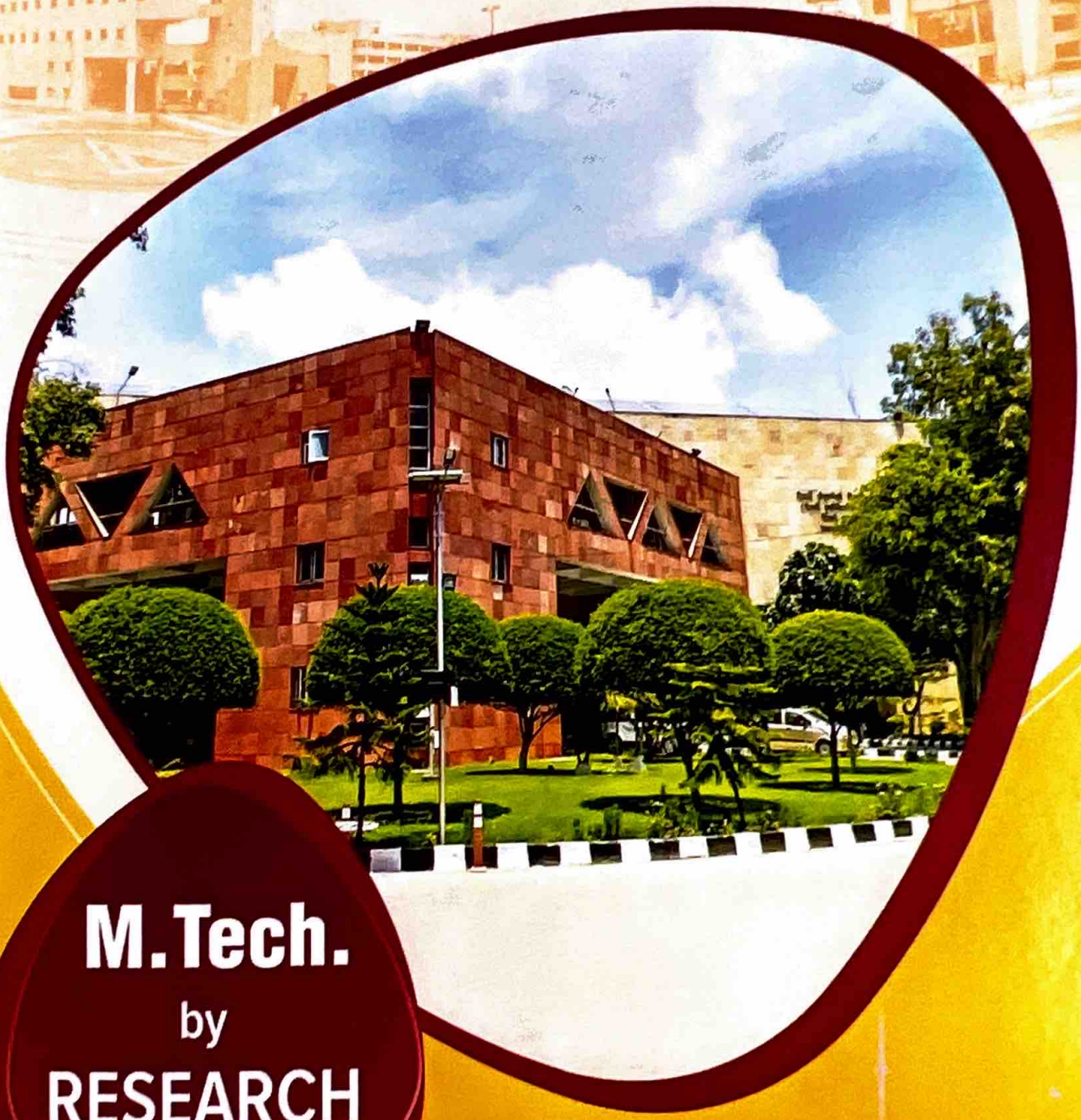
Delhi Technological University

Established by the Govt. of NCT of Delhi vide Act 6 of 2009

(Formerly Delhi College of Engineering)

ACCREDITED with 'A' Grade (CGPA 3.22 out of 4.0) by NAAC

ISO 9001 : 2015 Certified



M.Tech. by RESEARCH

ADMISSION BROCHURE

2024-25

M.Tech. by Research ADMISSIONS

SESSION: AUGUST, 2024

TENTATIVE ADMISSION SHEDULE AND IMPORTANT DATES

S. No.	Activity / Event	Date
1.	Advertisement in newspapers	28.06.2024 (Friday)
2.	Opening of website for Online Registration	28.06.2024 (Friday)
3.	Last date for Online Registration and Registration Fee Deposit	09.07.2024 (Tuesday) 12:00 Midnight
4.	Display of list of shortlisted candidates for Interview on DTU website for GATE qualified candidates	12.07.2024 (Friday) 8:00 PM
5.	Admission test for Non-GATE candidates	11.07.2024 (Thursday) & 12.07.2024 (Friday)
6.	Declaration of admission test result on DTU website	15.07.2024 (Monday)
7.	Dates for Interview (GATE candidates)	18.07.2024 (Thursday)
8.	Dates for Interview (Non-GATE candidates)	19.07.2024 (Friday)
9.	Declaration of final result on DTU website	24.07.2024 (Wednesday)
10.	Dates for Document verification and Admission (Candidates are required to report along with original documents and Demand Draft for admission fee)	25.07.2024 & 26.07.2024 (Thursday & Friday)
11.	Display of vacant seats for waitlisted candidates on DTU website	29.07.2024 (Monday) 5:00 PM
12.	Last round of admissions, if required (Candidates are required to report along with original documents and Demand Draft for admission fee)	31.07.2024 (Wednesday) at 10:00 AM

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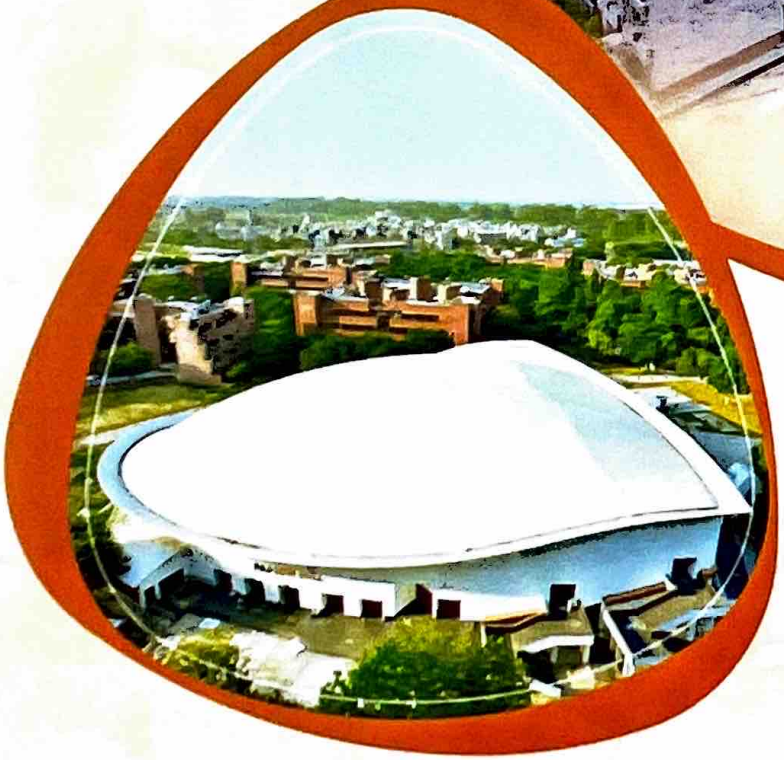
M.Tech. by Research

ADMISSION BROCHURE

2024-25



M.Tech.
by
RESEARCH

दिल्ली प्रौद्योगिकी विश्वविद्यालय
DELHI TECHNOLOGICAL UNIVERSITY
Established by Govt. of Delhi vide Act 6 of 2009
(Formerly Delhi College of Engineering)

Prof. Prateek Sharma
Vice-Chancellor

Message

It gives me immense pleasure to announce that Delhi Technological University is commencing M.Tech. by Research 2024-25.

Delhi Technological University is globally known for outstanding education, research and innovations. The University currently offers various interdisciplinary and industry relevant programmes in science, technology, management and allied areas at undergraduate, post- graduate and doctoral levels.

Students admitted to DTU, through their dedication, discipline and steadfastness can go on to become professionals and impactful leaders. DTU provides them with an environment to shape their talent as DTU ensures that every step of a student's journey is designed keeping in mind holistic development. This is coupled with a diverse range of extra-curricular activities throughout the year, which help students develop various skills to facilitate them throughout their lives.

Over the years, DTU has established itself as the University of unshakable repute. Hence, getting admission to DTU has reached great heights on the national and international stages and continues to make us proud. The Conjoined efforts of relentless students, faculty, administration and the staff have preserved an exceptional environment in DTU that allows persistent exchange of information and upholds the unmatched excellence associated with this University for eight decades.

We aim to nurture the students holistically and endeavour to foster a culture in which virtues and skills are instilled in them, along with a concern for society and its well-being.

I send my best wishes to the candidates applying for admission to the Delhi Technological University.

(Prof. Prateek Sharma)

SHAHBAD DAULATPUR, BAWANA ROAD, DELHI-110042, INDIA
PH. : 011-27882284, 27852207 Email: vcdtu@dtu.ac.in, WEBSITE: www.dtu.ac.in

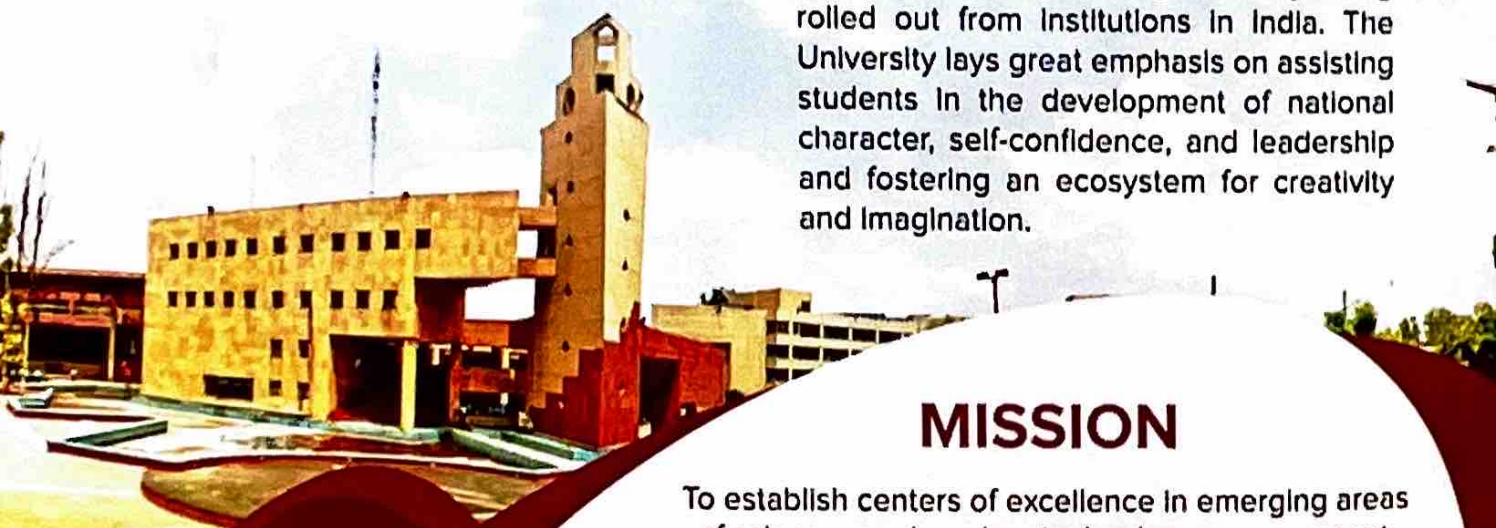
General Instructions

1. The application forms can be accessed at the web portal of the University website at: www.dtu.ac.in.
2. The candidates are advised to go through the Admission Brochure carefully and acquaint themselves with all the requirements with respect to filling up the Online Application Form.
3. The registration fee of Rs. 1500/- for GN/OBC/EWS/SC/ST/PwD/KM, is to be paid online through credit/debit card/ net banking at the time of registration. After completing the application form successfully if the candidate does not pay the registration fee, he/she will not be considered for any seat allotment in any round of the counseling. The fee paid for the application for admission shall not be refundable.
4. It is the responsibility of the candidate to ascertain whether he/she possesses the requisite eligibility and qualifications for admission as specified in this brochure.
5. If a candidate is found ineligible at any stage before or after examination/declaration of result or during any stage of the program, his / her candidature/ admission will be canceled without any notice and suitable action shall be initiated against him/her including forfeiture of the fee.
6. The applicants are advised to preserve the Online Application Form as well as Acknowledgements if any for future reference.
7. While filling up the application form, the candidate must verify the correctness of all the particulars furnished by him/her. In case any candidate is found to have furnished false information or is found to have concealed any information in his / her application, he/she will be debarred from admission. Further, the university reserves the right to take suitable actions against the applicant in this regard, including forfeiture of the fee.
8. After the application form is complete in all respects and all the required documents have been uploaded, the candidate must confirm all the details before final submission. The candidate will not be permitted to edit/change details filled in the registration form once the candidate submits the form.
9. Candidates must ensure that the Mobile Number and Email Address provided by them must be valid and should belong to the candidate or his/her immediate family members. These will be used by the university for future communications with the candidate. The university would not be responsible for communication not being made due to non-existent/faulty communication details provided by the candidate.
10. It is in the interest of candidate to remember his/her Password and keep it highly confidential, to avoid misuse by other candidates.
11. If a candidate wishes to apply for admission to a program offered by different departments, then he/she will have to register separately in that department by paying a separate online registration fee.
12. Tentative dates of commencement of first and subsequent round admissions are mentioned under "Important Dates Schedule" in this Admission Brochure. Any update/ change will be notified at the DTU website (www.dtu.ac.in).
13. The list of documents required for admission counseling is mentioned in section 6 of this brochure. Candidates are advised to bring/ upload, wherever specified, all the relevant documents as detailed in this brochure at the time of admission.
14. The candidate seeking admission under reserved categories has to mandatorily produce the caste/category certificate in his/her name at the time of counseling. The certificate in the name of either of the parents (mother/father) or any other family member is not acceptable and the candidate will not be entitled even to provisional admission. The caste certificate must be uploaded to the online admission portal as well. The NCL/EWS certificates should be issued after 31st March 2024.
15. It is the sole responsibility of the candidate to prove his / her eligibility for claiming reservation under any of the reserved categories. A candidate who is offered a seat under a reserved category/sub-category in any round of seat allotment and fails to produce an appropriate document in support, his/ her allotted seat will be canceled and he/she shall be considered for allotment in GENERAL (GN) category in subsequent rounds on submission of a written request by the candidate to university in this regard, subject to eligibility, availability of vacant seats and his/ her merit. University reserves the right to accept or reject such requests.

CONTENTS

About DELHI TECHNOLOGICAL UNIVERSITY

Delhi Technological University (DTU), a leading World Class Technological University, plays a vital role in the National and Global Knowledge Network. It is empowering India with the Wings of Knowledge and the Power of Innovation. With more than 82 years of tradition of excellence in "Engineering & Technological Education" and "Research & Innovations". DTU came into being after the reconstitution of the Delhi College of Engineering by the Government of NCT of Delhi in 2009, by Act 6 of 2009, passed by the assembly of the NCT of Delhi. It is a non-affiliating, teaching and research University, committed to achieving excellence in Engineering, Science, Technology, Management, and allied areas and matters connected therewith or incidental thereto. The university, in its various avatars, namely, the 'Delhi Polytechnic' and 'Delhi College of Engineering' (DCE), has been serving the nation and the global community since its inception in 1941, by providing trained manpower of the highest quality in the field of engineering and technology, and, 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 the Undergraduate, Postgraduate, and Doctoral levels. The University has established a strong academia-industry interface and has collaborations with reputed research organizations, industries, and premier institutions. A great many alumni of the institute have excelled at home and abroad and through their contributions to the profession of engineering, they have brought high honor and enhanced the dignity of engineering fraternity being rolled out from institutions in India. The University lays great emphasis on assisting students in the development of national character, self-confidence, and leadership and fostering an ecosystem for creativity and imagination.



VISION

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

MISSION

To establish centers of excellence in emerging areas of science, engineering, technology, management, and allied areas.

To foster an ecosystem for incubation, product development, transfer of technology, and entrepreneurship.

To create an environment of collaboration, experimentation, imagination and creativity.

To develop human potential with analytical abilities, ethics, and integrity.

To provide environment-friendly, reasonable, and sustainable solutions for local & global needs.

Location

Delhi Technological University is situated at Shahbad Daulatpur, Rohini in North-West Delhi, India. It is approximately 32 kilometers from the Indira Gandhi International Airport, New Delhi and the nearest Metro stations are Samaypur Badli/Rithala. Once at Samaypur Badli/Rithala, board local transport, auto or bus to get down at DTU, which is 3-4 km far from Samaypur Badli/ Rithala Metro Station.

Programs Offered

The University offers 14 Undergraduate engineering programs (B.Tech.) and three bachelor programs [i.e. B.Des., BBA, BA (Hons.), Economics], 25 M.Tech. programmes, 5 MBA programmes, 4 M.Sc. programmes, MA (Economics) and M.Des. Programme. The university offers Ph. D programs in all areas of engineering, science, management, and economics. The UG and PG programs of DTU offer the most modern curricula, based on the Choice Based Credit System (CBCS), having a 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 integrating advancements in science and engineering, while also incorporating industry-relevant technologies. To provide further flexibility there is a 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 needs of industries and society.

Faculty and Research

The university has a very talented pool of experienced, as well as young faculty members who are well-qualified in their area of specialization and have very good national and international exposure. To engage the students and faculty in research and innovation the university offers provisions like funding for students' innovative projects, financial assistance to students for attending internships overseas, research project grants to all faculty members, etc.

To celebrate the individual's excellence in research, the university gives Research Excellence Awards to researchers in 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 provides funds to faculty and students to organize and attend various faculty development programs, seminars, and conferences.

Ranking and Rewards

The university has had ISO 9001:2015 certification since 27.11.2018, accredited with an 'A' grade by NAAC (National Assessment and Accreditation Council), and has been accorded 2(f) and 12-B status by the University Grants Commission (UGC). Many of its UG & PG engineering programs are also accredited by the National Board of Accreditation (NBA). The University is consistently ranked among the best 10 engineering institutions as per the various independent surveys of the best engineering institutions in the country. The university has been ranked 8th by India Today's Best Government Engineering Colleges Ranking 2023. The 2023 NIRF rankings placed DTU at the 29th position among the engineering institutions and at 40 in the categories of universities. DTU has been placed in the 801- 1000 bracket in the Times Higher Education World University Ranking 2024.

Student Amenities

Campus and Infrastructure

DTU has 164 acres of a lush green, tech-savvy main campus, consisting of 16 academic departments, research centers, and residences for students, faculty, and staff. At present the university has around 15,000 students in its undergraduate, postgraduate, and Ph. D programs. DTU has an EDUSAT Studio utilized for recording lectures, events, and talks. Besides the main campus, the university has another campus in East Delhi, where some of the M. B. A programs, B. A (Hons.) Economics and B.B.A. programs are offered. The newly established East Delhi Campus of DTU has been functional since the 2017-18 academic session. It is located at Vivek Vihar, Phase II, Delhi. This campus endeavors to provide quality education, research, and innovation in the emerging areas of management, relevant to industry and society.

Computer Centre

DTU has a well-equipped centralized computer center to cater to the needs of students and faculty in the university. It is housed, in a magnificent state-of-the-art building having specialized laboratories to provide a variety of platforms and computing environments for UG, PG, and research students. The center possesses a number of servers and over 275 Dell Intel core i5 computer systems. In addition, the center has more than 15 servers hosting different applications such as websites & portals, SPSS, Mathematica, MatLab, DNS, LDAP, proxy, Email services, Network Monitoring System (NMS), etc. and 4 SUN CAD workstations meant for use by UG/ PG/PhD students for their projects and research work. The center is networked through high-end intelligent Juniper/Avaya/ CISCO/ Brocade/Ruckus manageable switches and possesses round-the-clock two leased lines of 10 Gbps link of NKN and 1Gbps link of Reliance Jio with shared bandwidth in different pipes for the Wi-Fi connectivity in the Library, Academic Departments, Administrative Blocks, Sports Complex, Faculty Residence and Hostel blocks of the campus, with Internet facilities on all the nodes. It also has the latest versions of compilers, scientific, technical, and engineering software, training kits, etc. for the students of different branches of engineering.

Library and Knowledge Centre

DTU library, with a collection of more than 2,00,000 text and reference books and a large number of e-journals, e-books, and manuscripts in digital format, is one of the richest engineering libraries in the country. The library provides a remote access facility to all its readers by using cloud-based remote access software. The library also helps researchers maintain proper integrity and ethics and provides the facility of similarity checks to avoid instances of plagiarism. It has a very active presence on Facebook. Various current awareness services and user information literacy programs are continually organized throughout the year. The library building is a four-storied, aesthetically designed, centrally air-conditioned structure with a seating capacity of 400.

The library is updated regularly by way of adding new literature in the form of textbooks, reference books, reports, proceedings, abstracts & indexes, encyclopedias, data books, standards (National & International), Journals & databases on CD-ROM.

Hostel

Hostel life is one of the most enjoyable and memorable times of one's life. There are 11 boys' hostels and 3 girl's hostels in DTU, besides, one separate hostel for International students (boys). Each hostel

on the campus gives each individual ample opportunity to develop various qualities as each hostel is equipped with a recreation room, reading room, mess, and gymnasium. Additionally, every hostel subscribes to the latest magazines and newspapers for the residents. The hostels are connected to the campus via the campus-wide wi-fi network and LAN which enables the residents to browse the internet and access the online library resources for their academic and research-related work. The information on all available accommodation will be posted on the University website. However, limited seats could be provided inside the University premises. In addition, the mess facility at the University can be availed by all the students.

Centre for Extension & Field Outreach

The Centre for Extension and Field Outreach was established at DTU in the year 2018. The various activities/programs performed by the Centre are to sensitize the students to develop social values, and widespread their responsibilities and knowledge in societal issues and problems by making them involved with the community people. DTU is a Participating Institute under "Unnat Bharat Abhiyan"- a Project of the Ministry of HRD, Govt. of India and adopted five villages and is conducting classes in their schools. Directorate of Education, Govt. of NCT of Delhi awarded a Project "Youth for Education" and has launched "Desh Ke Mentor", which is one of the largest mentoring programs in school education. Centre has also started a certificate course titled "Basic Computer Course" Under the Lab on Wheels (LOW) Scheme for candidates from the Government Schools of NCT of Delhi or from society. The Centre at DTU is coordinating with Delhi Police to conduct a Skill development program through one-month basic computer training for Juveniles in conflict with the law/weaker section in Rohini. Centre is regularly organizing Seminars/ online webinars/workshops/ Awareness programs etc and is working towards increasing productivity, enhancing skills and abilities, focusing on growth, and helping people to work on their own future development. Additionally, NSS at DTU facilitates enhanced student engagement with the community contributing to deeper reservoirs of ideas.

Innovation and Incubation Foundation (DTU-IIF)

DTU-IIF is a Technology Business Incubator (TBI) established in 2016 as a non-profit section 8 company. Currently, this TBI is supported by the Government of Delhi and Delhi Technological University. DTU-IIF helps start-up companies and individual entrepreneurs to develop their business ideas by providing a range of services including co-working office space, mentoring support, funding support with venture capital financing, and other supports & resources they need, all under one roof. During the last five years, IIF provided 70 lakhs of funds to 56 start-up companies. Also, DTU-IIF promotes the culture of innovation and Entrepreneurship by organizing various webinars/workshops/ Hackathons, etc. The Business Review Committee screens the new ideas and recommends incubation at DTU-IIF. The Finance Review Committee recommends the investment of Rs. 7.5 lakh per start-up. Delhi Technological University established Technology Business Incubator (TBI) in the name of DTU Innovation and Incubation Foundation (DTU-IIF). DTU-IIF was incorporated as a Section 8 Company on 06.09.2016.

Sports and Other Outdoor Activities

The students of DTU are provided with excellent facilities for indoor and outdoor games. DTU has a 4 x 400m racing track, fields for football, hockey, and cricket, courts for volleyball, basketball, tennis, and badminton, along with facilities for indoor games.

A well-equipped gymnasium is also available on the campus in addition to gym facilities in each hostel. The university has appointed coaches in almost all the games to train 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 the academic year 2018-19, as per the revised curriculum, the university offers foundation electives to the students of the first year and second year, and in these sports have a big share of electives.

A large number of bright and capable scholars, having graduated from the Institute, have distinguished themselves by means of their extraordinary achievements in their chosen professions and by their contributions to society at large.

DCE-DTU Alumni Network

DCE-DTU Alumni are serving leadership positions in many of the best-known companies in India and abroad, in marketing, finance, human resources, information technology, research & analytics, innovation & entrepreneurship. The worldwide network of illustrious alumni includes world-known personalities like Prof. Vinod Dham (Father of the Pentium Chip), Dr. Raj Soin (Founder, and CEO of Soin, and LLC), Prof. D. Yogi. Goswami (Inventor, Author, Entrepreneur, and Educator), Dr. Durga Das Aggarwal (President, and CEO of Piping Technology & Products, Inc). Mr. Vijay Shekhar Sharma, (Founder of Paytm), Sh. Karnal Singh (Former Chief of Enforcement Directorate), Sh. Arun Goyal (Member-CERC & Former Secretary, Cabinet Secretariat). Alumni have been traditionally contributing generously towards placement opportunities, sponsorships/ Fellowship programs, and infrastructural developments of their alma mater. Donations for Raj Soin Hall by Dr. Soin, the Clean Energy Research Centre establishment by Prof. Yogi Goswami, and several scholarships for the students of DTU have shown the dedication of the alumni for the betterment of their alma mater. Vinod Dham has sponsored the "Centre of Excellence for Semi-conductors and Micro-electronics" to establish a centralized state-of-the-art infrastructure facility for device design / material research/fabrication for cutting-edge R&D in Semiconductors and Micro-electronics.

Events and Festivals

The university organizes annual 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, one of the most well-attended student cultural events in northern India, and the YUVAAN, the literary Fest, is the annual cultural extravaganza of the university and offers a good mix of literary, cultural, and entertainment events. The "INVICTUS" is an annual technical festival of the university where all technical societies of the university host various technical activities and competitions. The AAHVAAN is the annual sports fest organized by the DTU sports council.

Medical Facilities

DTU has a well-equipped health care center. The medical practitioners are available to the students requiring medical attention. The healthcare center has specialized medical practitioners including ENT, dental care, Physiotherapy, Nutrition, Gynaecology and Obstetrics, etc. Further, medical camps are also being organized by the University on a regular basis. In addition, an Ambulance facility is also available in case of emergency. The University has also tie-ups with the major hospitals of Delhi for emergency cases. More information about DTU can be accessed at www.dtu.ac.in.

1. M.Tech. by Research Admissions

M.Tech. by Research is a new program in the Delhi Technological University (DTU) is similar to other masters program. The program is designed for students who wish to explore a career in R&D, and can serve as a first step either towards a Ph.D. or towards a high-end R&D oriented career in industry. The duration of the program is flexible with a duration of 2 years. This programme is for those students who are interested in exploring specified in-depth research problem or real world problem through research pursue their career in M.Tech. by Research programme. In conformance with the interdisciplinary mandate of the center, the program will be open to students with a bachelor's degree in all engineering disciplines. M.Tech. by Research will start with 12 students in full-time mode through valid GATE score followed by Interview. The Non-GATE candidates appear for DTU entrance test followed by Interview for final selection. The 30% credits of core course and elective course can be covered from online course as per NEP 2020 policy. The programme focused on conducting quality and innovative research. The outcome of this programme is 01 SCIE Journal paper and 01 Scopus indexed conference. M.Tech. by Research programme is different from regular M.Tech. and M.Sc. programme in terms of research component. In M.Tech and M.Sc. programme the major part of scheme is focused on teaching specified course instead of research. M.Tech. by Research programme is majorly about the research, where students require to work on a specified problem statement from the beginning of first semester. The research will continue till in every semester of M.Tech. by Research scheme. Thus, students require to work on their problem statement in continuously. The credits of M.Tech. by Research programme is 80 as per NEP 2020. M.Tech. by Research programme scheme categorized into two parts, where 2/3 part of scheme focused on research and remaining 1/3 part of the scheme focused on university core course, department core course, and elective course. Further, if students want to explore his/her research in more detail, then based on the performance in Ist year and research potential may convert to Ph.D. programme. In this case students is not required to do coursework of the Ph.D. The Ist year scheme of M.Tech. by Research programme is designed same as of Ph.D. coursework in addition to research component. All the candidates admitted to this programme must have excellent academic performance at graduation level and good research background. This programme is research focused. M.Tech. by Research programme will start in AY 2024-2025 with intake of 12 students with GATE and Non-GATE.

Please direct all queries related to Cutoffs, Shortlisting criteria, hostel accommodation and certificate submissions for admission to pgadm@dtu.ac.in

Name of the Degree

A student will be given a degree in M.Tech. by Research in specific Specialization.

Number Admitted

Twelve students will be admitted in the TA category.

2. Credit Structure for M.Tech. by Research

DELHI TECHNOLOGICAL UNIVERSITY

(Formerly Delhi College of Engineering)
Shahbad Daulatpur, Bawana Road Delhi – 110042

SCHEME OF TEACHING AND EVALUATION FOR M.Tech. BY RESEARCH as per NEP-2020

SEMESTER - I

Group	S. No.	Course Code	Course Name	Type/ Area	Cr	L	T	P	CWS	PRS	MTE	ETE	PRE	Total Credits	Level
Group A	1	RUCC501	Research and Publication Ethics (RPE)	UCC	2	2	0	0	25	-	25	50	0	18	500 - 599*
	2	RUCC503	Research Methodology	UCC	4	4	0	0	25	-	25	50	0		
	3	RXXX501	Core Course 1	DCC	4	4 / 3	0	0 / 2	25 / 15	- / 25	25 / 20	50 / 40	0		
	4	RXXX505	Core Course 2	DCC	4	4 / 3	0	0 / 2	25 / 15	- / 25	25 / 20	50 / 40	0		
	5	RXXX507	Dissertation 1	DCC	4	0	0	4	-	40 / 50	-	-	60 / 50		

SEMESTER – II

Group	S. No.	Course Code	Course Name	Type/ Area	Cr	L	T	P	CWS	PRS	MTE	ETE	PRE	Total Credits	Level
Group B	1	RXXX502	Core Course 3	DCC	4	4 / 3	0	0 / 2	25 / 15	- / 25	25 / 20	50 / 40	0	22	500 - 599*
	2	RXXX504	Core Course 4	DCC	4	4 / 3	0	0 / 2	25 / 15	- / 25	25 / 20	50 / 40	0		
	3	RXXX508	Dissertation 2	DCC	6	0	0	6	-	40 / 50	-	-	60 / 50		
Group C	4	RXXX532	Elective 1	DEC/ GEC	4	4 / 3	0	0 / 2	25 / 15	- / 25	25 / 20	50 / 40	0		
	5	RXXX534	MS(R) Project -1	DEC/ GEC	4	4 / 3	0	0 / 2	25 / 15	- / 25	25 / 20	50 / 40	0		
NHEQF Level														6.5	

Semester – III														
Group	S. No.	Course Code	Course Name	Type/ Area	Cr	L	T	P	CWS	PRS	MTE	ETE	PRE	Total Credits	Level
Group D	1	RXXX631	MS(R) Project -2	DEC/ GEC	4	4 / 3	0	0 / 2	25 / 15	- / 25	25 / 20	50 / 40	0	16	600 - 699*
Group E	2	RXXX601	Dissertation 3	DCC	12	0	0	12	-	40 / 50	-	-	60 / 50		

Semester – IV														
Group	S. No.	Course Code	Course Name	Type/ Area	Cr	L	T	P	CWS	PRS	MTE	ETE	PRE	Total Credits	Level
Group F	1	RXXX602	Final Dissertation	DCC	24	0	0	24	-	-	-	-	100	24	-
	NHEQF Level													7.0	

*: Refer Draft UGC Curriculum and Credit Framework for PG Programmes

3. Application Process

For admission to M.Tech. by Research programme August 2024, all candidates need to register and fill the application ONLINE only by accessing www.dtu.ac.in from June 19, 2024 to July 7, 2024. The application process is completed only when a print out of the filled ONLINE application form is taken after paying online the registration fee. The candidate must bring a duly signed copy of the same along with two good quality photo (same as uploaded on online application form) affixed in the appropriate place on the form on the day of interview.

Candiadtes whose final year result is awaited, may also fill the online application form. Once the candidate has registered and paid the registration fees, he/she would be sent a separate link to upload their graduation marks be September 30, 2024.

Candidates are requested to ensure that they must fulfill all such requirements before filling and applying for such programmes as their choices. Incomplete application due to any reason is liable for rejection by the University. In this regard, no communication will be entertained.

3.1 Application Fee

The registration fee of Rs. 1500/- for all categories is to be paid online through credit/debit card /net banking at the time of registration and choice filling. The registration shall not be complete without the payment of registration fee which is non-refundable and would not be adjusted towards any other fee. A convenience charge (online transaction) will be extra as per banking gateway on every online registration fee payment. If a candidate wishes to apply for admission

in a programme offered by different departments then he/she will have to register separately in that department by paying separate online registration fee.

Full Time GATE CANDIDATES

If a candidate wishes to apply for admission in a programme offered by different departments, then he/she will have to register separately in that department by paying a separate online registration fee.

Full Time Non-GATE CANDIDATES

If a candidate wishes to apply for admission in a programme offered by different departments, then he/she will have to register separately in that department by paying a separate online registration fee and candidates can appear in the respective admission test as per the schedule.

3.2 Rules for Seat Allotment

For M.Tech. Full Time Programme (With Valid GATE Score)

- Merit list will be prepared on the basis of valid GATE score for Interview.
- To resolve and determine inter-se-merit of candidates having same GATE score, following criterion will be used in the stated order of preference.
    1. Candidates having GATE score in 2024 will be given preference over candidates having score of 2023 or 2022.
    2. Candidates having GATE score in 2023 will be given preference over candidates having score of 2022.
    3. If the year of GATE score is same, then preference will be given to that candidate who has obtained higher GATE marks out of 100.
    4. In unlikely event of their GATE marks out 100 and the year of GATE score being the same, then preference will be based on the All-India Rank (AIR)
    5. In highly unlikely event of candidates having same GATE Year, GATE marks out of 100, and AIR, then Date of Birth will be considered. Elder candidate will be given preference.
    6. In highly unlikely event of Date of Birth is same, then rank will be decided on the basis of marks/CPGA obtained in the qualifying degree.
- The final result will be declared based on the marks secured in Interview.

For M. Tech (NON-GATE Full-Time) programmes

The short listing of applications possessing the minimum educational qualifications, for the purpose of admission test will be done by DTU.

The entrance test will be of 60 minutes duration comprising of 40 multiple choice questions. The cut off for the same will be decided by the University.

- The mode of examination shall be Computer Based Test at DTU Campus.
- Merit list for each programme will be made based on the percentile score earned by the candidate in the admission test.
- In case of a tie of percentile, the percentage of marks earned in B.Tech. upto 7th semester will be considered. Candidates with highest percentage of marks will be given preference.
- In highly unlikely event of candidates having same percentage of marks in the qualifying degree, then Date of Birth will be considered. Elder candidate will be given preference.
- In highly unlikely event of candidates having same Date of Birth, then marks in Class- XII will be considered.
- DTU merit list will be prepared based on the admission test and who have marks above the cutoff marks as decided by the university. The candidates has to appear in the Interview based on DTU merit list for final selection.

4. Information about Academic Departments

Department of Applied Chemistry

The department aims to provide state- of-art knowledge and practical skills to the UG and PG students in the diverse subjects of Chemistry, Chemical Engineering an Polymer Technology. The department runs four year course of B. Tech Chemical Engineering and post graduate course in Chemistry and Polymer Technology. The Department has well–established laboratories in Applied Chemistry, Polymer Science and Chemical Technology. The department has undertaken and completed successfully large numbers of research and industry projects funded by AICTE, CSIR, UGC, DRDO, DST, BARC etc. Active national and International collaborations for R&D activities in different fields have been established by the department.

Research Areas: Chemistry including synthetic organic chemistry, Bioinorganic chemistry, Bio organic chemistry, Inorganic Chemistry, Material Chemistry, Green Chemistry Cheminformatics; Medicinal Chemistry; including gene delivery applications, Bio Materials, Drug Delivery systems; Polymer Science including fiber Technology, Conducting Polymers, Composites, Hydrogels: Chemical Engineering including Reaction engineering, Multi phase reactor systems and design, Pollution abatement technology and gene; Advance materials development, Separation processes, Transport Phenomena, Pharmaceuticals sciences, Food Science.

Thrust Areas: Polymer Science, Chemical Technology

Department of Applied Physics

Applied Physics Department is providing cutting edge research, innovation and education in the emerging areas of science and technology. Department offers the undergraduate academic programme in Engineering Physics and Postgraduate program and M.Sc. Physics. The department has well- equipped state of art laboratories for undergraduate, postgraduate and Ph.D. students. Faculties of the department are actively involved in National and International collaborations for R & D activities.

Research Areas: Nanotechnology: Carbon Nanotube / Carbon Nano fibre and Graphene. Plasma Physics/ Dusty plasma / THz Radiation Emission / High power microwave devices, Photonics and Photonic Crystals. Theoretical Condensed Matter Physics, Density Functional Theory, Heusler alloys based materials for Spintronics and energy application, Topological insulators and Low dimensional Systems. Glass Science and Technology Phosphors, Photoluminescence, Organic & Nano - Material, Time - resolved spectroscopy, Microelectronic Devices-FinFETs, Tunnel FETs, Nanowires, MOSFETs - Application Oriented Modeling and Simulation, Waveguide based devices. Fibre and Integrated optics, Luminescent Material, Material science, Experimental Lithium Ion battery, Multiferroic materials, Atomic physics, Gas sensors, Atmosphere Science, Memory Devices, CNTFET and Graphene FET Devices, CNTFET based Biosensors and Solar energy materials

Thrust Areas: Advanced Functional Materials

Department of Biotechnology

The main objective of the department is to provide academic training and conduct research in the interdisciplinary areas of biotechnology with particular emphasis on extending the knowledge generated from these studies towards the development of technologies of commercial significance.

The Department is running postgraduate programmes in Bioinformatics and Industrial Biotechnology. Department of Biotechnology is also running research oriented Ph.D. programme. The department has undertaken sponsored projects funded by ICMR, CSIR, DST, UGC, etc. The department has 10 state- of-the-art laboratories.

Research Areas: Aquaculture, Algal Biotechnology, Bioremediation, Biosensor, Functional Genomics, Genome informatics, Immunology, Immuno stimulation, Molecular Neuroscience, Nano biotechnology, Neuro-oncology, Radiation Biology, Water Quality Management.

Thrust Areas: Biomedical Data Science, Sustainable Environment, Molecular Neuroscience and Neuro-oncology, Cell Technology, and Advanced Therapeutics.

Department of Civil Engineering

The Department offers an undergraduate programme with an intake of about 120. The post graduate Programmes are offered in Hydraulics and Water Resource and Engineering, Structural Engineering, Environmental Engineering, and Geotechnical Engineering with the intake of about 90 students. The Department is well equipped with laboratories related to Structure, Concrete testing, Soil Mechanics, Highway Engineering, Experimental Stress Analysis, etc. The department lays greater emphasis on quality research of industrial design and development, Structural Engineering and Structural Dynamics.

Research Areas: Structural Engineering, Concrete Technology, Cementitious Materials, Prestressed Concrete, Tall Structures and Rehabilitation of Structures, Geotechnical Engineering, Rock Mechanics, Soil Mechanics, Geo- Environment Engineering, Water Resources Engineering, Pavement Engineering. Hyper Spectral Microwave and LIDAR Remote Sensing.

Thrust Areas: AI-Driven Structural Health Monitoring, Machine Learning in Construction Management, Data Science for Smart Cities, Predictive Maintenance of Infrastructure, AI in Transportation Systems, Intelligent Water Resource Management, Machine Learning for Geotechnical Engineering, AI-Enhanced Environmental Monitoring, Data-Driven Urban Planning, Predictive Analytics in Disaster Risk Management, AI for Sustainable Building Design, Machine Learning in Traffic Flow Analysis, AI-Optimized Energy Efficiency in Buildings, Data Science for Waste Management Systems, Smart Pavement Technologies.

Department of Computer Science and Engineering

The Department of Computer Science and Engineering endeavours to provide the thrill of a corporate and R&D environment with a planned focus on industrially relevant projects and technology incubation. The department has been offering two M.Tech level programs in Computer Science and Engineering and Artificial Intelligence. The department has elite faculties from premier Institutes. Department has developed state of the art laboratories in the various fields of Computer Engineering– Computer Architecture Lab, Network Lab, Web Designing Lab, Computation and Programming Lab, Operating System Lab, Artificial Intelligence Lab, Machine Learning Research Lab, Internet of Things Lab and many others. The department offers Doctoral (Ph.D) degree programs in diverse recent areas and a large number of problems have been taken up in those collaborations (like Samsung Research Lab etc.) with Industries. The department has successfully fetched projects for National and International organizations.

Research Areas: Machine Learning, Artificial Intelligence, High Performance Computing, Mobile Computing, Soft Computing, Optimization techniques, Parallel

Computing, Cloud Computing, Internet of Things, Wireless Sensor Networks, Quantum Computing, BlockChain, Nature Inspired Optimization, Virtual and Augmented Reality, Web Technology, Image Processing, Evolutionary Computing, Big Data, Computer Vision, Steganography, Network Security, Information Security, Software Defined Networks, Software Engineering.

Thrust Areas: Artificial Intelligence and Machine Learning, Computer Vision, Natural Language Processing, Cloud Computing and Internet of Things, Data Analytics and data Science, Cyber Forensics and Security, Quantum Computing, Wireless Networks, Human Computer Interaction.

Department of Information Technology

The Department of Information Technology (IT) endeavors to provide the thrill of a corporate R&D environment with a planned focus on industrially relevant subjects, projects and technology incubation. The department offers an undergraduate (B. Tech.) course in Information Technology with an intake of 180 students every year. To meet the growing demands of present day technologies, the department has started M.Tech. degree in Information Systems in 2009-10 with an intake of 25. The curriculum of the department is designed in a way so as to provide the students with fundamental concepts and learning tools related to outcome based studies. The designed courses mainly emphasize on all basic core subjects such as data structure, operating systems, computer architecture and design, software development, networking, multimedia and graphics, analog and digital communications and computer communications, compiler design, theory of computation, etc. The department is also imparted a specialized subject knowledge on analysis and design of information system, information security systems, mobile computing, Internet of Things, cloud computing & security, soft computing, artificial intelligence, digital signal processing, computer vision and expert systems and web engineering. The department has developed the various state-of-the-art laboratories in the fields of Information Technology such as Computer Networks Lab, Web Engineering Lab, Programming Lab, Information and Security Lab, Biometric Research Lab, and many others.

Research Areas: Pattern Recognition, Computer Vision, Soft computing, Biometric security system, Neural Networks/ Deep learning, Fuzzy- Neural Networks, Natural Language Processing, Optimizations Techniques, Computer Vision, Big data Analytics Web Mining Internet Technologies, Data Mining Social Networks, Social Media Mining, Social Computing, Human behaviour, Multimedia Systems Human Computer Interaction (HCI), Image processing, Human Action and Activity Recognition, Sentiment Analysis, Spam Analysis, Fake News Analysis, Rumour Detection, Evolutionary Computing, Wireless Ad-hoc & Sensor Networks, Internet of Things (IoT), Software Defined Networking (SDN), Network Security, Information Security, Mobile Security, Internet of Robotics Things (IoRT), Cyber Physical System Security, Flying Ad-hoc Network (FANET) Security, Distributed Computing, Pattern Mining and Digital Forensics, Blockchain Technology, Recommendation Systems, Affective Computing, Autonomous Vehicles, etc.

Thrust Areas: Data Science and Engineering, Cyber Security, Internet of Things (IoT).

Department of Electronics & Communication Engineering

The vision of the department is to foster education, innovation and research in the frontline areas of Electronics and Communication Engineering for the sustainable growth of nation and service

to the mankind. The department offers UG and PG programmes with annual intake of 240 students in the B. Tech programme in Electronics and Communication Engineering and the PG Programmes include M. Tech. in VLSI Design and Embedded Systems; Signal Processing and Digital Design; and Microwave and Optical Communication. The Department has focused attention on quality research and offers Ph. D. Programmes in the area of Electronics and Communication namely VLSI, DSP, Image Processing, Micro strip antenna design, Sensor Networks, Analog and digital system design. The Department also has active MoUs with academic institutions, research labs and the industrial sector to ensure that the students and faculty can get ample opportunities to work on real-world problems in collaboration through these MoUs.

Research Areas: VLSI Design, Semiconductor Devices Computer Vision, Pattern Recognition, Object Tracking, Image Processing, Machine learning, Artificial Intelligence Human Computer Interaction, Wireless Sensor Network, Microwave Engineering, Antenna Design, Digital Signal Processing, Wireless Communication, RF Devices, Nano- electronics, Network Security, and Cloud Computing, Optical Communication, R F Circuit Design.

Thrust Areas: Signal Processing, VLSI Design

Department of Electrical Engineering

The goal of the department is to provide quality education at undergraduate and post graduate 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. The department has an annual intake of 300 and 60 students in the B.Tech programmes in Electrical Engineering and B.Tech (Evening), respectively. At the post graduate level, the department is offering three M.Tech programmes in Control and Instrumentation, Power Systems and Power Electronics and Systems. In addition to the above the department offers regular Ph.D. programmes in various areas of specialization in Electrical Engineering. The department is involved in carrying out several sponsored R&D projects funded by national agencies like AICTE, DST etc. The department is establishing a new Centre of Excellence for Electrical Vehicle and Related Technologies (COE for EVRT) which is funded jointly by Govt. of NCT of Delhi and Delhi Technological University.

Research Areas: Power system optimization, AI Techniques, Modelling & Analysis of Electrical machines, Power Electronics & Drives, Intelligent control of nonlinear systems, FACTS, SSR, Voltage stability, Power quality improvement, Grid integration, Micro grid, Smart grid, Analog Signal processing (Linear and Non linear), Power system & control, System Engineering, Power System Analysis, Power electronics, Renewable energy, HVDC, Power systems restructuring, AI in Electricity market forecasting, Wind energy forecasting, Embedded system, Information security, Design of power supply, Electric traction systems, Energy conversion, IOT enabled electrical system, Charging infrastructure for EVs, Battery management system (BMS), Electric drives & control, EV retrofitting.

Thrust Areas: Electric Vehicular Technology (EVT), Analog Signal processing, Intelligent Control, Power System Operation and Control, Renewable Energy Systems.

Department of Mechanical Engineering

The Department of Mechanical Engineering also offers undergraduate and Postgraduate courses with specialization in

a. Thermal Engineering
b. Production Engineering.

c. Industrial Engineering and Management
d. Computer Aided Analysis and Design
e. Energy Systems and Management

Ph.D. Programmes in all fields of Mechanical Engineering are also offered. The department possesses modern laboratories equipped with latest experimental set-ups and research facilities for instrumentation, experimental stress analysis strength of materials, fluid mechanics, tic, engines, automotive engineering, robotics, heat transfer, solar energy, flexible manufacturing system, computational fluid dynamics supported by Software like view-flex, CAD-CAM and I.e. engine design. Cad lab has Softwares like NX- LAD, NXCAM, AUTOCAD Inventor, Catia, Techomatix, Abus, ladino, NX-Narran, Hyper mesh, hyper works, MDADAMS, Dynaform etc. The department has many research projects which are sponsored by different government organizations.

Research Areas: Turbo Machinery, Fluid Mechanics, Power Plant b Engineering, Refrigeration and Air conditioning, Computational Fluid Dynamics, Solar Energy, Bio Fuels, Power Plant, Industrial Engineering & Supply Chain Management, Robotics, CAD/CAM, Welding, Production Engineering, System Dynamics, Structural Vibration, Modeling & Simulation, Automation, Advanced Manufacturing Process, Human Factor Engineering, Quality Engineering.

Thrust Areas:

1. Vibration and Acoustic
2. Tribology
3. Finite Element Analysis / Methods
4. Composites
5. Robotics & Automation
6. Mechatronics

Thermal and Fluids Engineering

1. Micro fluidics
2. Micro mixing
3. Heat Transfer through Micro Channels
4. Aerodynamics
5. Phase Change Materials
6. Fuels & Energy
7. Computational Fluid Dynamics
8. Sustainable Transportation Solutions

Production Engineering

1. Advanced Manufacturing Systems
2. Welding
3. Metal Forming
4. Industry 4.0
5. Supply Chain Management
6. Total Quality Management
7. Dimensional Quality Measurement
8. Plasticity and Metal Forming
9. Manufacturing Processes

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, two M.Tech programs in Software Engineering and Data Science and offers Ph.D. in the Discipline of Computer Science and Software Engineering. All the software engineering programs are well designed keeping in view the industry demands. The programs are designed to build the analytical and practical capabilities 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 department has state of art labs consistent with industrial standards which provide a hands-on experience to the students.

Research Areas: Empirical software engineering, machine learning, software quality and testing, search based software engineering, web engineering, opinion mining, social web, predictive modeling, machine learning and Deep learning for mobile healthcare, telemedicine, internet of things, cryptography.

Thrust Areas: Software Engineering, Data Science

Department of Multi-disciplinary Centre for Geo-informatics (MCG)

Delhi Technological University has established a "Multidisciplinary Centre for Geoinformatics" with a view to promote different location-based technologies falling under the umbrella of Geospatial Science and Technologies/ Geoinformatics. The Centre currently offers a PhD and a M.Tech program in Geoinformatics. Besides, it conducts several short-term courses/ workshops and undertakes research projects awarded by DST, NMHS, ISRO etc. and consultancies in the field of Geospatial sciences and Technologies. The MCG has been established with the vision to be a world class multidisciplinary center for education, research and consultancy in the field of Geospatial Science and Technologies/ Geoinformatics. The Centre aims to work in close coordination with Central/ State Government Agencies and Industries in fulfillment of Government objectives, capacity building, research and consultancy.

Research Area: Glaciology, Water Resources, EO satellite-based water quality estimation, Meteorology & Climate Change, Environment, GNSS (GPS and Navic) based Water Vapour Estimation, Urban Planning Studies, Urban Biodiversity, Urban UHI and Green Spaces, Earth Sciences, Agriculture, Forest, Geohazards & Disaster Management, Geosciences, Defense, Security and Intelligence Satellite Image Analysis, Photogrammetry, Geographic Information System, AI and Machine Learning, Big data analytics.

Thrust Areas: AI-driven Geospatial Data Analysis, GeoIntelligence, Terrain modeling for extraction of terrain features, Target detection and monitoring, automation of target detection process with high accuracy, Machine Learning for Remote Sensing Image Processing, Data Science in Geospatial Big Data Analytics, Predictive Modeling for Environmental Monitoring and Management, AI-enhanced Geographic Information Systems (GIS) Development, Machine Learning for Land Use and Land Cover Classification, Data-driven Spatial Decision Support Systems, Predictive Analytics for Natural Disaster Prediction and Management, AI in Geospatial Data Fusion and Integration, Machine Learning for Urban Planning and Development, Data Science for Climate Change Modeling and Adaptation, AI-Powered Precision Agriculture and Crop Monitoring, Machine Learning in Geoinformatics for Disaster Response and Recovery, Data-driven Smart City Planning and Management, AI-driven Geo-visualization and Spatial Data Visualization. Drone data analytics, Thermal image analytics in Terrahertz, passive microwave remote sensing, comparative analysis of medical imaging and satellite imaging, GLOF identification, flood modeling and prediction, satellite based water quality monitoring

5. Admission Criteria

Full-Time Candidates with GATE Score

a. Admission to M.Tech. by Research programs leading to an M.Tech. by Research degree will be open to the candidates qualified in GATE based on valid GATE score only in the subjects as given in Annexure 1 to be eligible for Interview. The final merit list will be prepared based on the performance of candidate in Interview and GATE score. All the requirements of their qualifying examination including back paper(s)/ supplementary(ies) before the date of admission may also apply. Such candidates will be required to submit a certificate as per the Performa given in Annexure-3 along with the application form. Such candidates may be admitted provisionally but they will be required to produce proof of having passed the qualifying degree with the required percentage of marks or CGPA by September 30, 2024, failing which their admission shall be canceled and the fee will be forfeited.

b. Final year students who will be completing Candidates having AMIE/ AMIS/ AMIICHE/AMIIM/Grad IETE, who possess a B.Sc. or Diploma in engineering are also eligible to apply for admission to M.Tech. by Research. courses.

Full-Time Non-GATE Candidates (DTU Merit-based)

a. Candidates not having a valid GATE score can also apply for admission to the M.Tech. by Research programme. The selection will be based on a merit list prepared after the admission test and Interview conducted by DTU.

b. Details of the eligibility conditions and qualifying degree requirements for non-GATE candidates are given in Annexure 2. Minimum qualifications for these candidates are the same as for full-time candidates except the requirement of qualifying in the GATE examination is waived off.

c. The non-GATE candidate(s) are not eligible to receive any AICTE scholarship/ Govt. fellowship in any of the M.Tech. by Research programme(s). However, the university will provide financial assistance of Rs. 7500/- per month to a candidate under the scheme DTUTA, based on merit, performance, and consistent academic record and requirements in the department. The number of financial assistance under DTU-TA is flexible and the university shall have the final authority in this regard.

d. Admission to all M.Tech. by Research. programmes shall be done on the basis of a valid GATE score. Valid GATE score holders will be given first preference and then the candidates seeking admission under the non-GATE category will be considered.

e. In case seats are vacant and non-GATE candidates are available, then admission shall be done through the DTU merit list based on the admission test by DTU. The decision of the university in this regard shall be final. If all the seats in a discipline are filled by the GATE candidates, then no admission will be conducted in that discipline and accordingly no merit list will be displayed for the same.

f. The syllabus of the DTU admission test to M.Tech. by Research programme for Non-GATE candidate is similar to M.Tech. programme.

g. The test will be conducted in the following 9 areas i.e., DAC, DAP, DBT, DCE, DCS, DEE, DEC, DME and DGINF (Annexure 2).

h. For the purpose of maintaining transparency a metric that we use is the calculation of percentile which is calculated by factoring in details like the candidate's rank and the number of candidates who appeared in that particular program.

i. The result will be declared in percentile as per the formula given below: Percentile = (No. of candidates who appeared in the admission test – candidate rank) / (Total No. of candidates who appeared in the admission test in which you have appeared)

Delhi Technological University -Teaching Assistantship Scheme (DTU-TA)

a. University provides financial assistance of Rs. 7500/- per month to a candidate under the scheme DTU-TA, based on the merit, performance, and consistence of academic record.

b. Financial assistance in the form of teaching assistantships (referred to as DTU Teaching Assistantship (DTU-TA) is offered to the M.Tech. by Research students and will be awarded a semester-to-semester basis for a maximum of four semesters or till the final submission of M.Tech. by Research final dissertation.

c. These candidates will be required to take an academic workload of 6-8 hours as assigned by the department such as laboratory classes, tutorials, seminars, research projects or any other work, etc. along with their regular academic work related to their own degree program.

d. Candidates getting financial support under DTU-TA must not be getting/ claiming any financial support/stipend in any form from any sponsoring agencies. If the candidate does any paid internship, then this financial support under DTU-TA will terminate.

6. Reservation of Seats for Different Categories and Relaxation in Essential Qualifications

Admissions to the PG programs as mentioned in Annexure-1 and Annexure-2 will be made on an All-India basis. The university follows the reservation rules of Govt. of NCT of Delhi. In addition to this, 01 (One) seat in each M.Tech. by Research programme of DTU, over and above their normal intake, is earmarked for Single Girl Child (SG) candidate and 01 (one) seat in each M.Tech. by Research programme is reserved for Kashmiri migrant. However, there will be no relaxation in the minimum eligibility criteria for SG and Kashmiri migrants (KM). The table given below indicates the percentage of reservations for various categories and relaxation in minimum eligibility conditions as applicable for the academic session 2024-2025.

S. No.	Category	Seat Reserved	Relaxation
1	SC	15%	5%
2	ST	7.5%	5%
3	OBC	27%	Nil
4	PwD	5% (Horizontal)	5%
5	EWS	10%	Nil

The reservation for persons with disabilities will be implemented department-wise. Candidates seeking admission must fulfill the eligibility conditions as detailed earlier. The 5% reservation horizontally in the seat matrix for persons with disability may be allocated as follows.

a. The stipend for the assistantship shall be paid at the approved rates as notified by the University from time to time.

b. In case of unsatisfactory performance of the candidate in discharging the academic duties assigned by the department or poor academic performance, the University may discontinue the financial assistance on the recommendation of the concerned Head of the department.

c. The University reserves the right to terminate the DTU-Teaching Assistant (TA) anytime without any notice on the unsatisfactory report of the assigned work/teaching duties carried out by the candidate. Against the seats identified for each disability, of which, one percent each shall be reserved for persons with benchmark disabilities under clauses (a), (b), and (c) and one percent, under clauses (d) and (e).

   a) Blindness and low vision;

   b) Deaf and hard of hearing;

d. Locomotor disability including cerebral palsy, leprosy, dwarfism, acid attack victims, and muscular dystrophy; Autism, intellectual disability, specific learning disability, and mental illness;

e. Multiple disabilities from amongst persons under clauses (a) to (d) including deaf-blindness.

f. Physically handicapped applicants are permitted 5% marks or equivalent CGPA relaxation in eligibility requirements in line with the policies of Govt. of NCT of Delhi. They will not be allowed any other relaxation beyond this limit even if they belong to the SC/ST category.

Formula for conversion of seats

If the seats remain vacant in some specific categories, with no waiting list available in those categories, the seats shall be converted as per the details given below on the day of the spot round of counseling.

Existing Seats	Seats converted into
(PwD) seat of GN/OBC/SC/ ST Categories	GN/OBC/SC/ ST Category (i.e. in respective categories)
OBC Seat	GN Seat
SC Seat	ST Seat
ST Seat	SC Seat
EWS	GN Seat

7. Fees Structure

The annual fee of the M.Tech. by Research programs will have to be deposited by the candidate at the time of admission in the form of a DD drawn in favor of the "Registrar, Delhi Technological University payable at New Delhi". Candidates must note that the admission fee must be paid in a single instalment failing which the admission offer will be withdrawn immediately. Waitlisted candidates (if offered admission during counseling) also have to deposit annual fees in single installment at the time of admission/ seat allotment through DD. If the admission fee is not paid within the stipulated date, then the offer of admission given to them will withdrawn automatically and the seat will be offered to the next eligible candidate. The total academic fee of M.Tech. by Research programme is Rs. 1,00,000/- per year. The break up will be available at the time of admission.

8. Documents Required

The candidates should report at the venue mentioned by the respective departments on the specific date and time for admission round in person (or through an authorized representative) along with the following original documents and one set of self-attested photocopies, two photographs, printout of the registration form and demand draft for the annual fee made in the favour of "Registrar, Delhi Technological University payable at New Delhi". The entire process can be converted into online mode if an unavoidable situation like Covid-19 arises. Candidates are advised to visit University website regularly for notification in this regard.

a. Date of Birth proof

b. All mark sheets and certificate of qualifying examination (Graduation).

c. If result for final semester is not declared, then candidate will be required to submit an Undertaking as per format placed at Annexure-3.

d. SC/ST/OBC/Persons with disability Certificate(s) whichever applicable, on the basis of which reservation is claimed.

e. OBC (NCL) candidates are required to produce a caste certificate issued after March 31, 2023 from the authorities as mentioned in Annexure-4. However, if the certificate is issued prior to March 31, 2023, it must be accompanied with an additional certificate regarding the present non-creamy layer status of the candidate, issued by the same competent authority. This additional certificate must have reference of his /her already issued original caste certificate.

f. Candidates applying for admission to seat reserved for Differently Abled Person (PwD) sub-category, the candidate must produce the certificates in original at the time of document verification as per Annexure-5.

g. EWS Income and Asset certificate issued by the Competent Authority (For those who have applied for M. Tech admission under EWS category) as per Annexure-6 not later than 31st March, 2024

h. The candidates seeking admission under Kashmiri Migrants (KM) seats must produce the following documents, in original, at the time of document verification:

   1. Certificate of registration as Kashmiri Migrants issued by the Relief Commissioner, Jammu or Divisional Commissioner, Delhi to establish the status of the applicant as registered migrants as per Annexure-7.

i. Valid GATE Score Card in Original for full time candidates.

j. Research Proposal with emerging areas.

k. In case of non-availability of latest category certificate i.e. EWS and OBC, candidate can submit an undertaking given in Annexure-8 and Annexure-9 respectively at the time of application filing or during admission.

Details of the eligibility conditions and qualifying degree requirements for GATE Qualified candidates

Assistantship as per AICTE norms will be awarded to candidates for the duration of the programmes i.e. two years to the full time students for M. Tech.

S. No.	Department/ Programme Name	Qualifying GATE Subjects	Qualifying Degree
1.	**APPLIED CHEMISTRY**		
	Polymer Technology (PTE)	CY/CH/BT/ ME/PE/PI/ TF/XE/XL/ ES	B.E. / B. Tech / M.Sc. / Integrated M.Sc. in any of the following Discipline: Biochemical Engineering; Biomedical Engineering; Biomedical Instrumentation:; Biotechnology; Chemical Engineering; Chemical Technology; Environmental Engineering; Environmental Science & Technology; Fibre & Textiles Processing Technology; Food Engineering & Technology; Food Processing Engineering; Processing & Preservation Engineering; Leather / Foot Wear Technology; Man- Made Textile Technology; Material Science and Engineering/ Technology; Mechanical Engineering; Paint Technology; Petro-Chemical Engineering; Petroleum Engineering/ Technology; Petroleum Refinery Engineering; Plastic Engineering/Technology; Polymer Engineering / Science / Technology; Polymer Science & Chemical Technology; Printing & Packing Technology; Production & Industrial Engineering: Rubber Technology; Textile Engineering/ Technology; Biochemistry; Bio-Sciences; Chemistry: Industrial Chemistry; Nano Science Technology; Pharmaceutical Chemistry & Technology; Pharmaceutical Science; Textile Chemistry.
2.	**APPLIED PHYSICS**		
	Material Science & Technology (MST)	PH/CY/XE/ EE/EC/MT/ CY/CH/BT/ ME/TF/CH/ PI/XL/CE/ CS/IN/AE	B.E. / B.Tech / M.Sc. / Integrated M.Sc. in any of the following disciplines and equivalent: Physics / Applied Physics/ Chemistry/ Material Science/ Nuclear Physics/ Solid State Physics/ Astrophysics/ Electronics/ Electrical/ Mechanical Engineering/ Material Science and Engineering/Material Science and Technology / Engineering Physics/ Biotechnology/ Allied life Science/Biophysics/ Biochemistry/ Environmental Science/ Environmental Engineering/ Biomedical Engineering/ Instrumentation/M.Sc. (CS/IT with Mathematics, Physics and Chemistry at B.Sc. level)
3.	**BIOTECHNOLOGY**		
	BioInformatics (BIO)	BT/BM/XL/ ES/CS/DA	B.Tech/M.Sc. degree in Biotechnology/ Bioinformatics/ Biomedical Engineering/ Life Sciences/ Biochemistry/ Computer Science & Information Technology, Data Sciences, Artificial Intelligence/Environmental Science and Engineering/ Pharmaceutical Sciences & Technology.

	Industrial Biotechnology (IBT)	BT/BM/AG/ ES/EY/XL/ CY/CH	B.Tech/ M.Tech / M.Sc. degree/ degree in Biotechnology / Bioinformatics / Biomedical Engineering / Biochemical Engineering / Life Sciences/ Biochemistry / Zoology / Botany / Plant Molecular Biology / Microbiology / Environmental Sciences and Engineering / Agriculture Sciences & Engineering / Pharmaceutical Sciences & Technology/ Ecology and Evolution/ Chemistry/ Chemical Engineering.
4.	**CIVIL ENGINEERING**		
	Geotechnical Engineering (GTE)	CE	B. Tech./B.E. Degree in CE
	Hydraulics & Water Resources Engineering(HRE)	CE	
	Structural Engineering(STE)	CE	
5.	**COMPUTER SCIENCE AND ENGINEERING**		
	Computer Science & Engineering (CSE)	CS/DA	B.E /B.Tech. in CSE/IT/SE/MC/ECE/ EE/ EEE /CC/MoC/ BDA /DA/ IoT/ DS/ CyS/ AI/ ML/ CTIS/CST/CS&IT/Co/ CSD/Eo/EoE/Eo&Co/EI&Co/MI/ICT/IS/IC/CS&CE Or B.E /B.Tech. in CSE/CS/IT/SE/MC (with Specialization in CC/ MoC/ BDA/ DA/ IoT/ DS/ CyS/ AI/ML/CTIS) Or M.Sc. in (CS/ IT/ SE/ CC/MoC/BDA/DA/IoT/DS/CyS/AI/ ML/CTIS/Inf)
	Artificial Intelligence (AI)	CS/DA	
6.	**INFORMATION TECHNOLOGY**		
	Information Technology (IT)	CS/DA	B.E /B.Tech. in CSE/IT/SE/MC/ECE/ EE/ EEE /CC/MoC/ BDA /DA/ IoT/ DS/ CyS/ AI/ ML/ CTIS/CST/CS&IT/Co/ CSD/Eo/EoE/Eo&Co/EI&Co/MI/ICT/IS/IC/CS&CE Or B.E /B.Tech. in CSE/CS/IT/SE/MC (with Specialization in CC/MoC/ BDA/ DA/ IoT/ DS/ CyS/ AI/ML/CTIS) Or M.Sc. in (CS/ IT/ SE/ CC/MoC/BDA/DA/IoT/DS/CyS/AI/ ML/CTIS/Inf)
7.	**ELECTRONICS & COMMUNICATIONS ENGINEERING**		
	Microwave and Optical Communication (MOC)	EC/PH	B.E./B. Tech. Exam in ECE/ EP/ M.Sc. Electronics/ M. Sc.in Physics with Electronics/ Radio Physics/ Solid State Physics.
	Signal Processing & Digital Design (SPD)	EC	B.E./B. Tech Exam in Electrical and Electronics/ Electronics & Instrumentation/Electronics & Computer Engg/Electronics & control/Applied Electronics and Instrumentation Engg./Electronics Instrumentation & control Engg./Electrical.
	VLSI Design and Embedded System (VLS)	EC	
8.	**ELECTRICAL ENGINEERING**		
	Control & Instrumentation (C&I)	EE/EC/IN/ EEE	B. Tech./B.E. Exam in EE/EEE/ECE/C&I/I&C/ Electrical and Computer Engineering
	Power System (PSY)	EE/EEE	B. Tech./B.E .Exam in EE/EEE/ Electrical and Computer Engineering.

	Power Electronics and Systems (PES)	EE/EEE/C&I	B. Tech./B.E. Exam in EE/EEE/C&I/I&C/Electrical and Computer Engineering.
9.	**MECHANICAL ENGINEERING**		
	Production Engineering (PRD)	ME/PI/AE/ AG/NM/MN/ NT	B. Tech / B.E. in ME / PE / Industrial / Manufacturing/ Welding / Automation and Robotics/Automobile/ Aeronautical/ Aerospace/ Energy/ CADM/ CIM/ Foundry/ Marine/ Mechatronics/ Metallurgy/ Mining/ Tool and Die/ Agriculture or Equivalent of the above.
	Thermal Engineering (THE)	ME/PI/AE/ AG/NM/PE	B.Tech/B.E. in Mechanical/ Production/Automobile/ Aeronautical/ Aerospace/ Energy/ Hydraulics/ Petroleum/ Tribology/ Marine/ Mining/ Power Plant/ Agriculture or Equivalent of the above.
	Industrial Engineering and Management (IEM)	Any branch of Engineering	Bachelor degree (4-years degree Programs; B.Tech./ B.E/B.Sc. Engg., and equivalent degree) in any branch of Engineering will be eligible to take admission in this program.
	Energy Systems and Management (ESM)	Any branch of Engineering	Bachelor degree (4-years degree Programs; B.Tech./ B.E/B.Sc. Engg., and equivalent degree) in any engineering branch will be eligible to take admission in this program.
	Computer Aided Analysis and Design (CAAD)	ME/PI/CE/ AG/NM/AE	B.Tech./B.E in Mechanical/ Production/Civil/ Manufacturing/ Automation and Robotics/ Automobile/ Aeronautical/ Aerospace/ CADM/ CIM/ Mechatronics/ Mining/ Tool and Die/ Agriculture or Equivalent of the above.
10.	**SOFTWARE ENGINEERING**		
	Software Engineering (SWE)	CS/DA	B.Tech/ B.E. Degree in CS/ CSE/ Computer Engineering/ CST /CSD/ CS & IT/ SE/ IT/ IT&MI/ICT/ IS/ IC/ CS&CE/ MC/ ECE/ EEE/ CC/ MoC/ BDA/ DA/ IoT/DS/CyS/AI/ML/ CT/ Information Security OR M.C.A IM.Sc. (CS/ CSE/ Computer Engineering/CST/ CSD/ CS & IT/ SE/ IT/ Inf/ CC/MoC/ BDA/DA/IoT/DS/ CyS/ AI/ML/ CTIS) (with Mathematics at B.Sc./B.C.A level).
	Data Science (DS)	CS/DA/EC/ EE/BT/ST	B.Tech/ B.E. Degree in CS/ CSE/ Computer Engineering/ CST /CSD/ CS & IT/ SE/ IT/ IT&MI/ICT/ IS/ IC/ CS&CE/ MC/ ECE/ EEE/ CC/ MoC/ BDA/ DA/ IoT/DS/CyS/AI/ML/ CT/ Information Security/ Biotechnology OR M.C.A IM.Sc. (CS/ CSE/ Computer Engineering/ CST/ CSD/ CS & IT/ SE/ IT/ Inf/ CC/MoC/ BDA/DA/IoT/DS/ CyS/ AI/ML/ CTIS) (with Mathematics at B.Sc./B.C.A level) OR M.Sc. (Operational Research/ Electronics/ Physics / Statistics/ Mathematics)
11.	**MULTI-DISCIPLINARY CENTRE FOR GEO-INFORMATICS**		
	Geoinformatics (GINF)*	Any Subject shown in qualifying degree	(aa) BE/B.Tech. or equivalent in any branch of Engineering and Technology (ab) M.Sc. in Architecture/Remote Sensing / GIS / Geomatics / Geo-informatics/ Geography / Environment Science /Mathematics/ Physics/ Geology (ac) MCA or equivalent

Details of the eligibility conditions and qualifying degree requirements for Non-GATE candidates

The University will provide financial assistance of Rs. 7500/- per month based on the recommendations of a committee constituted by the Competent Authority

Details for Screening test for M.Tech admission

S. No.	Department/ Programme Name	Qualifying admission test	Qualifying Degree
1.	**APPLIED CHEMISTRY**		
	Polymer Technology (PTE)	DBT/ DEN/ DAC/ DME	B.E. / B. Tech / M.Sc. / Integrated M.Sc. in any of the following Discipline: Biochemical Engineering; Biomedical Engineering; Biomedical Instrumentation; Biotechnology; Chemical Engineering; Chemical Technology; Environmental Engineering; Environmental Science & Technology; Fibre & Textiles Processing Technology; Food Engineering & Technology; Food Processing Engineering; Processing & Preservation Engineering; Leather/Foot Wear Technology; Man- Made Textile Technology; Material Science and Engineering/ Technology; Mechanical Engineering; Paint Technology; Petro-Chemical Engineering; Petroleum Engineering/Technology; Petroleum Refinery Engineering; Plastic Engineering/Technology; Polymer Engineering / Science / Technology; Polymer Science & Chemical Technology; Printing & Packing Technology; Production & Industrial Engineering: Rubber Technology; Textile Engineering/ Technology; Biochemistry; Bio-Sciences; Chemistry: Industrial Chemistry; Nano Science Technology; Pharmaceutical Chemistry & Technology; Pharmaceutical Science; Textile Chemistry.
2.	**APPLIED PHYSICS**		
	Material Science & Technology (MST)	DAP/DEC/ DEE/DBT/ DEN/DME	B.E. / B.Tech / M.Sc. / Integrated M.Sc. in any of the following disciplines and equivalent: Physics / Applied Physics/ Chemistry/ Material Science/ Nuclear Physics/ Solid State Physics/ Astrophysics/ Electronics/ Electrical/ Mechanical Engineering/ Material Science and Engineering/Material Science and Technology / Engineering Physics/ Biotechnology/ Allied life Science/ Biophysics/ Biochemistry/ Environmental Science/ Environmental Engineering/ Biomedical Engineering/ Instrumentation/M.Sc. (CS/ IT with Mathematics, Physics and Chemistry at B.Sc. level.
3.	**BIOTECHNOLOGY**		
	Bioinformatics (BIO)	DBT/DEN/ DCS	B.Tech/M.Sc. degree in Biotechnology/ Bioinformatics / Biomedical Engineering/ Life Sciences/ Biochemistry/ Computer Science & Information Technology, Data Sciences, Artificial Intelligence/Environmental Science and Engineering/ Pharmaceutical Sciences & Technology.

	Industrial Biotechnology (IBT)	DBT/DEN/ DAC	B.Tech/ M.Tech/ M.Sc. degree/ degree in Biotechnology/ Bioinformatics / Biomedical Engineering / Biochemical Engineering / Life Sciences / Biochemistry / Zoology/ Botany / Plant Molecular Biology / Microbiology / Environmental Sciences and Engineering / Agriculture Sciences & Engineering / Pharmaceutical Sciences & Technology/ Ecology and Evolution/ Chemistry/Chemical Engineering
4.	**CIVIL ENGINEERING**		
	Geotechnical Engineering (GTE)	DCE	B. Tech./B.E. Degree in CE
	Hydraulics & Water Resources Engineering(HRE)	DCE	
	Structural Engineering(STE)	DCE	
5.	**COMPUTER SCIENCE AND ENGINEERING**		
	Computer Science & Engineering (CSE)	DCS	B.E /B.Tech. in CSE/IT/SE/MC/ECE/ EE/ EEE /CC/MoC/ BDA /DA/ IoT/ DS/ CyS/ AI/ ML/ CTIS/CST/CS&IT/Co/ CSD/Eo/EoE/Eo&Co/El&Co/MI/ICT/IS/IC/CS&CE Or B.E /B.Tech. in CSE/CS/IT/SE/MC (with Specialization in CC/ MoC/ BDA/ DA/ IoT/ DS/ CyS/ AI/ML/CTIS) Or M.Sc. in (CS/ IT/ SE/ CC/MoC/BDA/DA/IoT/DS/CyS/AI/ ML/ CTIS/Inf)
	Artificial Intelligence (AI)	DCS	
6.	**INFORMATION TECHNOLOGY**		
	Information Technology (IT)	DCS	B.E /B.Tech. in CSE/IT/SE/MC/ECE/ EE/ EEE /CC/MoC/ BDA /DA/ IoT/ DS/ CyS/ AI/ ML/ CTIS/CST/CS&IT/Co/ CSD/Eo/EoE/Eo&Co/El&Co/MI/ICT/IS/IC/CS&CE Or B.E /B.Tech. in CSE/CS/IT/SE/MC (with Specialization in CC/ MoC/ BDA/ DA/ IoT/ DS/ CyS/ AI/ML/CTIS) Or M.Sc. in (CS/IT/SE/CC/MoC/BDA/DA/IoT/DS/CyS/AI/ML/ CTIS/Inf)
7.	**ELECTRONICS & COMMUNICATIONS ENGINEERING**		
	Microwave and Optical Communication (MOC)	DEC/DAP	B.E./B. Tech. Exam in ECE/ EP/ M.Sc. Electronics/ M. Sc.in Physics with Electronics/ Radio Physics/ Solid State Physics
	Signal Processing & Digital Design (SPD)	DEC/DCS/ DEE	B.E./B. Tech Exam in Electrical and Electronics/ Electronics & Instrumentation/Electronics & Computer Engg/Electronics & control/Applied Electronics and Instrumentation Engg./Electronics Instrumentation & control Engg./Electrical
	VLSI Design and Embedded System (VLS)	DEC/DCS/ DEE	
8.	**ELECTRICAL ENGINEERING**		
	Control & Instrumentation (C&I)	DEE/DEC	B. Tech./B.E. Exam in EE/EEE/ECE/C&I/I&C/ Electrical and Computer Engineering
	Power System (PSY)	DEE	B. Tech./B.E .Exam in EE/EEE/ Electrical and Computer Engineering
	Power Electronics and Systems (PES)	DEE	B. Tech./B.E. Exam in EE/EEE/C&I/I&C/Electrical and Computer Engineering

9.	**MECHANICAL ENGINEERING**		
	Production Engineering (PRD)	DME	B. Tech / B.E. in ME / PE / Industrial / Manufacturing/ Welding / Automation and Robotics/Automobile/ Aeronautical/ Aerospace/ Energy/ CADM/ CIM/ Foundry/ Marine/ Mechatronics/ Metallurgy/ Mining/ Tool and Die/ Agriculture or Equivalent of the above.
	Thermal Engineering (THE)	DME	B.Tech/B.E. in Mechanical/ Production/Automobile/ Aeronautical/ Aerospace/ Energy/ Hydraulics/ Petroleum/ Tribology/ Marine/ Mining/ Power Plant/ Agriculture or Equivalent of the above
	Industrial Engineering and Management (IEM)	DCS/DEE/ DEC/DBT/ DCE/DEN/ DME/DAP/ DAC	Bachelor degree (4-years degree Programs; B.Tech./ B.E/B.Sc.Engg., and equivalent degree) in any branch of Engineering will be eligible to take admission in this program.
	Energy Systems and Management (ESM)	DCS/DEE/ DEC/DBT/ DCE/DEN/ DME/DAP/ DAC	Bachelor degree (4-years degree Programs; B.Tech./ B.E/B.Sc.Engg., and equivalent degree) in any engineering branch will be eligible to take admission in this program.
	Computer Aided Analysis and Design (CAAD)	DME/DCE	B.Tech./B.E in Mechanical/Production/Civil/ Manufacturing/ Automation and Robotics/ Automobile/ Aeronautical/ Aerospace/ CADM/ CIM/ Mechatronics/ Mining/ Tool and Die/ Agriculture or Equivalent of the above.
10.	**SOFTWARE ENGINEERING**		
	Software Engineering (SWE)	DCS	B.Tech/ B.E. Degree in CS/ CSE/ Computer Engineering/ CST/CSD/CS & IT/SE/IT/IT&MI/ICT/IS/IC/CS&CE/MC/ECE/ EEE/CC/MoC/BDA/DA/IoT/DS/CyS/AI/ML/CT/ Information Security OR M.C.A IM.Sc. (CS/CSE/Computer Engineering/CST/CSD/ CS&IT/SE/IT/Inf/CC/MoC/BDA/DA/IoT/DS/CyS/AI/ML/ CTIS) (with Mathematics at B.Sc./B.C.A level)
	Data Science (DS)	DCS/DEC/ DEE/DBT	B.Tech/ B.E. Degree in CS/ CSE/ Computer Engineering/ CST /CSD/ CS & IT/ SE/ IT/ IT&MI/ICT/ IS/ IC/ CS&CE/ MC/ ECE/ EEE/ CC/ MoC/ BDA/ DA/ IoT/DS/CyS/AI/ML/ CT/ Information Security/ Biotechnology OR M.C.A IM.Sc. (CS/ CSE/ Computer Engineering/ CST / CSD/ CS & IT/ SE/ IT/ Inf/ CC/MoC/ BDA/DA/IoT/DS/ CyS/AI/ML/ CTIS) (with Mathematics at B.Sc./B.C.A level) OR M.Sc. (Operational Research/Electronics/Physics /Statistics/ Mathematics)
11	**MULTI-DISCIPLINARY CENTRE FOR GEO-INFORMATICS**		
	GeoInformatics (GINF)*	DEC/DES/ DCS/DME/ DEE/DCE/ DGINF	(aa) BE/B.Tech. or equivalent in any branch of Engineering and Technology (ab) M.Sc. in Architecture/Remote Sensing/GIS/ Geomatics / Geo-Informatics/ Geography / Environment Science /Mathematics/ Physics/ Geology (ac) MCA or equivalent

List of GATE Disciplines/Papers and their codes

S. No.	Paper	Code	S. No.	Paper	Code
1	Aerospace Engineering	AE	16	Instrumentation Engineering	IN
2	Agricultural Engineering	AG	17	Mathematics	MA
3	Architecture and Planning	AR	18	Mechanical Engineering	ME
4	Biotechnology	BT	19	Mining Engineering	MN
5	Civil Engineering	CE	20	Metallurgical Engineering	MT
6	Chemical Engineering	CH	21	Naval Architecture & Marine Engineering	NM
7	Computer Science & Information Technology	CS	22	Life Sciences	XL
8	Chemistry	CY	23	Physics	PH
9	Data Science & Artificial Intelligence	DA	25	Textile Engineering and Fiber Science	TF
10	Electronics and Communication Engineering	EC	24	Production and Industrial Engineering	PI
11	Electrical Engineering	EE	26	Engineering Sciences	XE
12	Environmental Science & Engineering	ES	27	Humanities and Social Science	XH
13	Ecology and Evolution	EY	28	Life Sciences	XL
14	Geomatic Engineering	GE	29	Petroleum Engineering	PE
15	Geology and Geophysics	GG	30	Statistics	ST

List of Non-GATE Disciplines/Papers and their codes

S. No.	Paper	Code
1	Applied Chemistry	DAC
2	Applied Physics	DAP
3	Biotechnology	DBT
4	Civil Engineering	DCE
5	Computer Science Engineering/Information Technology/Software Engineering	DCS
6	Electrical Engineering	DEE
7	Electronics & Communication Engineering	DEC
8	Mechanical Engineering	DME
9	Geoinformatics Engineering	DGINF

Engineering Sciences (XE) Papers	Life Sciences (XL) Papers
A. Engineering Mathematics	P. Chemistry
B. Fluid Mechanics	Q. Biochemistry
C. Materials Science	R. Botany
D. Solid Mechanics	S. Microbiology
E. Thermodynamics	T. Zoology
F. Polymer Science and Engineering	U. Food Technology
G. Food Technology	
H. Atmospheric and Oceanic Sciences	

Details of the abbreviations used for qualifying degree

Electrical Engineering	EE	Mechanical Engineering	ME
Civil Engineering	CE	Environmental Engineering	EN
Information Technology	IT	Electrical & Electronics Engineering	EEE
Software Engineering	SE	Mathematics and Computing	MC
Automobile Engineering, Automotive Engineering	AE	Metallurgical and Material Science, Metallurgical Engineering	MT
Production, Production & Industrial Engineering, Industrial Engineering	PE	Biotechnology, Industrial Biotechnology, Bioinformatics	BT
Control & Instrumentation Engineering	C&I	Chemical Engineering	CH
Biochemical Engineering	BE	Artificial Intelligence	AI
Electronics & Communication Engineering, Electronics Engineering	ECE	Computer Science	CS
Engineering Physics	EP	Polymer Technology	PT
Computers	Co	Mobile Computing	MoC
Electrical Engineering	EE	Big Data Analytics	BDA
Cloud Computing	CC	Data Analytics	DA
Internet of Things	IoT	Data Science	DS
Cyber Security	CyS	Computer Science & IT	CS&IT
Machine Learning	ML	Computer Science & Design	CSD
Cloud Technology and Information Security	CTIS	Electronics	Eo
Computer Science and Technology	CST	Electronics Engineering	EoE
Electronics and Computerv	Eo&Co	Information and Communication Technology	ICT
Electrical and Computers	EI&Co	Information Science	IS
Mathematical Innovations	MI	Information and Communication	IC
Computer Science and Communication Engineering	CS&CE	Informatics	Inf
Information Technology and Mathematical Innovations	IT&MI	Computer Technology	CT
Computer Science & Engineering	CSE	Instrumentation & Control Engineering	I&C

Certificate for Appearing in the Final Semester/Year Examination

(Required from candidates who are yet to appear in the qualifying examination)

In connection with the application of Mr./Ms._____ for admission to PG programme(s) at Delhi Technological University Delhi, I hereby certify that he/she is a bonafide student of our institution. He/she is yet to complete the requirements of qualifying examination including theory, practical project examination and back paper(s)/supplementary(ies) for B.E./B.Tech./M.Sc./_____ which is to be scheduled later on (Strike out the non-applicable ones and write in the blank space if the degree is not mentioned) and the result is likely to be announced by_____ 2024. The percentage of aggregate marks/CGPA obtained by him/her upto pre final year examination is_____ His/her conduct and character during his/her stay at the University/University has been "GOOD".

Signature of the Principal/Dean/Registrar/
Dy. Registrar /Proctor/Administrative Officer

Place: _____

Date: _____

UNDERTAKING BY THE CANDIDATE REGISTERED WITHOUT PRODUCTION OF PROOF OF PASSING THE QUALIFYING EXAMINATION/APPEARED IN THE BACKPAPER(S)/ SUPPLEMENTARY(IES) TILL DATE OF REGISTRATION

I,_____ son/daughter/ward of Mr./Ms _____ hereby give an undertaking that I have appeared in all the examinations including practical(S)/projects/theory/backpaper(s)/supplementary(ies) before the date of registration and only the result is awaited, which is likely to be declared by_____

Place: _____ Signature _____

Date: _____

Name _____

Address _____

Authorities who can Issue Caste/Tribe Certificate

SC/ST/OBC candidates should submit certificate issued by any of the following authorities:

District Magistrate/Additional District Magistrate/Collector/Deputy Commissioner/ Additional Deputy Commissioner/Deputy Collector/1st Class Stipendiary Magistrate/ City Magistrate/Sub-Divisional Magistrate/Taluka Magistrate/Executive Magistrate/ Extra Assistant Commissioner/Chief Presidency Magistrate/Additional Chief Presidency Magistrate/Presidency Magistrate/Revenue Officer not below the rank of Tehsildar/Sub-Divisional Officer of the area where the candidate and/or his/her family normally resides/ Administrator/Secretary to Administrator/Development Officer (Lakshadweep Island).

(Certificate issued by any other authority will not be accepted.)

Prescribed Format for OBC Certificate

FORM OF CERTIFICATE TO BE PRODUCED BY OTHER BACKWARD CLASSES

This is to certify that Shri / Smt. / Kum. _____

_____ Son / Daughter of Shri / Smt. _____

_____ of Village/Town _____

_____District/Division _____ in the State belongs to the _____

_____Community which is recognized as a backward class under:

i. Resolution No. 12011/68/93-BCC(C) dated 10/09/93 published in the Gazette of India Extraordinary Part I Section I No. 186 dated 13/09/93.
ii. Resolution No. 12011/9/94-BCC dated 19/10/94 published in the Gazette of India Extraordinary Part I Section I No. 163 dated 20/10/94.
iii. Resolution No. 12011/7/95-BCC dated 24/05/95 published in the Gazette of India Extraordinary Part I Section I No. 88 dated25/05/95.
iv. Resolution No. 12011/96/94-BCC dated 9/03/96. (v)Resolution No. 12011/44/96-BCC dated 6/12/96 published in the Gazette of India Extraordinary Part I Section I No. 210 dated 11/12/96.
v. Resolution No. 12011/13/97-BCC dated 03/12/97.
vi. Resolution No. 12011/99/94-BCC dated 11/12/97.
vii. Resolution No. 12011/68/98-BCC dated 27/10/99.
viii. Resolution No. 12011/88/98-BCC dated 6/12/99 published in the Gazette of India Extraordinary Part I Section I No. 270 dated 06/12/99.
ix. Resolution No. 12011/36/99-BCC dated 04/04/2000 published in the Gazette of India Extraordinary Part I Section I No. 71 dated04/04/2000.
x. Resolution No. 12011/44/99-BCC dated 21/09/2000 published in the Gazette of India Extraordinary Part I Section I No. 210dated21/09/2000.
xi. Resolution No. 12015/9/2000-BCC dated 06/09/2001.
xii. Resolution No. 12011/1/2001-BCC dated 19/06/2003.
xiii. Resolution No. 12011/4/2002-BCC dated 13/01/2004.
xiv. Resolution No. 12011/9/2004-BCC dated 16/01/2006 published in the Gazette of India Extraordinary Part I Section I No. 210 dated 16/01/2006.

Shri / Smt. / Kum. _____

and / or his family ordinarily reside(s) in the _____

District / Division of _____ State. This is also to certify that he/ she does not belong to the persons/sections (Creamy Layer) mentioned in Column 3 of the Schedule to the Government of India, Department of Personnel & Training O.M. No. 36012/22/93-Estt.(SCT) dated 08/09/93 which is modified vide OM No. 36033/3/2004 Estt. (Res.) dated 09/03/2004.

District Magistrate / Deputy Commissioner / Competent Authority
Seal

Dated: _____

NOTE:

a. The term 'Ordinarily' used here will have the same meaning as in Section 20 of the Representation of the People Act, 1950.

b. The authorities competent to issue Caste Certificates are indicated below:

   iii. District Magistrate / Additional Magistrate / Collector / Deputy Commissioner / Additional Deputy Commissioner / Deputy Collector / Ist Class Stipendiary Magistrate / Sub-Divisional magistrate / Taluka Magistrate / Executive Magistrate / Extra Assistant Commissioner (not below the rank of Ist Class Stipendiary Magistrate).

   iv. Chief Presidency Magistrate/ Additional Chief Presidency Magistrate/Presidency Magistrate.

   v. Revenue Officer not below the rank of Tehsildar' and

   vi. Sub-Divisional Officer of the area where the candidate and / or his family resides.

Declaration/undertaking - for OBC Candidates only

I, _____ son/daughter of Shri _____ resident of village/town/city _____ _____ district _____ State _____ hereby declare that I belong to the _____ community which is recognized as a backward class by the Government of India for the purpose of reservation in services as per orders contained in Department of Personnel and Training Office Memorandum No.36012/22/93- Estt. (SCT), dated 8/9/1993. It is also declared that I do not belong to persons/sections (Creamy Layer) mentioned in Column 3 of the Schedule to the above referred Office Memorandum, dated 8/9/1993, which is modified vide Department of Personnel and Training Office Memorandum No.36033/3/2004 Estt.(Res.) dated 9/3/2004.

Signature of the Candidate

Place: _____

Date: _____

Person with Disability Sub-Category

For admission to seat reserved for Differently Abled Person (PwD) sub-category, the candidate must produce the following certificates in original at the time of document verification for PwD candidates:

a. A certificate of physical disability issued by a duly notified Medical Board of a District/ Government Hospital set up for examining the physically challenged candidates under the provision of the Person with Disability (equal opportunities, protection of rights and full participation) Act 1995.The certificate should indicate the extent (i.e. percentage) of the physical handicap and should bear the Photograph of the candidate concerned. The certificate should be countersigned by one of the Doctors constituting the Board issuing the certificates.

b. A certificate duly recommended by Vocational Rehabilitation Centre for the Handicapped, 9 - 11 Vikas Marg, Karkardooma, Delhi 110092.

Certificate for Person with Disability
To be issued by Medical Board from Government Hospital

Name of the candidate: Mr./Ms.*_____

Father's Name:_____

Permanent Address:_____

Percentage loss of earning capacity (in words): _____

_____

Whether the candidate is otherwise able to carry on the studies and perform the duties of an engineer/architect satisfactorily: _____.

Name of the disease-causing handicap: _____

Whether handicap is temporary or permanent: _____

Whether handicap is progressive or non-progressive: _____

The candidate is FIT / UNFIT to pursue further studies.

(*Strike out whichever is not applicable)

Member | Member | Principal Medical Officer (Orthopaedic Specialist) Seal of Office:

Date: _____

NOTE:

1. The medical board must have one orthopaedic specialist as its member.
2. Candidate having temporary or progressive handicap will not be considered against the seats.

Government of.....

(Name & Address of the authority issuing the certificate)

Income & Asset Certificate to be Produced by Economically Weaker Sections

Certificate No. _____

Date: _____

VALID FOR THE YEAR_____

This is to certify that Shri/Smt./Kumari_____ son/daughter/wife of _____ permanent resident of_____ Village/Street_____ Post Office_____ District_____ in the State/Union Territory_____ Pin Code_____ whose photograph is attested below belongs to Economically Weaker Sections, since the gross annual income* of his/her family** is below Rs. 8 lakh (Rupees Eight Lakh only) for the financial year_____. His/her family does not own or possess any of the following assets***:

i. 5 acres of agricultural land and above;
ii. Residential flat of 1000 sq. ft. and above;
iii. Residential plot of 100 sq. yards and above in notified municipalities;
iv. Residential plot of 200 sq. yards and above in. areas other than the notified municipalities.

Shri/Smt./Kumari_____ belongs to the_____ caste which is not recognized as a Scheduled Caste, Scheduled Tribe and Other Backward Classes (Central List)

Name _____ Signature with seal of Office

Designation_____

*Note 1: Income covered all sources i.e. salary, agriculture, business, profession, etc.

**Note 2:The term 'Family" for this purpose include the person, who seeks benefit of reservation, his/her parents and siblings below the age of 18 years as also his/her spouse and children below the age of 18 years.

***Note 3: The property held by a "Family' in different locations or different places/cities have been clubbed while applying the land or property holding test to determine EWS status.

INCOME AND ASSET CERTIFICATE ISSUING AUTHORITY

The Income and Asset Certificate issued 'by any one of the following authorities in the prescribed format

as given above shall only be accepted as proof of candidate's claim as 'belonging to EWS: -

i. District Magistrate/Additional District Magistrate/ Collector/ Deputy Commissioner/ Additional Deputy Commissioner/ 1st Class Stipendiary Magistrate/ Sub-Divisional Magistrate/ Taluka Magistrate/ Executive Magistrate/ Extra Assistant Commissioner,
ii. Chief Presidency Magistrate/Additional Chief Presidency Magistrate/ Presidency Magistrate,
iii. Revenue Officer not below the rank of Tehsildar and
iv. Sub-Divisional Officer or the area where the candidate and/or his family normally resides.

Certificate for Availing Admission Against Kashmiri Migrant Quota

KASHMIRI MIGRANT QUOTA

(To be submitted at the time of admission)

Certified that Shri/ Km/Smt. _____

son/daughter/wife of _____

resident of _____

is registered as migrant from Jammu and Kashmir. The registration number is _____ dated _____.

It is also certified that Shri/ Km/Smt. _____

Is registered in Delhi/ _____ as J & K Migrant on _____.

Name & Signature of
Deputy Commissioner/ Competent authority
(Office stamp)

Place: _____

Date: _____

Note: No Document other than this will be accepted by the University for claiming reservation against the Kashmiri Migrant Seat.

DELHI TECHNOLOGICAL UNIVERSITY

For EWS Category Candidates Only

Department Applied For _____

Programme Applied For _____

Undertaking

I _____ son/daughter of Shri_____

resident of village/town/city _____district _____

State _____ hereby declare that I belong to EWS Category as notified by Government.

I also declare that the condition of status / annual income of my parents is within prescribed limits for EWS as on the financial year ending on March 31, 2024. I shall submit a fresh EWS certificate valid for the year 2023-24 by 25 July 2024.

Signature of the Candidate: _____

Name of the candidate: _____

Application No.: _____

Place: _____

Date: _____

DELHI TECHNOLOGICAL UNIVERSITY

For OBC Category Candidates Only

(Required from candidates seeking admission on part-time basis)

Department Applied For _____

Programme Applied For _____

Undertaking

I _____ son/daughter of Shr_____

resident of village/town/city _____district _____

State _____ hereby declare that I belong to OBC Category as notified by Government.

I also declare that the condition of status / annual income of my parents is within prescribed limits for the 'Non-Creamy Layer' as on the financial year ending on March 31, 2024. I shall submit the OBC-NCL Category certificate valid for the year 2024-25 by 25 July 2024.

Signature of the Candidate: _____

Name of the candidate: _____

Application No.: _____

Place: _____

Date: _____

9. SYLLABUS FOR ADMISSION TEST

1. Department of Applied Chemistry (DAC)

Introduction of Polymer Science and Technology, Polymer, Monomer, Polymer Chemistry, Addition Polymerization, Condensation Polymerization, Thermoplastic Polymers, Thermosetting Polymers, Molecular Weight of Polymers, Common Polymers, Their Synthesis, Properties and Applications such as Poly Ethylene, Poly Propylene, Poly Vinyl Chloride, Poly Styrene, Poly Methyl Methacrylate, Poly Carbonate, Poly Amides, Poly Esters, Epoxy Resins.

Basics of Thermodynamics, First Law of Thermodynamics, Type of Systems, Internal Energy, Enthalpy, Work, Heat, Reversible and Non-Reversible Systems, Second Law of Thermodynamics, Carnot Engines, Zeroth Law of Thermodynamics, Maxwell Thermodynamic Relations.

Types of fluids, Types of Flow, Reynolds Number, Newton's Law of Viscosity, Newtonian and Non- Newtonian Fluids, Power Law, Thixotropic Fluids, Dilatant Fluids, Bingham Plastic Fluids, Equation of Continuity. Mechanical Properties Of Materials, Stress-Strain Behavior, Hook's Law of Elasticity, Young's Modulus, Tensile Properties, Impact Strength, and Hardness.

Linear Algebra: Matrix Algebra, Systems of Linear Equations. Calculus: Functions of a Single Variable, Limit, Continuity and Differentiability, Partial Derivatives, Total Derivative, Maxima and Minima, Line, Surface and Volume Integrals. Differential Equations: First-Order Equations (Linear and Nonlinear).

2. Department of Applied Physics (DAP)

Solid State Materials: Introduction, Crystal structures, Unit cells, Crystal systems, Crystallographic point, direction and planes, Miller Indices, X-rays Diffraction, Magnetic properties of materials. Types of magnetic materials. Meissner effect, Type I and II superconductors, High temperature superconductors, BCS theory, Applications of Superconductors.

Quantum Mechanics: Failure of classical mechanics, Introduction to quantum mechanics, Wave function and its properties, Probability density, Schrodinger equations, Eigenvalues and Eigen-functions, Expectation values, Particle in a box (Infinite/Finite potential well), Tunneling effect, Photoelectric effect, Compton e ffect, Pair production, Phase and group velocities, Uncertainty principle and its applications.

Statistical Mechanics: Statistical distribution, Maxwell-Boltzmann statistics, Fermi-Dirac statistics Bose-Einstein statistics, Free electron in a metal and Fermi energy.

Thermodynamics: Introduction, Laws of thermodynamics, Thermodynamics processes, Thermodynamic potentials and their interrelations, Carnot cycle theorem, Temperature entropy diagram, Maxwell's thermodynamical relations.

Electromagnetics: Introduction, Gauss divergence and Stokes theorem, Poission's and Lapalce's equations, Maxwell's equations, Electromagnetic wave in free space, Dielectric and conducting media, Poynting theorem.

Lasers: Basic principle, Characteristics of lasers, Einstein coefficients, Spontaneous and stimulated emission, Spatial and temporal coherence, Ruby, He-Ne and semiconductor lasers, Applications of lasers.

Fibre Optics: Basic principle, Light propagation in fibers, Numerical aperture, Single and multi-modes fiber, Step and graded Index fibers, Signal dispersion

in optical fibers, Transmission losses, Applications of fibers.

Semiconductors: Elemental and compound semiconductors, Intrinsic and extrinsic semiconductors, Energy bands, Direct and indirect semiconductors, Effective mass, Fermi level, Statistics of electron and hole concentration, Temperature dependence of carrier concentrations, Conductivity and mobility, Hall effect in semiconductors, PN junction diodes, NPN/PNP transistors, BJT and FET.

Nuclear Physics: Binding energy, Binding energy curve, Liquid drop model, Radioactivity, Nuclear fission and fusion.

3. Department of Biotechnology (DBT)

Molecules and their Interaction Relevant to Biology: Structure and functions of biomolecules; Carbohydrates; Fatty acids; Lipids; Amino acids; Proteins; Nucleic acids – DNA, mRNA, tRNA, rRNA; Hormones; Vitamins; Enzymes; Bioenergetics; Cell metabolism; Protein-protein and protein-DNA interactions

Cellular Organization: Cell theory; Cell as basic unit of life; Hierarchy of cell organization; Structure and organization of prokaryotic and eukaryotic cells; Structure and function of cell organelles; Biomembranes; Cytoskeletal elements; Chromosome structure; Karyotype; Chromatin organization

Fundamental Processes: Photosynthesis; Cellular respiration; Movement through cell membrane; Nutrition; Blood clotting; Human physiological systems; Replication; Transcription; Translation; DNA repair mechanisms; Plant physiology; Bacterial growth; Microbial genetics, Secondary metabolites

Cell Communication and Cell Signaling: Tight, adherens and communicating cell junctions; Cell adhesion molecules; Cadherins and Integrins; Extracellular matrix; Cell cycle; Basics of cancer; Basics of cell signaling; Major signaling pathways

Developmental Biology and Evolution: Stages of development; Mechanism of differentiation; Germ layers; Potency; Morphogenetic movements; Early and late development in model organisms; Cell division; Gametogenesis and fertilization in animals and flowering plants; Embryology; Seed germination; Dormancy; Evolution and natural selection; Mendel's law of heredity; Evidences of DNA as genetic information carrier; Hardy-Weinberg law; Extra-chromosomal inheritance; Sex-linked inheritance in humans; Mutations

Plant and Animal Biotechnology: Plant tissue culture techniques; Totipotency; Organogenesis and Somatic embryogenesis; Suspension culture; Protoplast isolation and somatic hybridization; Production of secondary metabolites; Basic techniques in animal cell and organ culture; Bioreactors for large scale culture of animal cells; Stem cells; Transgenic plants and animals

Immunology and Vaccines: Immunity; Antigen; Structure of antibody; Hapten; Antigen-antibody interaction, Introduction to antigen presentation; Role of MHC; Complement system; Bacterial diseases of humans; Types of vaccines; Immunization; Recombinant vaccines

Diversity of Life Forms: General characteristics of life forms; General characteristics of bacteria, fungi, algae, Microbial growth curve; plant and animal viruses; Classification of plant and animal kingdom

Ecological Principles and Environmental Biology: Ecosystem; Ecological relationships; Habitat and niche; Ecology of ecosystems; Air, water and soil pollution; Green house effect and global warming; Noise pollution; Pollution abatement; Waste water treatment; Disposal of solid wastes; Biogeochemical cycles of elements;

Bioremediation; Bioleaching; Biopesticides; Biofertilizers

Applied Biology: Basics of fermentation technology; Microbes in industry; Biosensors; Biofuels; Principles of gene cloning; Methods of gene transfer; Application of biology in agriculture, health, industry and environment sectors

Methods in Biology: Basics of Centrifugation; Electrophoresis; Chromatography; Microscopy; UV-Visible spectrophotometry; Radiotracer technique; PCR; DNA sequencing; Southern blotting; Tests of significance; Analysis of variation; Correlation and regression; Hybridoma technology; Basic techniques in bioinformatics

Bioinformatics: Sequence and Structural Databases (NCBI, GenBank, EMBL, DDBJ, PDB); SNP databases; Visualization tools- Pymol, VMD; Functional Annotation; Local and Global Alignment; Phylogenetics; Pharmacogenomics; Machine learning

Inheritance Biology: Mendelian principles, Extensions of Mendelian principles, Gene mapping methods, Extra chromosomal inheritance, Human genetics, Mutations, Structural and numerical alterations of chromosomes

4. Department of Civil Engineering (DCE)

Engineering Mechanics: System of forces, free-body diagrams, equilibrium equations; Internal forces in structures; Frictions and its applications; Centre of mass; Free Vibrations of undamped SDOF system.

Solid Mechanics: Bending moment and shear force in statically determinate beams; Simple stress and strain relationships; Simple bending theory, flexural and shear stresses, shear centre; Uniform torsion, Transformation of stress; buckling of column, combined and direct bending stresses.

Structural Analysis: Statically determinate and indeterminate structures by force/ energy methods; Method of superposition; Analysis of trusses, arches, beams, cables and frames; Displacement methods: Slope deflection and moment distribution methods; Influence lines; Stiffness and flexibility methods of structural analysis.

Construction Materials and Management: Construction Materials: Structural Steel – Composition, material properties and behaviour; Concrete - Constituents, mix design, short-term and long-term properties. Construction Management: Types of construction projects; Project planning and network analysis - PERT and CPM; Cost estimation.

Concrete Structures: Working stress and Limit state design concepts; Design of beams, slabs, columns; Bond and development length; Prestressed concrete beams.

Steel Structures: Working stress and Limit state design concepts; Design of tension and compression members, beams and beam- columns, column bases; Connections - simple and eccentric, beam-column connections, plate girders and trusses; Concept of plastic analysis -beams and frames.

Soil Mechanics: Three-phase system and phase relationships, index properties; Unified and Indian standard soil classification system; Permeability - one dimensional flow, Seepage through soils – two - dimensional flow, flow nets, uplift pressure, piping, capillarity, seepage force; Principle of effective stress and quicksand condition; Compaction of soils; One- dimensional consolidation, time rate of consolidation; Shear Strength, Mohr's circle, effective and total shear strength parameters, Stress-Strain characteristics of clays and sand; Stress paths.

Foundation Engineering: Sub-surface investigations - Drilling bore holes,

sampling, plate load test, standard penetration and cone penetration tests; Earth pressure theories - Rankine and Coulomb; Stability of slopes – Finite and infinite slopes, Bishop's method; Stress distribution in soils – Boussinesq's theory; Pressure bulbs, Shallow foundations – Terzaghi's and Meyerhoff'sbearing capacity theories, effect of water table; Combined footing and raft foundation; Contact pressure; Settlement analysis in sands and clays; Deep foundations – dynamic and static formulae, Axial load capacity of piles in sands and clays, pile load test, pile under lateral loading, pile group efficiency, negative skin friction.

Fluid Mechanics: Properties of fluids, fluid statics; Continuity, momentum and energy equations and their applications; Potential flow, Laminar and turbulent flow; Flow in pipes, pipe networks; Concept of boundary layer and its growth; Concept of lift and drag. Hydraulics: Forces on immersed bodies; Flow measurement in channels and pipes; Dimensional analysis and hydraulic similitude; Channel Hydraulics - Energy-depth relationships, specific energy, critical flow, hydraulic jump, uniform flow, gradually varied flow and water surface profiles.

Hydrology: Hydrologic cycle, precipitation, evaporation, evapo-transpiration, watershed, infiltration, unit hydrographs, hydrograph analysis, reservoir capacity, flood estimation and routing, surface run-off models, ground water hydrology - steady state well hydraulics and aquifers; Application of Darcy's Law.

Irrigation: Types of irrigation systems and methods; Crop water requirements - Duty, delta, evapotranspiration; Gravity Dams and Spillways; Lined and unlined canals, Design of weirs on permeable foundation; cross drainage structures.

Water and Waste Water Quality and Treatment: Basics of water quality standards – Physical, chemical and biological parameters; Water quality index; Unit processes and operations; Water requirement; Water distribution system; Drinking water treatment. Sewerage system design, quantity of domestic wastewater, primary and secondary treatment. Effluent discharge standards; Sludge disposal; Reuse of treated sewage for different applications

5. Department of Computer Science and Engineering/ Department of Information Technology/ Department of Software Engineering (DCS)

Section 1: Engineering Mathematics

Discrete Mathematics: Propositional and first order logic. Sets, relations, functions, partial orders and lattices. Monoids, Groups. Graphs: connectivity, matching, coloring. Combinatorics: counting, recurrence relations, generating functions.

Linear Algebra: Matrices, determinants, system of linear equations, eigenvalues and eigenvectors decomposition.

Calculus: Limits, continuity and differentiability. Maxima and minima. Mean value theorem. Integration.

Probability and Statistics: Random variables. Uniform, normal, exponential, poison and binomial distributions. Mean, median, mode and standard deviation. Conditional probability and Bayes theorem.

Section 2: Digital Logic Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point).

Section 3: Computer Organization and Architecture Machine Instructions and addressing modes. ALU, data-path and control unit. Instruction pipelining pipeline hazards. Memory hierarchy: cache, main memory and secondary storage; I/O interface (Interrupt and DMA mode).

Section 4: Programming and Data Structures Programming in C. Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs.

Section 5: Algorithms Searching, sorting, hashing. Asymptotic worst-case time and space complexity. Algorithm design techniques: greedy, dynamic programming and divide-and-conquer. Graph traversals, minimum spanning trees, shortest paths

Section 6: Theory of Computation Regular expressions and finite automata. Context-free grammars and push-down automata. Regular and context-free languages, pumping lemma. Turing machines and undecidability.

Section 7: Compiler Design Lexical analysis, parsing, syntax-directed translation. Runtime environments. Intermediate code generation. Local optimization, Data flow analyses: constant propagation, liveness analysis, common sub expression elimination.

Section 8: Operating System, System calls, processes, threads, inter-process communication, concurrency and synchronization. Deadlock. CPU and I/O scheduling. Memory management and virtual memory. File systems.

Section 9: Databases ER-model. Relational model: relational algebra, tuple calculus, SQL. Integrity constraints, normal forms. File organization, indexing (e.g., B and B+ trees). Transactions and concurrency control.

Section 10: Computer Networks Concept of layering: OSI and TCP/IP Protocol Stacks; Basics of packet, circuit and virtual circuit-switching; Data link layer: framing, error detection, Medium Access Control, Ethernet bridging; Routing protocols: shortest path, flooding, distance vector and link state routing; Fragmentation and IP addressing, IPv4, CID notation, Basics of IP support protocols (ARP, DHCP, IMP), Network Address Translation (NAT); Transport layer: flow control and congestion control, UP, TCP, sockets; Application layer protocols: DNS, SMTP, HTTP, FTP, Email.

6. Department of Electrical Engineering (DEE)

Section 1 : Electric Circuits

Network graph, KCL, KVL, Node and Mesh analysis, Transient response of DC and AC networks, sinusoidal steady-state analysis, resonance, passive filters, Ideal current and voltage sources, Thevenin's theorem, Norton's theorem, Superposition theorem, Maximum power transfer theorem, Two-port networks, Three phase circuits, Power factor in AC circuits.

Section 2 : Electromagnetic Fields

Coulomb's Law, Electric field intensity, Electric flux density, Gauss's law, Divergence, Curl, Electric field and potential due to point, line, plane and spherical charge distributions, Effect of dielectric medium, Capacitance of simple configurations, Bio-Savart's law, Ampere's law, Faraday's law, Lorentz force, Inductance, Magneto motive force, Reluctance, Magnetic circuits, Self and mutual inductance of simple configurations.

Section 3 : Signals and Systems

Representation of continuous and discrete time signals, Shifting and scaling operations, Linear time invariant systems, causal systems, BIBO stability criterion, Fourier series representation of continuous time periodic signals, Nyquist sampling theorem, Applications of Fourier transform, Laplace transform and Z-Transform.

Section 4 : Electrical Machines

Single phase transformer : equivalent circuit, phasor diagram, open circuit and short circuit tests, regulation and efficiency; Three phase transformer: connections, parallel operation; Auto-transformer; Electromechanical energy conversion principles, DC machines : separately excited, series and shunt, motoring and generating mode of operation and their

characteristics, starting and speed control of dc motors; Three phase Induction motors : principle of operation, types, performance, torque-speed characteristics, no-load and blocked rotor tests, equivalent circuit, starting and speed control; Operating principle of single phase induction motors; Synchronous machines: cylindrical and salient pole machines, performance, regulation and parallel operation of generators, starting of synchronous motor; Types of losses and efficiency calculations of electric machines.

Section 5 : Power systems

Power generation concepts, AC and DC transmission concepts, Models and performance of transmission lines and cables, Series and shunt compensation, Electric field distribution and insulators, Distribution systems, Per-unit quantities, Bus admittance matrix, Gauss-Seidel and Newton-Raphson load flow methods, Voltage and Frequency control, power factor correction, Symmetrical components, Symmetrical and unsymmetrical fault analysis, Principles of over-current, differential and distance protection; Circuit breakers, System stability concepts, Equal area criterion.

Section 6 : Control Systems

Mathematical modeling and representation of systems, Feedback principle, transfer function, Block diagrams and Signals flow graphs, Transient and Steady-state analysis of linear time invariant systems, Routh-Hurwitz and Nyquist criteria, Bode plots Root loci, Stability analysis, Lag, Lead and Lead-Lag compensators; P, PI and PID controllers; State space model, State transition matrix.

Section 7 : Electrical and Electronic Measurements

Bridges and potentiometers; Measurement of voltage, current, power, energy and power factor; Instrument transformers; Digital voltmeters and multimeters; Phase, Time and Frequency measurement; Oscilloscopes, Error analysis.

Section 8 : Analog and Digital Electronics

Characteristics of diodes, BJT, MOSFET; simple diode circuits : clipping, clamping, rectifiers; Amplifiers: Biasing, Equivalent circuit and Frequency response; Operational amplifiers : Characteristics and applications; Combinational and Sequential logic circuits; multiplexer; demultiplexer; 8085 microprocessor: Architecture, programming and Interfacing.

Section 9 : Power Electronics

Characteristics of semiconductor power devices: Diode, Thyristor, Triac, GTO, MOSFET, IGBT; DC to DC conversion; Buck, Boost and Buck-Boost converters; Single and three phase configuration of uncontrolled rectifiers; Line commutated thyristor based converters; Bidirectional AC to DC voltage source converters; Issues of line current harmonics; Power factor, Distortion factor of AC to DC converters; Single phase and three phase inverters; Sinusoidal pulse width modulation.

7. Department of Electronics and Communication Engineering (DEC)

Engineering Mathematics:

Linear Algebra: Vector space, basis, linear dependence and independence.

Calculus: Taylor series.

Probability and Statistics: mean, mode, median and standard deviation, joint and conditional probability.

Networks, Signals and Systems

Circuit Analysis: Node and mesh analysis, superposition, Thevenin theorem and Norton's theorem. Steady state sinusoidal analysis using phasors, complex power, maximum power transfer. Time and frequency domain analysis of linear circuits: RL, RC, RLC circuits. Solution of network equations using Laplace transform. Linear 2-port network parameters. Continuous-time signals: Fourier series and Fourier transform representations, sampling theorem and applications.

Discrete-time signals: Discrete- time Fourier transform (DTFT), DFT, z-transform, interpolation of discrete-time signals; LTI systems; definition and properties causality, stability, impulse response, convolution, pole and zeros, frequency response.

Electronic Devices

Energy bands in intrinsic and extrinsic silicon; equilibrium carrier concentration, direct and indirect band gap semiconductors. Carrier transport: diffusion current, drift current, mobility and resistivity, generation and recombination of carriers; Poisson and continuity equations. P-N junction, Zener diode, BJT, MOS capacitor, MOSFET, LED, photo diode and solar cell.

Analog Circuits

Diode circuits; clipping, clamping and rectifiers.

BJT and MOSFET Amplifiers: Biasing, ac coupling, small signal analysis, frequency response. Current mirrors and differential amplifiers.

Op-amp circuits: Amplifiers, summers, differentiators, integrators, active filters, Schmitt triggers and oscillators.

Digital Circuits:

Number systems: binary, integer and floating-point numbers. Combinatorial circuits: Boolean algebra, minimization of functions using Boolean identities and Karnaugh map, logic gates and their static CMOS implementations, arithmetic circuits, code converters, multiplexes, decoders.

Sequential circuits: latches and flip-flops, counters, shift-registers and finite state machines. Data converters: sample and hold circuits, ADCs and DACs.

Control Systems

Basic control system components; Feedback principle; Transfer function; Block diagram representation; Signal flow graph; Transient and steady-state analysis of LTI systems; Frequency response; Routh-Hurwitz and Nyquist stability criteria; Bade and root-locus plots; Lag, lead and lag-lead compensation; State variable model and solution of state equation of LTI systems.

Communication System:

Random processes: autocorrelation and power spectral density, properties of white noise, filtering of random signals through LTI system.

Analog communications: amplitude modulation and demodulation, angle modulation and demodulation, spectra of AM and FM, superheterodyne receivers, circuits.

Information theory: entropy, mutual information and channel capacity theorem.

Digital communications: PCM, DPCM, digital modulation schemes,(ASK,BPSK, FSK), bandwidth, MAP, ML decoding, matched filter receiver, SNR and BER for digital modulation, inter-symbol interference

Electromagnetics:

Maxwell's equations: - differential and integral forms and their interpretation, boundary conditions, wave equation, Poynting vector.

Plane waves and properties: reflection and refraction, polarization, phase and group velocity, propagation through various media, skin depth.

Transmission lines: equations, characteristic impedance, impedance matching, impedance transformation, S-parameters, Smith char. Rectangular and circular waveguides, dipole and monopole antennas.

8. Department of Environmental Engineering (DEN)

Section 1: Mathematics Foundation

Linear Algebra: Determinants and matrices, Systems of linear equations, Eigenvalues and eigenvectors.

Calculus: Functions, Limit, Continuity, Differentiability, Local maxima and minima, Taylor series, Tests for convergence, Definite and Indefinite integrals, Application of definite integral to obtain area and volume, Partial and total derivatives.

Differential Equations: Linear and non-linear first order ordinary differential equations (ODE), Higher order linear ODEs with constant coefficients, Cauchy's and Euler's equations, Laplace transform and its application in solving linear ODEs.

Probability and Statistics: Descriptive statistics, Measurement of central tendency, Dispersion, Skewness and kurtosis, Probability concepts, Conditional probability, Bayes theorem, Risk and reliability, Probability distributions, Correlation, Single and multiple regression models, Hypothesis testing (t-test, F-test, chi-square test).

Section 2: Environmental Chemistry

Fundamentals of Environmental Chemistry: Covalent and ionic bonding; Chemical equations, concentration and activity; Structure and chemistry of organic molecules; Radioactivity of elements; Chemical equilibria; Thermodynamics and kinetics of chemical reactions.

Principles of water chemistry: Water quality parameters and their measurement; Acid-base equilibria; Buffer solution; Carbonate system; Solubility of gases in water; Complexation, precipitation, and redox reactions; Inorganic and organic contaminants in water and their speciation.

Soil chemistry; Organic matter, nitrogen, phosphorous, potassium, cation exchange capacity, base saturation, and sodium absorption ratio.

Atmospheric Chemistry: Composition of the atmosphere; Reactivity of trace substances in the atmosphere; Urban atmosphere—smog and particulate pollution; Chemistry of ozone formation; Chemistry of stratosphere.

Section 3: Environmental Microbiology

Prokaryotic and eukaryotic microorganisms; Characteristics of diverse groups of microorganisms; Classification of microorganisms; Microbial diversity; Plant-microbe and soil-microbe interactions; Role of microorganisms in wastewater treatment, bioremediation and biogeochemical cycling.

Cell chemistry and cell biology: Structure of proteins, nucleic acid (DNA & RNA), lipids and polysaccharides; Bonds in biomolecules; Stereoisomerism in biomolecules; Structure of cell; Structure and function of cytoplasmic membrane, cell wall, outer membrane, glycocalyx, chromosomes, endospores, storage products, mitochondria and chloroplasts.

Microbial metabolism: Anabolism and catabolism; Phosphorylation; Glycolysis; TCA cycle; Electron transport chain; Fermentation; Anaerobic respiration; Energy balances; Enzymes and Enzyme kinetics.

Growth and control of microorganisms: Bacterial nutrition and growth; Specific growth rate and doubling time; Monod's model; Types of culture media; Batch and continuous culture; Effects of environmental factors on growth; Control of microbes using physical and chemical methods.

Microbiology and health: Pathogens and modes of transmission; Indicator organisms; Quantification of coliforms using MPN and membrane filtration techniques.

Section 4: Water Resources and Environmental Hydraulics

Global Water Resources: Structure, properties and distribution of water; Water quality; Threats to water resources; Water conservation.

Surface Water Resources: Hydrological cycle and water balance - precipitation, infiltration, evapotranspiration, runoff; Flow hydrographs; Unit hydrographs; Stage-

discharge relationship; Reservoir capacity; Reservoir and channel routing; Surface run-off models; Surface water management; Rain water harvesting and storage.

Groundwater Resources: Geologic formations as aquifers; Vadose and saturated zones; Confined and unconfined aquifers and their parameters - porosity, permeability, transmissivity and storage coefficient; Darcy's law and applications; Steady state well hydraulics.

Environmental Hydraulics: Concepts of mechanics; Properties of fluids; Pressure measurement; Hydrostatic force on surfaces; Buoyancy and flotation; Laminar and turbulent flow; Flow through pipes; Pipe networks; Boundary layer theory; Forces on immersed bodies; Flow measurement in channels and pipes; Kinematics of flow; Continuity, momentum and energy equations; Channel hydraulics - specific energy, critical flow, hydraulic jump, rapid and gradually varied flow; Design of lined and unlined channels.

Section 5: Water & Wastewater Treatment and Management

Water and wastewater quality parameters; Eutrophication and thermal stratification in lakes; River pollution - Oxygen sag curve.

Water treatment methods - screening, sedimentation with and without coagulation, filtration, desalination, disinfection; Water distribution and storage

Point and non-point sources of wastewater; Population forecasting methods; Design of sewer and storm water sewers; Sewer appurtenances; Preliminary, primary, secondary and tertiary sewage treatment; Sludge generation, processing and disposal methods; Sewage farming.

Sources and characteristics of industrial effluents; Concept of Common Effluent Treatment Plants (CETP); Wastewater recycling and zero liquid discharge.

Kinetics and reactor design: Mass and energy balance, Order and rate of reactions, Batch reactors, completely mixed flow reactors, Plug flow reactors.

Section 6: Air and Noise Pollution

Structure of the atmosphere; Natural and anthropogenic sources of pollution; Atmospheric sources, sinks, transport; Indoor air pollution; Effects on health and environment; Air pollution: gases and particulate matter; Air quality standards; Primary and secondary pollutants; Criteria pollutants, ambient and source standards, air quality indices, visibility.

Particulate pollutants: measurement and control methods; Control of particulate air pollutants using gravitational settling chambers, cyclone separators, wet collectors, fabric filters (Bag-house filter), electrostatic precipitators (ESP).

Gaseous Pollutants: Measurement and control methods; Control of gaseous contaminants: absorption, adsorption, condensation and combustion; Control of sulphur oxides, nitrogen oxides, carbon monoxide, and hydrocarbons; Vapour-liquid and vapour-solid equilibria; Diffusion, Fick's law and interfacial mass transfer. Automotive emission controls, fuel quality, diesel particulate filters, catalytic convertors.

Air quality management: Point, line and area sources; Inventory; Influence of meteorology - wind rose diagrams, stability, mixing height, topography, dispersion modelling, monitoring. Noise pollution: Sources; Health effects; Standards; Measurement and control methods.

Section 7: Solid and Hazardous Waste Management

Integrated solid waste management; Waste hierarchy; Rules and regulations for solid waste management in India.

Municipal solid waste management: Sources, generation, characteristics, collection and transportation, waste

processing and disposal (including reuse options, biological methods, energy recovery processes and landfilling).

Hazardous waste management: Characteristics, generation, fate of materials in the environment, treatment and disposal.

Soil contamination and leaching of contaminants into groundwater.

Management of biomedical waste, plastic waste and E-waste: Sources, generation and characteristics; Waste management practices including storage, collection and transfer.

Section 8: Global and Regional Environmental Issues

Global effects of air pollution – Greenhouse gases, global warming, climate change, urban heat islands, acid rain, ozone hole.

Ecology and various ecosystems; Biodiversity; Factors influencing increase in population, energy consumption, and environmental degradation.

Section 9: Environmental Management and Sustainable Development

Environmental Management Systems; ISO14000 series; Environmental auditing: Environmental Impact Assessment; Life cycle assessment; Human health risk assessment

Environmental Law and Policy – Objectives; Polluter pays principle, Precautionary principle; The Water and Air Acts with amendments; The Environment (Protection) Act (EPA) 1986; National Green Tribunal Act, 2010; National Environment Policy; Principles of International Law and International treaties.

Energy and Environment: Energy sources – overview of resources and reserves; Renewable and non-renewable energy sources; Energy-Environment nexus.

Sustainable Development: Definition and concepts of sustainable development; Sustainable development goals; Hurdles to sustainability; Environment and economics.

9. Department of Mechanical Engineering (DME)

Section 1: Engineering Mathematics

Linear Algebra: Matrix algebra, systems of linear equations, eigenvalues and eigenvectors.

Calculus: Functions of single variable, limit, continuity and differentiability, mean value theorems, indeterminate forms; evaluation of definite and improper integrals; double and triple integrals; partial derivatives, total derivative, Taylor series (in one and two variables), maxima and minima, Fourier series; gradient, divergence and curl, vector identities, directional derivatives, line, surface and volume integrals, applications of Gauss, Stokes and Green's theorems.

Differential Equations: First order equations (linear and nonlinear); higher order linear differential equations with constant coefficients; Euler-Cauchy equation; initial and boundary value problems; Laplace transforms; solutions of heat, wave and Laplace's equations.

Complex Variables: Analytic functions; Cauchy-Riemann equations; Cauchy's integral theorem and integral formula; Taylor and Laurent series.

Probability and Statistics: Definitions of probability, sampling theorems, conditional probability; mean, median, mode and standard deviation; random variables, binomial, Poisson and normal distributions.

Numerical Methods: Numerical solutions of linear and non-linear algebraic equations; integration by trapezoidal and Simpson's rules; single and multi-step methods for differential equations.

Section 2: Applied Mechanics and Design

Engineering Mechanics: Free-body diagrams and equilibrium; friction and

its applications including rolling friction, belt-pulley, brakes, clutches, screw jack, wedge, vehicles, etc.; trusses and frames; virtual work; kinematics and dynamics of rigid bodies in plane motion; impulse and momentum (linear and angular) and energy formulations; Lagrange's equation.

Mechanics of Materials: Stress and strain, elastic constants, Poisson's ratio; Mohr's circle for plane stress and plane strain; thin cylinders; shear force and bending moment diagrams; bending and shear stresses; concept of shear centre; deflection of beams; torsion of circular shafts; Euler's theory of columns; energy methods; thermal stresses; strain gauges and rosettes; testing of materials with universal testing machine; testing of hardness and impact strength.

Theory of Machines: Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of linkages; cams; gears and gear trains; flywheels and governors; balancing of reciprocating and rotating masses; gyroscope.

Vibrations: Free and forced vibration of single degree of freedom systems, effect of damping; vibration isolation; resonance; critical speeds of shafts.

Machine Design: Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; principles of the design of machine elements such as bolted, riveted and welded joints; shafts, gears, rolling and sliding contact bearings, brakes and clutches, springs.

Section 3: Fluid Mechanics and Thermal Sciences

Fluid Mechanics: Fluid properties; fluid statics, forces on submerged bodies, stability of floating bodies; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation; dimensional analysis; viscous flow of incompressible fluids, boundary layer, elementary turbulent flow, flow through pipes, head losses in pipes, bends and fittings; basics of compressible fluid flow.

Heat-Transfer: Modes of heat transfer; one dimensional heat conduction, resistance concept and electrical analogy, heat transfer through fins; unsteady heat conduction, lumped parameter system, Heisler's charts; thermal boundary layer, dimensionless parameters in free and forced convective heat transfer, heat transfer correlations for flow over flat plates and through pipes, effect of turbulence; heat exchanger performance, LMTD and NTU methods; radiative heat transfer, Stefan-Boltzmann law, Wien's displacement law, black and grey surfaces, view factors, radiation network analysis

Thermodynamics: Thermodynamic systems and processes; properties of pure substances, behavior of ideal and real gases; zeroth and first laws of thermodynamics, calculation of work and heat in various processes; second law of thermodynamics; thermodynamic property charts and tables, availability and irreversibility; thermodynamic relations.

Applications: Power Engineering: Air and gas compressors; vapour and gas power cycles, concepts of regeneration and reheat. I.C. Engines: Air-standard Otto, Diesel and dual cycles. Refrigeration and air-conditioning: Vapour and gas refrigeration and heat pump cycles; properties of moist air, psychrometric chart, basic psychrometric processes. Turbomachinery: Impulse and reaction principles, velocity diagrams, Pelton-wheel, Francis and Kaplan turbines; steam and gas turbines.

Section 4: Materials, Manufacturing and Industrial Engineering

Engineering Materials: Structure and properties of engineering materials, phase diagrams, heat treatment, stress-strain diagrams for engineering materials.

Casting, Forming and Joining Processes: Different types of castings, design of patterns, moulds and cores; solidification and cooling; riser and gating design. Plastic deformation and yield criteria; fundamentals of hot and cold working processes; load estimation for bulk (forging, rolling, extrusion, drawing) and sheet (shearing, deep drawing, bending) metal forming processes; principles of powder metallurgy. Principles of welding, brazing, soldering and adhesive bonding.

Machining and Machine Tool Operations: Mechanics of machining; basic machine tools; single and multi-point cutting tools, tool geometry and materials, tool life and wear; economics of machining; principles of non-traditional machining processes; principles of work holding, jigs and fixtures; abrasive machining processes; NC/CNC machines and CNC programming.

Metrology and Inspection: Limits, fits and tolerances; linear and angular measurements; comparators; interferometry; form and finish measurement; alignment and testing methods; tolerance analysis in manufacturing and assembly; concepts of coordinate-measuring machine (CMM).

Computer Integrated Manufacturing: Basic concepts of CAD/CAM and their integration tools; additive manufacturing.

Production Planning and Control: Forecasting models, aggregate production planning, scheduling, materials requirement planning; lean manufacturing.

Inventory Control: Deterministic models; safety stock inventory control systems.

Operations Research: Linear programming, simplex method, transportation, assignment, network flow models, simple queuing models, PERT and CPM.

10. Department of Geoinformatics Engineering (DGINF)

Basics of Geospatial Science, Geospatial Technologies, Fundamentals of Geoinformatics, Geomatics, Remote Sensing and GIS

Geomatics Engineering- Definition, Importance and its relevance to engineering projects, Multi-concept, Big geospatial data.

Maps - Types of maps, Scales and uses, Plotting accuracy, Map sheet numbering, Coordinates, datums and map projections.

Advance Surveying/GPS/GNSS- Total Stations, GPS/DGPS, Drone, LIDAR Survey, Principles and Components of GPS, NaviC. Data collection methods, DGPS, Errors in observations and corrections DEM/DSM.

Aerial Photogrammetry- Types of photographs, Flying height and scale, Relief (height) displacement, Stereoscopy, 3-D Model, Height determination, Digital Elevation Model (DEM), Slope.

Remote Sensing- Electromagnetic spectrum, Spectral signature, Resolutions Spectral. Spatial, Temporal and Radiometric, Platforms and Sensors, Remote Sensing.

Data Products- Pan, Multispectral, hyperspectral, Microwave, Thermal, Hyperspectral, Introduction to visual and digital image interpretation techniques.

GIS and Web GIS- Introduction, Creation of database (spatial and non-spatial), Vector and Raster data, Spatial analysis-Buffer, Overlay, Applications in infrastructure planning, 3D visualization, Disaster mapping, Land-use change.

Digital Image Processing, - Image acquisition, Image enhancement techniques, Image restoration, color image processing, multi resolution processing, compression, morphological processing, segmentation, parametric and non-parametric methods of classification, soft classification, wavelets, SVM, ANN, CNN, Deep learning/Machine learning, Image processing software

CONTACT US

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Established by the Govt. of NCT of Delhi vide Act 6 of 2009

(Formerly Delhi College of Engineering)