDS

### LIST OF STUDENTS HAVING SHORTAGE OF ATTENDANCE (<75%)

DEPARTMENT OF .....

Academic Year .....

Semester .....Odd / Even

Course Title ..... Course Code .....

#### All Course Coordinators,

Please inform the names of UG students having less than 75% attendance (L+T+P) upto ..... (as per academic calendar) in the course of which you are the coordinator in Odd /Even Semester ..... The information may please be sent to undersigned **latest by** ..... In the proforma given below along with a photocopy of attendance record of entire class. If there is no short attendance case in your course, please write NIL in the proforma.

| S.<br>No. | Student<br>Enrolment /<br>Roll No. | Name of<br>Student | Branch | Attendance Record (L+T+P) |                     |                          |
|-----------|------------------------------------|--------------------|--------|---------------------------|---------------------|--------------------------|
|           |                                    |                    |        | Classes<br>Held           | Classes<br>Attended | Percentage of Attendance |
|           |                                    |                    |        |                           |                     |                          |
|           |                                    |                    |        |                           |                     |                          |
|           |                                    |                    |        |                           |                     |                          |

Name of the Course Coordinator ..... Signature

## FROM CHAIRMAN, BOS TO STUDENT NOTICE BOARDS

### LIST OF STUDENTS NOT ELIGIBLE TO APPEAR IN END-TERM EXAMINATION AS PER REGULATIONS

DEPARTMENT OF .....

Academic Year ..... Class .....

Semester ..... Odd / Even

Course Title .....

Course Code .....

| S.No. | Enrolment / Roll No. | Name of Student | Percentage of Attendance |
|-------|----------------------|-----------------|--------------------------|
|       |                      |                 |                          |
|       |                      |                 |                          |
|       |                      |                 |                          |

1. (a) Dates on which the names of the students were placed on the Notice Boards of the Department  
.....
- (b) If the names of the students were not placed on the Notice Boards, specify the reasons for the same.
2. As per the information given by all teachers of this subject, there are no other cases of shortage of attendance in this subject.
3. The students as listed above are detained from appearing in the end term examination in the subject noted above as per the attendance record given above.

**Signature of Chairman, BoS**  
**Members of Academic Committee**  
**(CHAIRMAN)**



## FROM AR ACADEMIC (UG)

### LIST OF STUDENTS HAVING SHORTAGE OF ATTENDANCE (<75%)

Academic Year .....

Class .....

Semester .....Odd / Even

#### OFFICE ORDER

As per Attendance Regulations ..... and recommendation made by competent authority, following students are not eligible to appear in End-Term Examination of Odd / Even semester in the courses mentioned before their name. Invigilators are requested not to allow these students to appear in the concerned examinations.

| S.No. | Course |       | Roll number of students detained for end term examinations. |
|-------|--------|-------|---|
|       | Code   | Title |   |
|       |        |       |   |
|       |        |       |   |
|       |        |       |   |

Date :.....

Assistant Registrar Academic (UG)

Copy to:

1. Dean Academic (UG)
2. All HODs
3. Superintendent of Examinations (B. Tech.)
4. Registrar
5. Controller of Examinations.

**ACADEMIC SECTION (UG)**  
**DELHI TECHNOLOGICAL UNIVERSITY**

## FORM OF APPLICATION

For

### Make-up Examination for Mid / End Semester (Odd / Even)

Examination 20\_\_\_\_ - 20\_\_\_\_

|   |   |
|---|---|
| <p>The form when completed should be submitted to:</p> <p><b>The Assistant Registrar,<br/>Academic Section(U.G.),<br/>Delhi Technological University</b></p>  | <p><b><i>(For use by the Academic Section {UG})</i></b></p> <p><b>Permitted</b> by Dean Acad.(UG) /</p> <p><b>NOT Permitted</b> by Dean Acad.(UG)</p> |
| <p style="text-align: center;"><b>To be filled in by the applicant</b></p> <p>Name: ..... <i>Address for Communication:</i></p> <p>Roll No: ..... ..</p> <p>Mobile No: ..... ..</p> <p>Email: .....</p> |   |

**A. Courses requested for Make-up Examination:**

| S. No. | Course Code | Name of the Course | Credits | Date & time slot of the Exams scheduled | Reason for missing the Exams |
|--------|-------------|--------------------|---------|---|------------------------------|
| 1.     |             |                    |         |   |                              |
| 2.     |             |                    |         |   |                              |
| 3.     |             |                    |         |   |                              |

**B. Supported Mandatory Documents for the claim:**

***(Please tick the annexed documents below)***

|    |   |
|----|---|
| 1. | Recommendation of concerned Warden ( <i>if the student resides in University Hostel</i> )   |
| 2. | Medical Certificate issued by the Medical Officer of the Hospital the student was admitted duly endorsed by Medical Officer of University Health Centre |
| 3. | Proof of admission in Hospital and discharge slip etc   |

|    |   |
|----|---|
| 4. | Proof of medical tests conducted  |
| 5. | Fitness certificate of the hospital   |
| 6. | Endorsement by parent/guardian on the certificate of treatment<br><i>(if the student is a Day Scholar)</i>  |
| 7. | Medical certificate from hospital where Parents/real brother or sister/spouse was admitted in ICU<br>duly endorsed by Medical Officer of University Health Centre |
| 8. | Prior Approval of Dean Academic (UG) for any authorized work in the academic interests  |

## DECLARATION

I hereby solemnly declare that the foregoing facts are true and correct and nothing is false therein and nothing material has been concealed there from. I also agree that in case any information given by me herein before is found false at later date, the result for the requested courses for make-up examination be cancelled.

Signature of the Parents/Guardian

Name (in Capital Letters)

Signature of Student

Name (in Capital Letters)

Date:

Place:

Date:

Place:

## Disclaimer

The information contained in Academic Programme Ordinance and Regulations 2022 has been prepared solely for the purpose of dissemination of information. Though all efforts have been made to ensure the correctness and currentness of the content, the same should not be surmised as a statement of law or used for any legal purpose.

This book is available at the DTU website:

[http://dtu.ac.in/Web/Academics/ordinance/BTech\\_2022\\_ordinance.pdf](http://dtu.ac.in/Web/Academics/ordinance/BTech_2022_ordinance.pdf)

In case of queries, please visit DTU website or contact:

Undergraduate Programmes

Associate Dean (Academic –UG)

Ph:- +91 11 27296337

E mail- aracademic@dtu.ac.in

Postgraduate Programmes

Associate Dean (Academic-PG)

Ph:- +91 11 27296851

E mail :- adean.academicpg@dtu.ac





# DELHI TECHNOLOGICAL UNIVERSITY

(Formerly Delhi College of Engineering)

Shahbad Daulatpur, Bawana Road, Delhi-110042

[www.dtu.ac.in](http://www.dtu.ac.in)