



Department of Applied

Mathematics

Magazine for

AY 2020-21

## **Editorial Board**

Dr. Nilam

Dr. Satyabrata Adhikari

Ms. Shruti Aggarwal

Ms. Vinita Khatri



**A Student-Faculty collaborative efforts**

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## Message from HOD

The Department of Applied Mathematics at DTU, offers courses in mathematics, which is the foundation of all engineering disciplines. In addition to mathematics, the department also offers courses in mathematics and computer engineering.



The Covid-19 pandemic has presented an unprecedented challenge to the world in 2020. As a result, our academic year was drastically altered and colleges were forced to close their doors. Despite this, it is a testament to the resiliency of students and educators that the academic year 2019-2020 was not a complete failure. Through creative problem solving, inventive solutions and hard work, students were able to make the best of their circumstances and graduate with flying colors.

We are immensely proud of the great success our students have achieved in their placements and take immense joy in witnessing their progress. The Department, along with our students, works hard to actively participate in a wide array of social and cultural activities to enhance their learning experience. Our B.Tech. Students are especially motivated and take part enthusiastically in researching different topics to further expand their knowledge base.

I would like to extend my heartiest congratulations to all the students of Mathematics and Computer Engineering who have gained admission into world-famous institutes. I wish them the best of luck and hope that they make the most of their future endeavours.

The Department strives to make our students academically successful and morally strong and responsible citizens of our country. We want to ensure that each student develops into a good human being with the highest principles and values as well as a sense of civic responsibility towards their country.

**Prof. S. Sivaprasad Kumar**

## Achievements/Highlights of the Department:

The Department is renowned for its eminent faculty and motivated students. Our faculty members are highly qualified and experienced in their respective fields, while our students are passionate about learning and exploring new avenues of knowledge. As part of their academic activities, our faculty members and students are constantly engaging in various activities that go beyond the regular curriculum. These activities include research projects, internships, workshops, seminars, conferences, competitions and other initiatives that help them gain valuable skills as well as broaden their understanding of the subject matter. Achievements of the faculty members and students for the academic year 2020-21 are mentioned below:

### Details of Premier Research Awards

Authors	Paper Title	Journal Reference
Anshul Arora, Sateesh K. Peddoju and Mauro Conti	PermPair: Android malware detection using permission pairs	IEEE Transactions on Information Forensics and Security (IEEE), vol. 15, pp. 1968-1982, 2020, Impact Factor: 6.013.
C. P. Singh and Ajay Kumar	Holographic dark energy, matter creation, and cosmic acceleration	Physical Review D (American Physical Society), vol. 102, no. 12, pp.123537, 2020, Impact Factor: 4.833.

## Details of Commendable Research Awards

Authors	Paper Title	Journal Reference
Abhishek Kumar, Manoj Kumar and Nilam	A study on the stability behavior of an epidemic model with ratio dependent incidence and saturated treatment	<i>Theory in Biosciences (Springer)</i> , vol. 139, pp. 225-234, 2020, Impact Factor: 1.303.
Aditya Kaushik, Anil K. Vashishth, Vijayant Kumar and Manju Sharma	A higher order finite element method with modified graded mesh for singularly perturbed two-parameter problems	<i>Mathematical Methods in the Applied Sciences (Elsevier)</i> , vol. 43, no. 15, pp. 8644-8656, 2020, Impact Factor: 1.626.
Anjali Singh, Anjana Gupta and Aparna Mehra	Matrix games with 2-tuple linguistic information	<i>Annals of Operations Research (Springer)</i> , vol. 287, pp. 895-910, 2020, Impact Factor: 2.583.
Ajay Kumar and C. P. Singh	Observational constraints on holographic dark	<i>Astrophysics and Space Science (Springer)</i> , vol. 365, no.

	energy model with matter creation	1, 2020, <i>Impact Factor: 1.430.</i>
<b>C. P. Singh and Simran Kaur</b>	Probing bulk viscous matter dominated model in Brans-Dicke theory	<i>Astrophysics and Space Science (Springer)</i> , vol. 365, no. 1, 2020, <i>Impact Factor: 1.430</i>
<b>C. P. Singh and Ajay Kumar</b>	Quintessence behavior via matter creation cosmology	<i>The European Physical Journal C (Springer)</i> , vol. 80, no. 2, 2020, <i>Impact Factor: 4.389.</i>
<b>Dhirendra Kumar, R. K. Agrawal and Hanuman Verma</b>	Kernel intuitionistic fuzzy entropy clustering for MRI image segmentation	<i>Soft Computing (Springer)</i> , vol. 24, no. 6, pp. 4003-4026, 2020, <i>Impact Factor: 3.050</i>
<b>Goonjan Jain and D.K. Lobiyal</b>	Word sense disambiguation using implicit information.	<i>Natural Language Engineering (Cambridge University Press)</i> , vol. 26, no. 4, pp. 413-432, <i>Impact Factor: 1.465</i>

<p><b>Kanica Goel, Abhishek Kumar and Nilam</b></p>	<p>A deterministic time-delayed SVIRS epidemic model with incidences and saturated treatment</p>	<p><i>Journal of Engineering Mathematics (Springer)</i>, vol. 121, pp. 19-38, 2020, Impact Factor: 1.434.</p>
<p><b>Luckshay Batra and H.C.Taneja</b></p>	<p>Evaluating volatile stock markets using information theoretic measures</p>	<p><i>Physica A: Statistical Mechanics and its Applications (Elsevier)</i>, vol. 537, pp. 122711, 2020, Impact Factor: 2.924.</p>
<p><b>Kanica Goel, Abhishek Kumar and Nilam</b></p>	<p>Nonlinear dynamics of a timedelayed epidemic model with two explicit aware classes, saturated incidences, and treatment</p>	<p><i>Nonlinear Dynamics (Springer)</i>, vol. 101, pp. 1693-1715, 2020, Impact Factor: 4.867.</p>
<p><b>S. Sivaprasad Kumar and Priyanka Goel</b></p>	<p>Starlike functions and higher order subordinations</p>	<p><i>Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales. Serie A. Matemáticas (Springer)</i>, vol. 114, no. 192, 2020, Impact Factor: 1.406.</p>

## Invited Talks/Paper presentations:

The Department is committed to providing its faculty members and students with the opportunity to connect with other Institutes and Universities around the world. Through regular visits, faculty members and students are able to deliver invited talks and present papers at prestigious events.

These visits provide invaluable opportunities for the Department's faculty members and students to learn from their peers, exchange ideas, discuss current trends in their field, and network with potential employers. By engaging in these activities, they are able to gain a better understanding of the research being done in other institutions while providing a platform for them to showcase their own work. The details for the academic year 2020-21 are given below:

### **Invited Talks:**

- **Prof. C.P. Singh** delivered an invited talk on "Viscous Dark Energy Model and its Thermodynamic analysis", in National e-Conference on "Recent Mathematical Innovation Skills in 21st Century" on 27th March, 2021 at Department of Mathematics and IQAC, Sant Gadge Baba Amravati University, Amravati.
- **Prof. C.P. Singh** delivered an invited talk on "Cosmological dynamics and observational consequences in alternative dark energy models" in International Conference of international Academy of Physical Sciences (CONIAPS XXVI) on "Advances in Relativistic Astrophysics and Cosmology (ARAC-2020)" during 18-20, 2020, organized by Department of Mathematics, Sant Longowal Institute of Engineering & Technology (SLIET), Longowal.
- **Dr. Nilam** delivered invited talks "Application of Mathematics in providing solution to real life problems" in three session of National Webinar on Role of Mathematics



in real world problems on 1st May 2021 and 2nd May 2021 organized by Department of Mathematics, School of Technology, Pandit Deendayal Energy University, Gandhinagar, Gujarat.

- **Dr. Nilam** delivered an invited talk "Application of Mathematics in real world problems" on 22nd April 2021 in AICTE - ISTE Sponsored One Week Virtual Refresher Programme On Applied Mathematics 19.04.2021 - 24.04.2021, Department Of Mathematics, M.Kumarasamy College Of Engineering, Karur, India.
- **Dr. Nilam** delivered invited talk on "Effective usage of ICT tools in teaching Mathematics and Research" on 01.03.2021 in AICTE -ISTE sponsored one week online induction/Refresher Programme on Use of ICT in Engineering Education organized by Department of ECE, Maharaja Surajmal Institute of Technology, Delhi from 7th April 2021 - 13th April 2021.
- **Dr. Nilam** delivered an invited talk "Development of Mathematical Models for Infectious diseases" in Refresher course in Mathematics organized by Ministry of Education, Pandit Madan Mohan Malviya National Mission on Teachers and Teaching, Teaching Learning Centre, Ramanujan College, Delhi University, 16th March 2021 - 30th March 2021.
- **Dr. Nilam** delivered invited talk on "Use of ICT tools in teaching Mathematics and Research" on 01.03.2021 in AICTE -ISTE sponsored one week online induction/Refresher Programme on Use of ICT in Engineering Education organized by Department of ECE, Maharaja Surajmal Institute of Technology, Delhi from 24th Feb - 2nd March 2021.
- **Dr. Nilam** delivered invited talk on "Causes and control of Infectious Diseases through Mathematical Models" on 21.07.2020 in Three days National Webinar Series organized by Department of Mathematics, Bapuji Institute of Engineering and Technology (BIET) Davangere, Karnataka.

- **Dr. Nilam** delivered a talk on "Mathematical modelling approach to cause and control strategy for infectious disease" in Webinar entitled "Mathematical Modeling and its real world applications" organized by Department of Mathematics and IQAC of Hooghly Women's College, West Bengal on 8th September 2020.
- **Mr. Anshul Arora** delivered an Expert Lecture on "Mobile Malware Detection" in the FDP on "Cybersecurity and Cryptography", organized by Indian Institute of Technology Roorkee, from October 7-11, 2020.
- **Dr. Satyabrata Adhikari** delivered an invited talk on "Quantum Correlation and Absolute separable state" in the Online Symposium on "Quantum Information and Computation (Quantum Talks)" held online at International Institute of Information Technology, Hyderabad, India, during June, 2020.
- **Dr. Satyabrata Adhikari** delivered an invited lecture on "Beauty and Power of Linear Algebra" in the National webinar "Recent Advances in Mathematical Sciences" held online at Atma Ram Sanatan Dharma College, Delhi, India, during February, 2021.

#### **Paper presentations:**

- **Mr. Jamkhongam Touthang** presented a paper entitled "Contributions of Mathematical Sciences to Industry" organized by National Conference on Emerging Trends in Mathematical Sciences for Industry and Environment at Department of Mathematics, Shaheed Bhagat Singh College, University of Delhi, Delhi during 27-01-2020 to 29-01-2020.
- **Ms. Payal** presented a paper entitled "Dynamical Balanceness in a Signed Petri Net" organized by International Conference on Recent Advances in Mathematical Sciences at Jaypee Institute of Information Technology, Noida during 09-01-2020 to 11-01-2020.

- **Monika Choudhary** presented a paper entitled "The parameter uniform defect correction method on a novel Shishkin type mesh for linear singularly perturbed convection-diffusion problem" organized by ICIIIE-2020, University Institute of Engineering and Technology, Panjab University, Chandigarh, Teqip, Online during August 28-30,2020,
- **Luckshay Batra** presented a paper entitled "Optimizing Financial Markets using Generalized Information Theoretical Measures" organized by International Conference on Recent Trends in Mathematics and Its Applications to Graphs, Networks and Petri Nets (ICRTMA-GPN-2020), Delhi, India, School of Computational and Integrative Sciences, JNU during 20-24 July 2021,
- **Luckshay Batra** presented a paper entitled "Comparative Study of Information Measures in Portfolio Optimization Problems" organized by IEEE SSIT Norbert Wiener in the 21st Century-Virtual Conference, Chennai, India, Anna University during 22-25 July 2021.
- **Km. Lipi** presented a paper entitled "Bézier variant of certain exponential type operators" International Conference on Advances in Multi-Disciplinary Sciences and Engineering Research (ICAMSER-2021), Chitkara University, Himachal Pradesh, online during July 2-3, 2021.

### **Publications-**

Apart from the research publications which have been awarded by DTU for their excellence in publication category, faculty members and research scholars have published their research work in reputed journals/conferences. Details of the current academic year are given below:

- **A. Gupta, H. Ladia, S. Bansal, and A. Arora**, "Brave Men and Emotional Women: Analyzing Gender Bias in Bollywood Songs", Proceedings of International Conference on Computational Intelligence and Data Engineering, 2021, pp. 143-153.
- **Aditya Kaushik, Manju Sharma, Aastha Gupta, Monika Choudhary**, "Iterative analytic approximation to one-dimensional nonlinear reaction-diffusion equations", *Mathematical Methods in Applied Sciences*, 44,12152-12168 (2020).
- **Ajay Kumar and C.P. Singh**, "Viscous Ricci dark energy model with matter creation: exact solution and observational tests", *Pramana Journal of Physics*, 94, 129 (2020).
- **Anuma Garg, Satyabrata Adhikari**, "Teleportation criteria based on maximum eigenvalue of the shared  $d \otimes d$  dimensional mixed state: Beyond Singlet Fraction", *International Journal of Theoretical Physics*, 60,1038 (2021).
- **C.P. Singh and Milan Srivastava**, "New holographic dark energy model with bulk viscosity in modified  $f(R,T)$  gravity," *Indian Journal of Physics*, 95(3), 531-542 (2021).
- **Chauhan P., Gupta A.**, Matrix Games with Proportional Linguistic Payoffs, *Soft Computing* (25): 15067-15081(2021).
- **Chauhan, P., Gupta, A. (2022)**. Matrix Games with Linguistic Distribution Assessment Payoffs. In: Saraswat, M., Sharma, H., Balachandran, K., Kim, J.H., Bansal, J.C. (eds) Congress on Intelligent Systems. Lecture Notes on Data Engineering and Communications Technologies, vol 111. Springer, Singapore.
- **D. Singh, K. Gupta, A. Singh, and A. Arora**, "NTDroid: Android Malware Detection using Network Traffic Features" in *International Journal of Computer Networking, Wireless and Mobile Communications*, vol. 11, no. 1, 2021, pp. 1-12.

- **G. Garg, A. Sharma, and A. Arora**, "SFDroid: Android Malware Detection using Ranked Static Features", in *International Journal of Recent Technology and Engineering*, vol. 10, no. 1, 2021, pp. 142-152.
- **K. Khariwal, R. Gupta, J. Singh, and A. Arora**, "R-MFDroid: Android Malware Detection using Ranked Manifest File Components", in *International Journal of Innovative Technology and Exploring Engineering*, vol. 10, no. 7, 2021, pp. 55-64.
- **Lipi Km., Deo Naokant**, "General family of exponential operators, *Filomat*", 34(12), 4043-4061 (2020).
- **Luckshay Batra, HC Taneja**, "Evaluating volatile stock markets using information theoretic measures, *Physica A: Statistical Mechanics and its Applications*", 537(1) (2020).
- **Luckshay Batra, HC Taneja**, "On Black-Scholes option pricing model with stochastic volatility: an information theoretic approach", *Stochastic Analysis and Applications*, 39(2), 327-338 (2020).
- **Luckshay Batra, HC Taneja**, "Portfolio optimization based on generalized information theoretic measures, *Communications in Statistics-Theory and Methods*", 51(18), 6367-6384 (2020).
- **M. Upadhayay, A. Sharma, G. Garg and A. Arora**, "RPNDroid: Android Malware Detection using Ranked Permissions and Network Traffic," 2021 Fifth World Conference on Smart Trends in Systems Security and Sustainability (WorldS4), 2021, pp. 19-24.
- **Mridula Mundalia, S.Sivaprasad**, "Mathematical analysis. I. Approximation theory", 197-210, *Springer Proc. Math. Stat.*, 306, Springer, Singapore, (2020).
- **Ravindra Singh, Sumedha Seniaray, Prateek Saxena**, "A Framework for the improvement of frugal design practices" in journal *Designs*, September 2020.

- **S. Sivaprasad Kumar, G. Kamaljeet**, "A cardioid domain and starlike functions", *Analysis and Mathematical Physics*, 1664-235X.
- **S. Sivaprasad Kumar, K. Gangania**, "On geometrical properties of certain analytic functions", *Iranian Journal of Science and Technology*, 2364-1819.
- **Sangita Kansal, Payal**, "An introduction to Signed Petri Net", *Journal of Mathematics*, 2314-4785.
- **Satyabrata Adhikari**, "Constructing a ball of separable and absolutely separable states for  $2^*D$  quantum system", *EPID* 75, 92 (2021).
- **Satyabrata Adhikari**, "Probabilistic Teleportation of a Single Qubit: Unearthing New W-Class of States", *Jour. of Exp. & Theor. Phys.* 131, 375 (2020).
- **Sadhvi Mehra, Sumedha Senioray**, "An Analysis on Abrupt Fall of Indian Stock Markets", 2021 International Conference on Information Technology (ICIT), pp. 882-887, July 2021.
- **Shruti Aggarwal, Satyabrata Adhikari**, *Quantum Information Processing*, Vol. 20, No. 83, pp. 1-26, (2021).

### **Publications by students of M.Sc. 2019-2021 Batch**

- **Yash**: "Feature Ranking using Statistical Techniques for Computer Networks Intrusion Detection," 2022 7th International Conference on Communication and Electronics Systems (ICCES), Coimbatore, India, 2022, pp. 761-765.
- **Richa Rohira**: "Construction of a Family of Positive But Not Completely Positive Map For the Detection of Bound Entangled States", *Quantum Information Processing* 374, 20 (2021).

## Conferences/Programs attended by Faculty

- **Dr. Dharendra Kumar** attended 5-Day-National Level Online Faculty Development Program on Multi Technology from 28<sup>th</sup> June 2021 to 3<sup>rd</sup> July 2021 organised by the Department of Computer Engineering BHARATI VIDYAPEETH COLLEGE OF ENGINEERING, Station,Navi Mumbai-400614.
- **Dr. Goonjan Jain** attended "Online two - week interdisciplinary Refresher Course/Faculty Development Programme on Advanced Research Methodology 2.0" from 17-06-2021 to 01-07-2021.
- **Dr. Vivek Kumar Aggarwal** attended "Foundation of data science and its application" from 26-07-2021 to 30-06-2021.
- **Dr. Satyabrata Adhikari** attended "TWO-WEEK REFRESHER COURSE IN MATHEMATICS" organized by Department of Mathematics, Ramanujan College from 16-30 March 2021.
- **Mr. Rohit Kumar** attended "TWO-WEEK REFRESHER COURSE IN MATHEMATICS" organized by Department of Mathematics, Ramanujan College from 16-30 March 2021.
- **Ms. Payal** attended "TWO-WEEK REFRESHER COURSE IN MATHEMATICS" organized by Department of Mathematics,Ramanujan College from 16-30 March 2021.
- **Ms. Sumedha Seniaray** attended "TWO-WEEK REFRESHER COURSE IN MATHEMATICS" organized by Department of Mathematics, Ramanujan College from 16-30 March 2021.
- **Dr. Dharendra Kumar** attended the five "e-workshop on Research Methodology and Publishing Ethics" organized by JNU, New Delhi from 10<sup>th</sup> March 2021 to 14<sup>th</sup> March 2021.

- **Dr. Dharendra Kumar** has attended the Part 1 of the "online UHV Refresher 1 FDP" organized by All India Council for Technical Education(AICTE) from 22 February, 2021 to 26 February, 2021.
- **Mr. Rohit Kumar** completed "Orientation towards Technical Education and Curriculum Aspects by NITTT" from 10-08-2020 to 14-02-2021".
- **Mr. Rohit Kumar** completed "Professional Ethics and Sustainability by NITTT" from 10-08-2020 to 14-02-2021".
- **Mr. Rohit Kumar** completed "Communication Skills, Modes and Knowledge Dissemination" by NITTT from 10-08-2020 to 14-02-2021".
- **Mr. Rohit Kumar** completed "Instruction Planning and Delivery by NITTT" from 10-08-2020 to 14-02-2021".
- **Mr. Rohit Kumar** completed "Technology enabled learning and lifelong learning by NITTT" from 10-08-2020 to 14-02-2021".
- **Mr. Rohit Kumar** completed "Student Assessment and Evaluation by NITTT" from 10-08-2020 to 14-02-2021".
- **Mr. Rohit Kumar** completed "Creative Problem Solving, Innovation and Meaningful R&D by NITTT" from 10-08-2020 to 14-02-2021".
- **Mr. Rohit Kumar** completed "Institutional Management and Administrative Procedures by NITTT" from 10-08-2020 to 14-02-2021".
- **Prof. Aditya Kaushik** attended one week Short Term Training Program on "Academic Writing using LATEX" organized by Applied Mathematics and Humanities Department (AMHD), Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat during January 04-08, 2021 in online mode.
- **Prof. Aditya Kaushik** attended "Mathematical Approaches in Mechanics" organized at the Department of Mathematics, IIT Indore during December 24-31, 2020.



- **Mr. Anshul Arora** attended an Online Faculty Induction / Orientation Program organized by Ramanujan College (University of Delhi), from December 10, 2020 - January 08 2021.
- **Ms. Payal** attended a 4-Week Induction/Orientation Programme for "Faculty in Universities/Colleges/Institutes of Higher Education" organized by Ramanujan College from November 10- December 09, 2020.
- **Ms. Sumedha Seniaray** attended a 4-Week Induction/Orientation Programme for "Faculty in Universities/Colleges/Institutes of Higher Education" organized by Ramanujan College from November 10- December 09, 2020.
- **Prof. Aditya Kaushik** attended Faculty Development Program on "Mathematics with MATLAB and MATHEMATICA" organized by Department of Mathematics, IIT Indore during November 23-28, 2020.
- **Dr. Dhirendra Kumar** attended "Artificial Intelligence Driven Biomedical Data Analysis for Disease Diagnosis" organized by Department of Electrical Engineering and Department of Mathematics at IIT Indore from 05 -10 November, 2020.
- **Ms. Payal** attended one week Faculty Development Program on "Advanced Pedagogical Techniques" under the aegis of MHRD Pandit Madan Mohan Malviya National Mission on Teachers and Teaching from October 29 - November 05, 2020.
- **Ms. Sumedha Seniaray** attended one week Faculty Development Program on "Advanced Pedagogical Techniques" under the aegis of MHRD Pandit Madan Mohan Malviya National Mission on Teachers and Teaching from October 29 - November 05, 2020.
- **Ms. Payal** attended one week Faculty Development Program on "DEVELOPMENT AND IMPLEMENTATION OF MOOCS" from October 21 - October 27, 2020.
- **Ms. Sumedha Seniaray** attended one week Faculty Development Program on "DEVELOPMENT AND IMPLEMENTATION OF MOOCS" from October 21 -

October 27, 2020.

- **Prof. Aditya Kaushik** attended one week online Faculty Development Program on "Nascent Methodologies, Challenges and Realms of Research" held from 03 to 07 October, 2020 organized by Department of Electronics and Communication Engineering, Delhi Technological University, Delhi, India.
- **Dr. Dharendra Kumar** attended FDP on "Deep Learning and Artificial Intelligence" from 2020-9-21 to 2020-9-25 at INDIRA GANDHI DELHI TECHNICAL UNIVERSITY FOR WOMEN.
- **Prof. Aditya Kaushik** attended "Outcome Based Engineering Education and Accreditation (OBEEA 2020)" organized by NIT Meghalaya during 21st-23rd September, 2020.
- **Mr. Jamkhongam Touthang** attended "Outcome Based Engineering Education and Accreditation (OBEEA 2020)" organized by NIT Meghalaya during 21st-23rd September, 2020.
- **Dr. Dharendra Kumar** attended one week FDP on "Machine Learning and Computer Vision: Applications, Research Challenges" from 24-08-2020 to 28-08-2020.
- **Prof. Aditya Kaushik** attended One Week Online Faculty Development program on "Exploring Science and Technology Interconnections" organized by Department of Applied Sciences, University Institute of Engineering and Technology, Panjab University, Chandigarh from 3rd-8th August, 2020.

## Academic Achievers of the Department:

Rank	Roll No.	Name	CGPA
1.	2K16/MC/13	ANISH SACHDEVA	9.57
2.	2K17/MC/94	SANYAM GUPTA	9.52
3.	2K17/MC/78	PRATEEK SETHI	9.48

### Exams Qualified by M.Sc. 2019-2021 Batch

- **Yash:** GATE 2021 AIR 67 & JOINT CSIR UGC NET 2021 - AIR 110 JRF.
- **Kirti Rani:** CSIR UGC NET 2020 - AIR 22.

### Societies joined by M.Sc. 2019-2021 Batch

- **Urmita:** SAHITYA - The Literary & Debating Society of DTU & ASSETS-DTU (The Finance society of DTU) & CHEMISTREE - Eco Club DTU & CLIMB\_DTU (Women's community of DTU).
- **Surbhi:** KALAKRITI The creative art society of DTU.

## Placements :

"Over the past year, the Department of Applied Mathematics of Delhi Technological University has achieved great success in placing its graduates in leading companies and organizations across diverse industries, with a maximum CTC of 33.5 lakhs. The average CTC for our students was 12.21 lakhs, which is a testament to the exceptional education and training they receive at our institution. The median CTC, at 10.5 lakhs, is a good indicator of the strong performance of the majority of our graduates. Our students have secured placements in top-tier companies such as Microsoft, Amazon, Capgemini, American Express, Paytm, as well as a range of other highly respected organizations.

We believe that our students' success is a result of the collaborative approach we take to their education, where we encourage them to be proactive and take ownership of their learning. In addition to a rigorous academic program, we provide ample support to our students through career counseling, mock interviews, and networking opportunities. We also offer a range of extracurricular activities that allow students to develop their soft skills and gain hands-on experience, which is highly valued by employers.

We're proud of the achievements of our students, who have secured placements in various industries, including technology, finance, consulting, and more. Many of them have also received accolades and leadership positions in their respective companies. We're committed to continuing to provide our students with a well-rounded education that prepares them for success in their careers and in life. Our goal is to nurture future leaders who will make a positive impact on the world, and we're confident that our graduates will go on to do great things." Maximum CTC for the current year was 33.5 lakh and average CTC was 12.21 lakh per annum.

## Extra-Curricular activities of the Department-

By keeping the all round development of the student in mind, the Department is offering two technical societies, namely, Mathematics and Computing Society (MACS) and Society of Industrial and Applied Mathematics (SIAM). These two societies are continuously conducting events for the benefit of the students. The events conducted by MACS are given below, while due to unforeseen situation of COVID-19, the events planned by SIAM had to be cancelled:

**MACS** acronym for Mathematics and Computing Society, MACS DTU, the Mathematics and Computing Society of Delhi Technological University is the tavern for the snollygosters and esurient for the profound knowledge of each domain belonging to Mathematics, Computing, Finance etc. The academic year 2020-2021 was no exception and MACS hosted various indigenous as well as extrinsic events. Directed to introduce and inculcate the interest and the plenitude of perquisites that the discipline of mathematics and various scions of computing proffer.

1. **Webinar on CAT Vs GMAT** : On 28 November 2020, MACS-DTU, in collaboration with Career Launcher organized a webinar on the topic "CAT vs GMAT". Mr. ARKS Srinivas,(IIM Calcutta alumni.), President and CEO (MBA Group) at CL Educate Ltd. was the keynote speaker of the event. The event was hosted on the online platform Zoom . 100+ participants attended the webinar.
2. **DOUBT BUSTER SESSION AND MACS ORIENTATION** : On 22nd December ,2021, MACS-DTU organized its orientation and a doubt buster session for freshers. More than 120 participants attended the orientation on the Google Meet platform. The aim of the event was to provide academic assistance, roadmaps for coding and placements and explaining the purpose of MACS. The freshers were also

given tips for excelling in their college life with a roadmap of Web Development , Machine learnings and internships. The event lasted for about an hour where the last 20-25 minutes were specially reserved for the doubt session where attendees were given ample time to resolve their queries.

3. **Mathematical Relay** : On 9th January,2021, MACS-DTU, organized the Mathematical Relay. This event was the Qualifier round of the Intra-Macs Mathematics Competition. The Mathematics Competition was exclusively for the members of the society and was arranged in online mode using Google Forms. The Qualifier round consisted of 15 multiple choice questions which were to be completed within 18 minutes. The Mathematical Relay saw an active participation of 44 members. Out of the total participants the top 11 were selected for the next round of the competition.
4. **Mathletics** : On 10th January,2021,MACS-DTU, organized the Mathletics, the final round of the 2 Day Intra-Macs Mathematics Competition. 11 participants who cleared the qualifier round of the competition were eligible for the mathletics. The participants were given 4 descriptive questions of the mathematical domain under the time constraint of 1 hour. Akshat Jain , First Year Btech Undergraduate got the first position in the 2 Day Mathematics Competition.
5. **Webinar on Unlocking Success Path to MBA** : On 10th January, MACS-DTU , in collaboration with Career Launcher organized a webinar on unlocking the success path to MBA. Mr. Navneet Anand, National Head-MBA Division-Career Launcher and Mr. Ravi Teja, Category Manager-MBA test prep- Career Launcher were the keynote speakers. The event was hosted successfully on Zoom. The event saw 115+ registrations with an overall 100+ attendees.

6. **CODE TALKS** : On 16th and 17th January, 2021, MACS-DTU organized a 2-day CODE TALKS event. Our esteemed senior, Mr. Sachin Duhan was the keynote speaker of the event. In the 2-Day event, various topics ranging from choosing the language for programming to the aspects of internships and placements were discussed. The event got 270+ registrations with over 250 attendees.


7. **Webinar on Machine Learning ( Path to become a Data Scientist )** : On 13th February 2021, MACS-DTU in association with Bitgrit, conducted an exciting webinar on the roadmap to become a data scientist. The keynote speaker for the webinar was Mr Abhinav Singh, who is currently working as a data scientist at Snapdeal. He started with a basic introduction to data science and then briefed the attendees about the skill set required, different domains of ML and about the journey of a Data scientist. The webinar ended with a small interesting quiz conducted by MACS having prizes worth ₹ 2000. The participants gained a lot from it and the event was a great success.

8. **Special Interest Groups - SIGs**: On 26th February, 2021, MACS-DTU under the able guidance of Vardhaman Jain, SIG Head-MACS organized a SIG on Mathematics for the Academic Subject Mathematics MA-101 for first year students. On 4th March, 2021, MACS-DTU organized a SIG on Physics(AP-101) covering the important topics of the Academic Subject Applied Phys AP-101 for first year students. The events were conducted via Google Meet. Both the events had active participation from the students. The students were also provided with revision notes of the important chapters.



**VACS DPU presents**  
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 Keynote Speaker  
**CAT VS GMAT**  
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**MACHINE LEARNING WEBINAR**  
 Path to become a data scientist

**Speaker:**  
 Abhinav Singh  
 Data Scientist (ML)

**snapsdeal**

**Saturday 13th Feb**  
 Timing: 2 - 3 PM  
[http://bit.ly/da\\_ml](http://bit.ly/da_ml)

After the webinar, it will be held of papers worth Rs. 2000

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 HANDS ON ML CODING

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**MATHEMATICS MAJDI SIG**

**TIMING : 10 PM - 1ST**  
**DATE : 26TH FEB, 2021**

**Path to Become a Data Scientist**





## Literary Section

The Department is constantly encouraging its students to broaden their horizon and trying to bring the artistic capabilities in light. Some of the contributions from the Department are given below:

### Poetry by Dr. Dhirendra Kumar

तुम पूर्ण स्वयं जीवन अनंत,  
निष्पाप रूप हो जीवन का।  
तुम ज्ञान कोष जिसका ना अंत,  
तुम हो प्रवाह गंगा जल का।।  
है राग नया लय ताल प्रभु,  
तुमसे ही जीवन में यूँ बसा।  
करते हैं नृत्य हर जीव जीव ,  
तुमसे पाए रस जीने का।।  
काया है बनी पंचतत्वों से,  
कहते हैं वहीं मिल जानी है।  
शिव है शरीर तुम साथ हो तो ,  
तुम नहीं तो शव बन जानी है।।  
पाते हैं जीव जीने का बल ,  
पल भर में भंग होते है ताप।।  
तेरी कृपा से शीतल है मन,  
पाये वो जीव मुक्ति ही आप।।

-- धीरेन्द्र कुमार

## Articles

### **Impact of Corona on Education**

Year 2019 was ending with all mixed memories and people over the globe were preparing to celebrate and welcome New Year 2020. But all of it was happening under tapping of the COVID-19. Every walk of life, be it social, economic, psychological and many more got impacted by this covid-19 and by the middle of March-2020 India also started feeling the impact. Education in India was no exception to this.

As the time passed by, the search and application of new methods for teaching and learning was evolved and at all levels the teaching-learning process went into online mode. Up to some extent this could compensate the very purpose of delivery and grasping of the knowledge, but the limitation and constraints were more dominating.

A considerable proportion of teachers and students were not sound and comfortable to adopt these new methodologies or technologies for teaching-learning. The availability of teaching-learning aid products required for the online teaching purpose was a major issue because many were not financially in position to manage. Scarcity of uninterrupted internet was the one of the prominent factor.

In past two decades' scenario, an old saying " books are the best friends" has lost its relevance. The habit of reading and collecting books is now limited to very small percentage of readers. The attitude or I can say a lack of habit of reading books has dented the education a lot. Digitalization of books at one hand created an opportunity to have access to rare books, on the other hand shown this negative impact. During the Corona, beside financial and physical limitations, this attitude has also been detrimental to the education at recipient end.

Streams which involved the practical were the most affected one. The lack of access to the laboratory could not let the students to verify theories by way of experiment. Some experiments which were to be performed on computers using software were managed in online mode, but experiments which required the use of machines or materials were suffered. The experience was

something like learning driving by correspondence. Theoretical knowledge when practically applied will only be able to facilitate the world, which was severely affected.

Even God cannot change the past, now it is our duty, teachers and students together to compensate the loss by putting an extra effort and let not the society and the world suffer. The world is still surviving in the shadow of Corona.

~ *Prof. R. Srivastava*

**If you never learn to take something apart, test your assumptions about it, and reconstruct it, you'll always end up bound by what other people tell you.**

### The Great Mental Model

The quality of your thinking depends on the models that are in your head. When you learn to see the world as it is, and not as you want it to be, everything changes.

The solution to any problem becomes more apparent when you view through more than one lens. You'll be able to spot opportunities you couldn't see before, avoid costly mistakes that may be holding you back, and begin to make meaningful progress in your life.

### First Principles Thinking:-

As Richard Feynman said, "I don't know what's the matter with people: they don't learn by understanding; they learn by some other way -by rote or something. Their knowledge is so fragile!".

This looks like a very big problem which this model solves.

Sometimes called reasoning from first principles , it's a tool to help clarify complicated problems by separating the underlying ideas or facts from any assumptions based on them. What remains are essentials. If you know the first principles of something, you can build the rest of your knowledge them to produce something new.

Think of this as some sort of foundational knowledge that would not change and that we could build everything else on, from our ethical systems to our social structures.

For example, if we are considering how to improve the efficiency of a refrigerator, then the laws of thermodynamics can be taken as first principles. Maybe a physicist considers entropy to be it and breaks the second law further into its underlying principles.

First principles are the boundaries that we have to work within in any given situation—so when it comes to thermodynamics an appliance maker might have different first principles than a physicist.

### Socratic Method of first principles thinking:-

- 1) Why do I think this? What exactly do I think?
- 2) How do I know this is true? What if I thought the opposite?
- 3) How can I back this up? What are its sources?
- 4) What might others think? How do I know I am correct?
- 5) What if I am wrong? What are the consequences if I am?
- 6) Why did I think that? Was I correct? What conclusions can I draw from the reasoning process?

## Conclusion

Reasoning from first principles allows us to step outside of history and conventional knowledge and see what is possible. When you really understand the principles at work, you can decide if the existing methods make sense. Maybe they don't .

Many people mistakenly believe that creativity is something that only some of us are born with, but this isn't true . We're all born creative, but during our formative years, it can be beaten out of us by busy parents and teachers. As adults, we rely on convention and what we're told because that's easier than breaking things down into first principles and thinking about it yourself. By doing this most things suddenly seem more possible.

(By-2K20/MC/149/VAIBHAV SINGH)