PRAMITI

2023

DEPARTMENT OF
MATHEMATICS

"Mathematics is not about numbers, equations, computations, or algorithms: it is about understanding."

— **William Paul Thurston**

From the Head of the Department

It gives me immeasurable joy to release Pramiti 2023, which we started last year, where the document could act as a bridge between the public and administration. I believe it served the purpose for which we planned and implemented it. Pramiti, which means right Conception in Sanskrit, rightly stood for what we have intended.

In this year, the department has published more than 48 research papers in various national and international journals of repute. Recently, the demerger of the Department of Mathematics and Humanities into the Department of Mathematics, the Department of Management Studies, and the Department of Humanities and Social Sciences will give us greater freedom and independence, which should lead us to achieve greater goals for the benefit of humanity.

Humans were given the light to lead the upcoming generations forward. The hope of doing good for society should be our goal. The fast-ongoing developments in research will help society transition to secure technologies. We need to keep up with the latest emerging trends in research as well as in technology, which will ultimately help in the development of the country, mainly society.

I am deeply concerned regarding the ongoing vast divide between science and society, which might lead to catastrophe. Being constituent parts of the Institute of National Importance, we need to be creative in conveying educational ideas by communicating science in layman's language. I believe the divide is impacting society by engaging in various inhumane activities that are still being practiced under the banner of traditions, etc. Be the light shining in society, thereby abolishing dark acts in Society through Science.

As an ending note, I would like to congratulate the graduating class of '23 and wish them the best in their lives. I would urge you to be generous and humble in helping the needy people and organisations doing good for society through their philanthropic work. I hope you will implement all the knowledge that you acquired during your stay at SVNIT and take decisions with wisdom and understanding, thus achieving the best in your life.

Table of Contents

About

DEPARTMENT OF MATHEMATICS AND HUMANITIES

Vision

To be a model for excellence in educational research in Mathematics and Humanities in order to meet the changing needs of society.

Mission

To become an exemplary Centre of Excellence for research and training in the Mathematical Sciences and Humanities by promoting learning, growth and development of young minds and finding solutions to scientific, technological and real-life problems.

In 2021, the Department of Mathematics & Humanities received its current status. Since 2009, it has been Applied Mathematics & Humanities, and before that, it was part of the Applied Sciences and Humanities Department. Throughout these years, the department has evolved into one of the epicenters of research in India. Since 2007, the department has been offering its own 5 years Integrated M.Sc. Degree Program in Mathematics, in which students are enrolled through Joint Entrance Examination (JEE Mains). The department offers courses in Mathematics, English, and Management to undergraduate and postgraduate students in Engineering and other Science courses. A number of alumni from this department have attained prestigious positions in teaching and research in India and abroad.

The department has highly qualified faculty members including three Professors, three Associate Professors, and twelve Assistant Professors, who have extensive expertise in Fluid Mechanics, Special functions, Algebra, Integral Transforms, Approximation theory, Mathematical modeling, Magnetic fluid dynamics, Biomathematics, Data Mining, Finite element modeling, Techno innovation to Techno Entrepreneurship General Management, Entrepreneurship, Marketing, Postmodern Fiction, and Indian English fiction.

More than 270+ students have enrolled in the department for Five Years Integrated M.Sc., and 82+ Ph.D. students are presently pursuing research. In total, 710+ papers have been published by the Department in the reputed SCI/SCIE and Scopus indexed journals. During the last five years, the department has published 106 H index papers and 85 i10 index papers. A total of INR 2,06,00,000/- worth of projects have been carried out by the department in the last five years funded by different agencies such as Department of Science and Technology (DST), NBHM, ISRO and GUJCOST. So far, the department has produced 97 Ph.D. students specializing in Mathematics, Management, and English and the department has a good placement record as well.

Academics

Doctor of Philosophy

Department offers Ph.D. programmes in three streams: Mathematics, Management, and English. The department provides excellent research opportunities to students in aforementioned fields. It is noteworthy that the faculty members pursue research in a wide range of areas such as fluid mechanics, special functions, algebra, integral transforms, approximation theory, mathematical modeling, magnetic fluid dynamics, bio mathematics, data mining, finite element modeling, techno innovation to techno entrepreneurship general management, entrepreneurship, marketing, postmodern fiction and Indian English fiction, among others. Several scholars have achieved very good positions in academia and industry. Admissions are usually made twice a year and are notified by the institute on a regular basis. Students will also be admitted to individual faculties under their designated projects, and after evaluating their performance, they will be converted to regular Ph.D. programs.

Integrated Master of Science

Department offers Ph.D. programmes in three streams: Mathematics, Management, and English. The department provides excellent research opportunities to students in aforementioned fields. It is noteworthy that the faculty members pursue research in a wide range of areas such as fluid mechanics, special functions, algebra, integral transforms, approximation theory, mathematical modeling, magnetic fluid dynamics, bio mathematics, data mining, finite element modeling, techno innovation to techno entrepreneurship general management, entrepreneurship, marketing, postmodern fiction and Indian English fiction, among others. Several scholars have achieved very good positions in academia and industry. Admissions are usually made twice a year and are notified by the institute on a regular basis. Students will also be admitted to individual faculties under their designated projects, and after evaluating their performance, they will be converted to regular Ph.D. programs.

A picture of the departmental library located on the 1st floor, which is stocked with more than 700 books

Faculty

Mathematics

Dr. A. K. Shukla
Professor (Mathematics)

Area of Research
Special functions, Integral transforms & Fractional Calculus

Dr. V. H. Pradhan
Professor (Mathematics)

Area of Research
Fluid dynamics in porous media with relevance to ground water flow and petroleum recovery, Numerical techniques
https://sites.google.com/amhd.svnit.ac.in/dr-v-h-pradhan/home

Dr. Neeru Adlakha
Professor (Mathematics)

Area of Research
Mathematical and Computational Biology, Bioinformatics/Biomathematics / Biocomputing, Data mining, Finite element modeling

Dr. Sushil Kumar
Associate Professor (Mathematics)

Area of Research
Mathematical modeling, Bio-mechanics, Fractional Differential equations, Moving Boundary Problems, Bio-mechanics, Numerical Techniques, Radial Basis Functions, Chebyshev Polynomials
https://sites.google.com/view/sushil/home

Dr. Jayesh M. Dhodiya
Associate Professor (Mathematics)

Area of Research
Advance Operation Research, Optimization Technique, Mathematical Modeling and Simulation, Knowledge Based System,Data Mining
https://sites.google.com/view/drjayeshmdhodiya/home

Dr. Twinkle R. Singh
Assistant Professor (Mathematics)

Area of Research
Fluid flow through Porous media, Non-linear partial differential equations, Burger's equation, Groundwater recharge phenomenon, Analytical approximate Methods, Mathematical Modeling

Dr. Ranjan Kumar Jana
Assistant Professor (Mathematics)

Area of Research
Special Functions and Integral Transform, Operations Research. Mathematical Physics, Fractional Calculus, Mittag-Leffler function, Numerical Weather Prediction, Ramanujan's Mathematics
https://sites.google.com/amhd.svnit.ac.in/drranjankumarjana/home

Dr. Ramakanta Meher
Assistant Professor (Mathematics)

Area of Research
Differential Equations, Fractional Differential Equations, Fluid Dynamics, Fluid flow through Porous Media, Approximation theory, Numerical Analysis
https://sites.google.com/site/drramakantameher

Dr. Indira P. Tripathi
Assistant Professor (Mathematics)

Area of Research
Mathematical Programming Problems, Non-smooth Optimization, Fractional Programming problems, Interval-Valued Optimization, Generalized Convexity, I-fuzzy/Fuzzy Optimization, Variational Control Problems
https://sites.google.com/view/dr-indira-tripathi/home

Dr. Shailesh Kumar Srivastava
Assistant Professor (Mathematics)

Area of Research
Trigonometric Fourier Approximation
https://sites.google.com/view/shaileshsrivastava/home

Dr. Raj Kamal Maurya
Assistant Professor (Mathematics)

Area of Research
Reliability Theory and Survival Analysis, Estimation under various Censoring, Competing Risk, Optimum Plan
https://sites.google.com/view/dr-raj-kamal-maurya/home

Dr. Amit Sharma
Assistant Professor (Mathematics)

Area of Research
Algebraic Coding Theory: Constructions of error-correcting codes such as linear codes over finite rings, skew codes, quantum codes
https://www.apsharma.com/

Dr. Sudeep Singh Sanga
Assistant Professor (Mathematics)

Area of Research
Queueing Theory
https:
//sites.google.com/view/sudeepsinghsanga/home?authuser=0

Dr. Saroj R. Yadav
Assistant Professor (Mathematics)

Area of Research
Mathematical Modeling, Non-Linear Partial Differential Equations, Fractional Differential Equations, Analytical Approximate Methods, Numerical Methods, Fluid Dynamics, Fluid Flow through Porous Media

Dr. Sourav Gupta
Assistant Professor (Mathematics)

Area of Research
Linear Water Wave Theory, Integral Equations, Numerical Analysis
https://sites.google.com/amhd.svnit.ac.in/dr-sourav-gupta

Management

Dr. Hemantkumar P. Bulsara
Associate Professor (Management)

Area of Research
Techno innovation to Techno entrepreneurship through Techno Business incubation, Marketing Entrepreneurship Strategy, Supply Chain Management(SCM), General Management

Dr. Vaishali S. Dhingra
Assistant Professor (Management)

Area of Research
Time Series Analysis, Econometrics, Quantitative Analysis, Stock Market, Portfolio Management, Financial Management
https:
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English

Dr. Urvashi Kaushal
Assistant Professor (English & Communication Skills)

Area of Research
Post Modern Fiction,Indian English Fiction and Feminist Literature, Themes in Diaspora literature
https://sites.google.com/view/drurvashikaushal/home

Teaching Assistants

Dr. Sonalika Singh
(Mathematics)

Dr. Krupa Desai
(Mathematics)

Dr. Rakesh Das Laxmikant
(Mathematics)

Dr. Vandana Yashwant Kakran
(Mathematics)

Dr. Varsoliwala Archana Chandrakant
(Mathematics)

Mr. Rathod Sudhakar Kishanrao
(English)

Dr. Syeda Beenish Naqvi
(English)

Dr. Unais K. T.
(English)

Ms. Unnati Kaniya
(Management)

Ms. Gandhi Aazmin
(Management)

Ms. Ruchita Lodaliya
(Management)

Ms. Shreya Desai
(Management)

Ms. Kruti Tamakuwala
(Management)

Dr. Bali Bhalani
(Humanities)

Non-Teaching Staff

Mr. Divyesh P. Patel
(Lab Assistant)

Ms. Km Gunjan Singh
(Technician)

Mr. Behera Vrajbandhu Jayaram
(Technician)

Mrs. Crissie Christian
(Clerk)

Mr. Jitendra J. Patel
(Peon)

Mr. Pramod R. Solanki
(Peon)

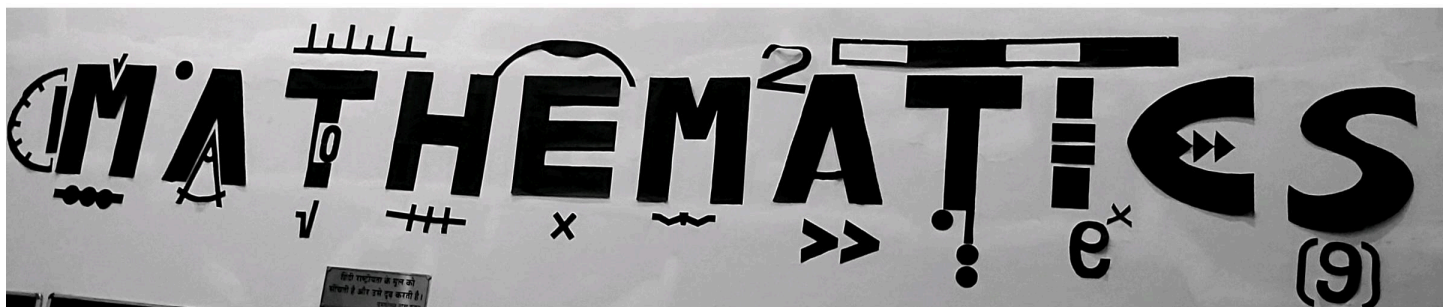A joint picture of the faculty and staff of the Department

Responsibilities

S. No.	Duties Assigned	Name
1	In Charge, Management (UG/PG)	Dr. H. P. Bulsara
2	In Charge, English (UG/PG)	Dr. U. Kaushal
3	PG. In-charge (Mathematics)	Dr. R. K. Meher
4	Secretary, Department Meeting	Dr. Indira P. Debnath
5	Member Secretary, DAAC	Dr. U. Kaushal
6	UG In-charge (Mathematics)	Dr. Jayesh M. Dhodiya
7	Coordinator, Research Project	Dr. R. K. Jana Prof. V. H. Pradhan Dr. Jayesh M. Dhodiya
8	Coordinators, Ph. D Credit, Progress Seminars & Registration	Prof. A. K. Shukla Dr. T. R. Singh
9	Coordinators, Teachers' Evaluation	Prof. A. K. Shukla Prof. V. H. Pradhan Prof. Neeru Adlakha Dr. R. K. Meher
10	Coordinator, Annual Report, Faculty/ Student related data, MIS etc.	Dr. S. Kumar Dr. Shailesh Kumar Srivastava Dr. Indira P. Debnath Dr. Sudeep Singh Sanga Dr. Vaishali Dhingra
11	Coordinators, Work Load & Time Table	
	Mathematics	Prof. A. K. Shukla Dr. T. R. Singh Dr. Indira P. Debnath Dr. Amit Sharma
	Management	Dr. H. P. Bulsara
	English	Dr. U. Kaushal
12	Department Examinations Cell	Dr. S. Kumar Dr. Shailesh Kumar Srivastava Dr. Sudeep Singh Sanga Dr. Vaishali S Dhingra Dr. Sourav Gupta
13	Students' Grievances Committee	Prof. A. K. Shukla Prof. V. H. Pradhan Prof. Neeru Adlakha Dr. H. P. Bulsara Dr. R. K. Meher Dr. Jayesh M. Dhodiya
14	Website Management	Dr. H. P. Bulsara Dr. Sourav Gupta Dr. Amit Sharma Dr. Vaishali S Dhingra Dr. Jayesh M Dhodiya

(Continued on the next page.)

15	Coordinators, Magazine, Department Annual Booklet	Dr. U. Kaushal Dr. Indira P. Debnath Dr. Saroj R. Yadav Dr. Raj Kamal Maurya Dr. Jayesh M Dhodiya
16	Coordinators, Training and Placement	Dr. U. Kaushal Dr. T. R. Singh Dr. R. K. Jana Dr. Sudeep Singh Sanga Dr. Vaishali S Dhingra
17	Coordinators, TEQIP, CCE	Dr. R. K. Jana Dr. Raj Kamal Maurya
18	Coordinators, Maintenance, Cleaning & Gardening	Dr. R. K. Jana Prof. Neeru Adlakha Dr. S. Kumar Dr. Amit Sharma Dr. Jayesh M Dhodiya
19	Coordinators, Services to Community & Tribal Development	Dr. H. P. Bulsara Dr. R. K. Jana Dr. Jayesh M Dhodiya
20	Finance Committee (DOC & Annual Plan Grant)	Prof. A. K. Shukla Prof. V. H. Pradhan Prof. Neeru Adlakha Dr. H. P. Bulsara Dr. S. Kumar Dr. Jayesh M Dhodiya Dr. T. R. Singh
21	Purchase Committee	Prof. A. K. Shukla Prof. V. H. Pradhan Prof. Neeru Adlakha Dr. H. P. Bulsara Dr. S. Kumar Dr. Jayesh M Dhodiya Dr. U. Kaushal
22	Coordinators, Stock Verification	Prof. Neeru Adlakha Dr. T. R. Singh Dr. Amit Sharma Dr. Raj Kamal Maurya
23	Department Library Committee	Dr. Sourav Gupta Dr. Raj Kamal Maurya
24	Lab In-charges, Computer Lab	Dr. S. Kumar (Mathematics) Dr. H. P. Bulsara (Management) Dr. U. Kaushal (English Language Lab)

25	Mathematics and Humanities related event organization and Day Celebrations: (Teachers Day Celebration, Mathematics Day Celebration, Expert Talk organization, Workshop organization, etc.)	Prof. A. K. Shukla Prof. V. H. Pradhan Dr. R. K. Meher Dr. U. Kaushal Dr. T. R. Singh Dr. Vaishali S Dhingra Dr. Sudeep Singh Sanga Dr. Saroj R. Yadav Dr. Jayesh M Dhodiya
26	Coordinators B. Tech-I / M.Sc-I (Mathematics) Advisor	Dr. Shailesh Kumar Srivastava Dr. Saroj R. Yadav Prof. V. H. Pradhan
27	Committee for NET/GATE Examination preparation	Prof. V. H. Pradhan Prof. Neeru Adlakha Dr. S. Kumar Dr. Jayesh M Dhodiya Dr. Indira P. Debnath Dr. Shailesh Kumar Srivastava Dr. Amit Sharma Dr. Raj Kamal Maurya Dr. Sudeep Singh Sanga Dr. Sourav Gupta Dr. Saroj R. Yadav

28	Faculty Advisors	
	M.Sc. 1st Year	Prof. A. K. Shukla
	M.Sc. 2nd Year	Dr. S. Kumar
	M.Sc. 3rd Year	Prof. V. H. Pradhan
	M.Sc. 4th Year	Dr. R. K. Jana
	M.Sc. 5th Year	Prof. Neeru Adlakha

A random picture from the Department

Placement

Mihir Khambhati
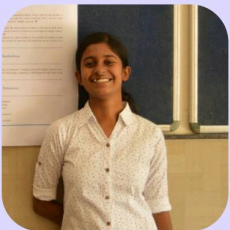- Company: Samsung R & D
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Anusree C B
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- 2nd Placement
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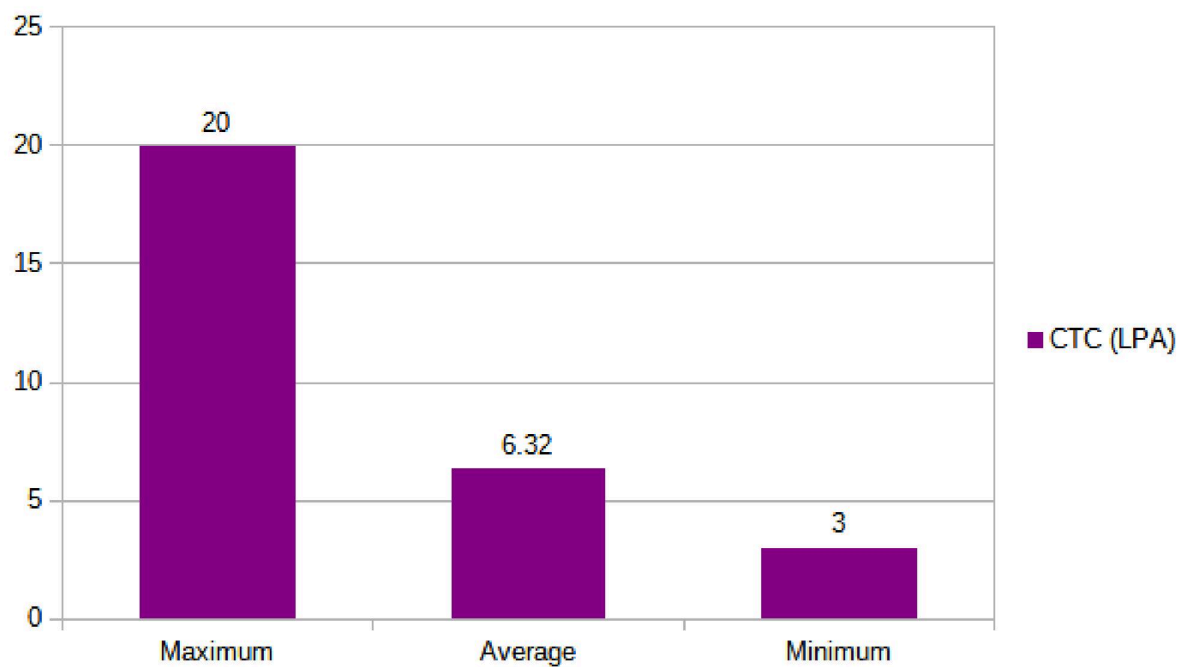- Designation: Finance

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Jekki Aswini

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- Designation: Finance

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Placement Salary Details

Publications

Journal Publications

- V. K. Jatav and A. K. Shukla: On Matrix Polynomials $L_n(M, \delta, \lambda)(x)$, Filomat, 36(15), 5059–5072, 2022.

- F. H. Patel, R. K. Jana, and Shukla, A. K.: Generalized Bessel matrix functions. Georgian Mathematical Journal, 2023, https://doi.org/10.1515/gmj-2023-2003.

- Y. M. Thakkar and A. K. Shukla: Generating functions for $_pR_q$ Polynomials, Int. J App & Comp Math, 9:31, https://doi.org/10.1007/s40819-023-01510-w (Springer).

- A. Pal, V. K. Jatav, and A. K. Shukla: Matrix analog of the four-parameter Mittag-Leffler function, Math. Meth. Appl. Sci., 1–13, 2023, https://doi.org/10.1002/mma.9363.

- F. H. Patel, R. K. Jana and A. K. Shukla: Note on Extended Generalized Bessel Function, Palestine Journal of Mathematics, 12(1), 222–230, 2023.

- F. H. Patel, R. K. Jana and A. K. Shukla: Some Statistical properties of Extended Generalized Bessel function, Palestine Journal of Mathematics, 12(1), 600–607, 2023.

- Kothiya, A., Adlakha, N.: Model of calcium dynamics regulating IP3 and ATP production in a fibroblast cell, Advances in Systems Science and Applications 22(3), 106-125, 2022, https://doi.org/10.25728/assa.2022.22.3.1219.

- Kothiya, A.B., Adlakha, N.: Cellular nitric oxide synthesis is affected by disorders in the interdependent calcium and ip3 dynamics during cystic fibrosis disease. Journal of Biological Physics, 1-26, 2023, https://doi.org/10.1007/s10867-022-09624-w.

- R. Verma, S. Kumar: Computational study on 2D three-phase lag bioheat model during cryosurgery using RBF meshfree method. Journal of Thermal Biology, 114, 103575, 2023, https://doi.org/10.1016/j.jtherbio.2023.103575.

- B. S. Meena, S. Kumar: Temperature response in skin tissue during hyperthermia based on three-phase-lag bioheat model using RBF meshfree method, Numerical Heat Transfer, Part A: Applications, 2023, https://doi.org/10.1080/10407782.2023.2182386.

- R. Gupta, S. Kumar: Space-time pseudospectral method for the variable-order space-time fractional diffusion equation, Mathematical Sciences, 2023, https://doi.org/10.1007/s40096-023-00510-7.

- B. S. Meena, S. Kumar: Computational study on 2D space-time fractional single-phase-lag bioheat model using RBF and Chebyshev polynomial based space-time collocation method, Waves in Random and Complex Media, 2022, https://doi.org/10.1080/17455030.2022.2136418.

- R. Verma, S. Kumar: Numerical study on heat distribution in biological tissues based on three-phase lag bioheat model, Palestine Journal of Mathematics, 11 (Special Issue III), 1-11, 2022.

- R. Meena, S. Kumar: Solution of fractional order SIR epidemic model using residual power series method, Palestine Journal of Mathematics, 11 (Special Issue III), 12-24, 2022.

- Sunil Bhoi, Jayesh Dhodiya: Multi Objective Student Project Assignment Problem By Fuzzy Programming Technique, International Journal of Advanced Operations Management, 15(1), 1-23, 2023.

- Agnihotri, S., Dhodiya, J.M.: Non-dominated sorting genetic algorithm III with stochastic matrix-based population to solve multi-objective solid transportation problem, Soft Computing, 2022, https://doi.org/10.1007/s00500-022-07646-z.

- Yogeshwari F. Patel, Jayesh M. Dhodiya: Exact Solution of Nonlinear Newell Whitehead Segel Equation Using Semi Analytical Approach, Mathematical Methods in the Applied Sciences, 2022, http://doi.org/10.1002/mma.8843.

- Aaishwarya Bajaj, Jayesh Dhodiya: Multi-objective quasi oppositional Jaya algorithm to solve multi-objective solid travelling salesman problem with different aspiration level, International Journal of Systems Science: Operations & Logistics, Taylor & Francis, 2022, https://doi.org/10.1080/23302674.2022.2127340.

- Yogeshwari F. Patel, Jayesh M. Dhodiya: Efficient algorithm to study the class of Burger's Fisher equation, International journal of applied Non-Linear Science, 3(3), 242-266, 2022.

- Vandana Kakran, Jayesh Dhodiya: Four-dimensional uncertain multi-objective multi-item transportation problem, Operations Research and Decisions, 32(2), 2022, https://doi.org/10.37190/ord220204.

- Shubha Agnihotri and Jayesh M. Dhodiya: Variants of Genetic Algorithm to solve Multi-objective interval solid transportation problem, Palestine Journal of Mathematics, Vol. 11 (Special Issue III), 189–201, 2022.

- Patel Yogeshwari, and Jayesh M Dhodiya: Analytical approach to study water infiltration phenomenon in unsaturated soils using reduced differential transform method, Songklanakarin J. Sci. Technol., 44(3), 708–719, 2022.

- Vandana Kakran, Jayesh Dhodiya: A belief-degree based multi-objective transportation problem with multi-choice demand and supply, An International Journal of Optimization and Control: Theories & Applications, ISSN:2146-0957, eISSN:2146-5703, 12(2), 99-112, 2022.

- Haresh Jani and Twinkle R. Singh: Solution of time fractional Swift-Hohenberg equation by Aboodh transform homotopy perturbation method, Int. J. Nonlinear Anal. Appl., ISSN: 2008-6822 (electronic), 14(1), 1005–1013, 2023, http://dx.doi.org/10.22075/ijnaa.2022.27904.3754.

- D. J. Bhatt, V. N. Mishra and R. K. Jana: A study on approximation properties of Durrmeyer type operator based on beta function, Nonlinear Studies, 29(2), 411-427, 2022.

- A. Mondal, D. K. Jana and R. K. Jana: Competition of Forward and Reverse supply chain for selling two substitutable products: novel game theory approach, Operations Research Forum, 3:66, 1-34, 2022, https://doi.org/10.1007/s43069-022-00175-3.

- J. B. Gajera and R. K. Jana: Turán Type Inequalities for j Generalized $p-k$ Mittag-Leffler function, Int. J. Appl. Comput. Math., 9(28), 2023, https://doi.org/10.1007/s40819-023-01513-7.

- M. Kumar and R. K. Jana: Homotopy analysis method for forced KdV equation in unmagnetizedsuperthermal plasmas, National Academy Science Letters, 2023, https://doi.org/10.1007/s40009-023-01231-0.

- M. Kumar, R. K. Jana, P. Chatterjee and U. N. Ghosh: Regular and singular dust ion-acoustic soliton structures in superthermal plasmas: Adomian Decomposition Approach, Indian Journal of Physics, 2023, https://doi.org/10.1007/s12648-023-02703-1.

- V. J. Prajapati and R. Meher: A robust analytical approach to the generalized Burgers–Fisher equation with fractional derivatives including singular and non-singular kernels, Journal of Ocean Engineering and Sciences, 2022, https://doi.org/10.1016/j.joes.2022.06.035 (Elsevier).

- V. J. Prajapati and R. Meher: Solution of Time-Fractional Rosenau-Hyman Model Using a Robust Homotopy Approach via Formable Transform, Iranian Journal of Science and Technology, Transactions A: Science, 2022, https://doi.org/10.1007/s40995-022-01347-w (Springer).

- Sartanpara PP, Meher R.: Solution of generalised fuzzy fractional Kaup–Kupershmidt equation using a robust multi parametric approach and a novel transform. Mathematics and Computers in Simulation, 205, 939-69, 2023.

- Sartanpara PP, Meher R.: A robust computational approach for Zakharov-Kuznetsov equations of ion-acoustic waves in a magnetized plasma via the Shehu transform. Journal of Ocean Engineering and Science, 8(1), 79-90, 2023.

- Sartanpara PP, Meher R.: A robust fuzzy-fractional approach for the atmospheric internal wave model. Journal of Ocean Engineering and Science, 2023.

- Sartanpara PP, Meher R, Meher SK:. The generalized time-fractional Fornberg–Whitham equation: An analytic approach. Partial Differential Equations in Applied -Mathematics, 5:100350, 2022.

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Book Chapter Publications

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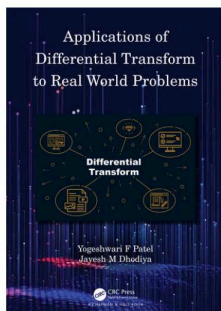
Application of Differential Transform to Real World Problem

Author(s): Dr. Yogeshwari Patel and Dr. Jayesh M Dhodiya

Publisher: CRC Press, Taylor & Francis Group
ISBN: 9781003254959
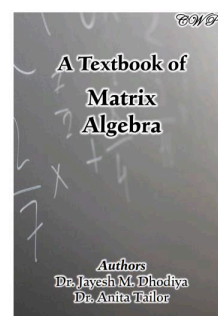**DOI**: https://doi.org/10.1201/9781003254959

A Text Book of Matrix Algebra

Author(s): Dr. Jayesh M Dhodiya and Dr. Anita Tailor

Publisher: Central West Publishing (CWP), Australia
ISBN: 781922617385
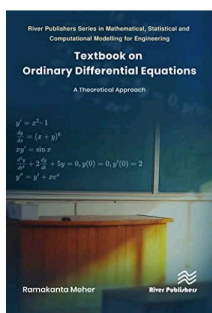
Textbook on Ordinary Differential Equations, A Theoretical Approach

Author(s): Dr. Ramakanta Meher

Publisher: River Publisher, USA
ISBN: 9788770227636, **e-ISBN**: 9788770227629

A Text Book of Advanced Engineering Mathematics, Volume (I)

Author(s): Dr. Jayesh M Dhodiya and Yogeshwari Patel

Publisher: Central West Publishing (CWP), Australia
ISBN: 781922617507
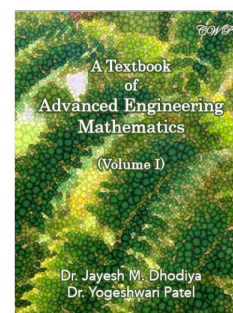
- Dr. A. K. Shukla has delivered a talk on "Some Generalization of Mittag-Leffler Function" at 2nd (hybrid) International conference on Orthogonal Polynomials, Special functions and computer Algebra: Applications in Engineering (OPSFA-2022) organized by Ananad International College of Engineering, Jaipur, India supported by UNINETTUNO, Italy, during October 15-16, 2022.

- Dr. A. K. Shukla has delivered a talk on "Generalizations of Laguerre Polynomials and Laguerre Transforms" at International Conference on Special Functions and Their Applications (XXIst ICSFA-2022) organized by Department of Studies in Mathematics, University of Mysore, Mysuru (Karnataka), India during November 26-28, 2022.

- Dr. A. K. Shukla has delivered a talk on "Recent Development in Hypergeometric functions" at International Conference of International Academy of Physical Sciences (CONIAPS XXVIII) on Innovations in Computational and Physical Sciences for Sustainable Development(ICPSSD-2022) organized by Vijaynagara Sri Krishanadevaray University, Ballari (Karnataka), India during December 21-23, 2022.

- Dr. A. K. Shukla has delivered a talk on "Laguerre Transforms in two variables and applications" at National Conference on Special Functions and Allied Areas organized by Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar (Gujarat), India during March 17-18, 2023.

- Dr. V. H. Pradhan has delivered a talk on "Numerical methods for solving solute transport equations" at Department of Mathematics, Ganpat University, Mehsana on July 26, 2022.

- Dr. V. H. Pradhan has delivered a talk on "Exact travelling wave solutions of Burger's equation" at Department of Applied Science & Humanities, Pimpri Chinchwad college of Engineering, Pune on September, 30, 2022.

- Dr. V. H. Pradhan has delivered a talk on "Numerical simulation of Advection Dispersion Equation" at Department of Mathematics, VNSGU, Surat on March 5, 2023.

- Dr. V. H. Pradhan has delivered a talk on "Introduction to quadratic B-spline Finite Element Method & its applications" at Swami Keshvanand Institute of Technology, Management & Gramothon, Jaipur on April 18, 2023.

- Dr. Sushil Kumar has delivered a Keynote Speach on "An Introduction to collocation methods and its applications to solve differential equations" in ATAL Faculty Development Programme on "MATHEMATICAL MODELING OF DIFFERENTIALLY ROTATING STARS IN STELLAR SYSTEM" organized by Graphic Era (Deemed to be) University, Dehradun during October 31-November 11, 2022.

- Dr. Sushil Kumar has delivered an invited contributory talk on "Thermal Damage Analysis in Skin Tissue using Space-Time Fractional Single-phase-lag and Dual-phase-lag Heat Transfer Model" in National Conference on Differential Equations (NCDE-2023) at Indian Institute of Technology, Patna during March 17-19, 2023.

- Dr. Jayesh M. Dhodiya has delivered a talk on "Aligning classroom teaching with learning objectives and outcomes" in Faculty Development Program at J H Ambani High School at Vesu, Surat, Gujarat, India on March 28, 2023.

- Dr. Jayesh M. Dhodiya has delivered a talk on "Fuzzy Multi-objective Optimization Problem and their solutions by computational method with aspiration level" in National Conferences, Aarye 2023 at Gujarat University on March 25, 2023.

- Dr. Jayesh M. Dhodiya has delivered a talk on "Uncertain real problems and their solutions by Mathematical and Simulation modelling" in National workshop at Navyug Science College, Surat on March 15, 2023.

- Dr. Jayesh M. Dhodiya has delivered a talk on "Real system fuzzy problems and their solutions by Mathematical Modelling and Simulation through Computational Methods" at Mathematics Department, C. K. Pithawala Engineering College on October 15, 2022.

- Dr. R. K. Jana has delivered a talk on "Application of Community Land Surface Model (CLM) for improving Rice Crop Dynamics" at International Conference on Applied Mathematics (ICAM-2022) organized by Vidyasagar University, Midnapore during June 8-9, 2022.

- Dr. R. K. Jana has delivered a talk on "Techniques of Operations Research: An Overview" at International Workshop on Optimization Techniques in Industrial and Engineering Applications (IWOTIEA-2023) organized by Department of Mathematics, School of Advanced Sciences, VIT-AP University, Andhra Pradesh, India during January 6-10, 2023.

- Dr. R. K. Jana has delivered a talk on "Optimization Techniques for Public Bicycle Sharing System: A case study for Surat city" at 5-Day International Workshop on Optimization Techniques in Industrial and Engineering Applications (IWOTIEA-2023) organized by Department of Mathematics, School of Advanced Sciences, VIT-AP University, Andhra Pradesh, India during January 6-10, 2023.

- Dr. R. K. Jana has delivered a a Motivational and Interactive Talk for Higher Secondary students at Pataspur Haro-Charan Vidyapith on March 25, 2023.

- Dr. Urvashi Kaushal has delivered a talk "Revising Historiography Through South Asian Fiction" in an International Online Faculty Development Programme on "Innovation in the Art of Teaching English Language and Literature: Venturing into New Frontiers - Transcending Boundaries with Progressive Ideas" organised by The Department of Languages, SOE, Presidency University, Bengaluru during February 27-March 4, 2023.

- Dr. Urvashi Kaushal has delivered a talk "Decoding the Process of Ethical Research and Publication" in Capacity Building workshop on Qualitative Research organised by IQAC, M.T.B. Arts College, Sarvajanik Education Society, Surat on October 7, 2022.

Departmental Activities

STTP on "Computational Techniques for Physical Sciences and Engineering"

The programme was organized by Prof. V. H. Pradhan, Dr. Jayesh M. Dhodiya and Dr. Yogesh Sonvane from 19th to 23rd September, 2022 in association with the Center for Continuing Education. The Chief Guest of the programme was Prof. V. P. Saxena, Former Vice Chancellor of Jiwaji University, Indore, Madhya Pradesh. The purpose of the programme is to bring together leading academic scientists, researchers, and research scholars. This will enable them to exchange and share their experiences and research results on all aspects of computational techniques and simulation in the physical sciences.

In addition, it provides a premier interdisciplinary forum for researchers, practitioners, and educators to present and discuss innovations, trends, and challenges. It also offers some solutions adopted in the fields of Mathematical Modelling and Simulation in the physical sciences like Scientific Computation based modelling, Overview of Linux and Python programming, High performance computing, Density functional theory, Molecular Dynamics, Monte-Carlo Simulations, Data Science, Machine Learning.
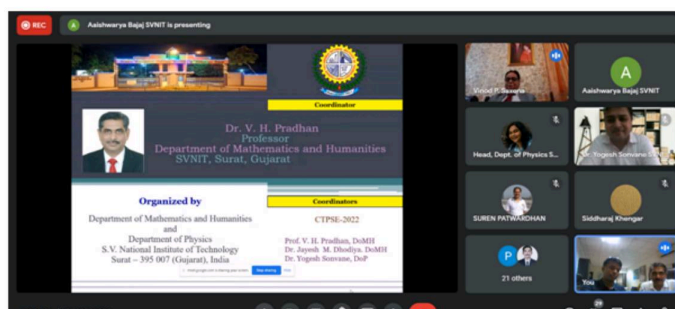
STTP on Academic Writing using LaTeX

The programme was organized by Dr. Sudeep Singh Sanga and Dr. Amit Sharma from 26th to 30th July, 2022 in association with the Center for Continuing Education.

The programme succeeded in reaching out to Academicians and Research Scholars, and they have discovered Introduction to LaTeX, Writing Text Applications, Classes and Packages (Enumerate, Itemize, AMS Package), Text Formatting, Page Layout and Style, Mathematical Environments along with different formats for equations, Famous LaTeX Packages like the Chemfig command, TikZ Package, Technical References/ Bibliography database collection and citation using Jabref. Furthermore, it provided insights into how to handle tables, figures, and make wonderful presentations using beamer.

STTP on Python Programming for Students, Engineers & Researchers

STTP on Python Programming for Students, Engineers & Researchers was organized by Prof. V. H. Pradhan (Chairman) and co-ordinators Dr. Jayesh M. Dhodiya, and Dr. Saroj R. Yadav during 26-30 December, 2022.

Python is a widely used high-level, general purpose, interpreted, dynamic programming language. Python works as a simple programming language for beginners, but more importantly, it also works great in scientific simulations and data analysis. This training program on Python programming language aimed to show how clean language design, ease of extensibility, and the great wealth of open source libraries for scientific computing and data visualization are driving Python to become a standard tool for the programming scientist.

This training program was targeted at Master's students, Doctoral students, Post-docs, Faculties, Engineers, and Researchers from all areas of science. In these five days, first two days aimed to introductory sessions followed by a selection of advanced programming techniques and best practices which are standard in the industry, but especially tailored to the needs of a students, faculties, engineers and scientist. Lectures were devised to be interactive and to give enough time to acquire direct hands-on experience with the materials.

The target of this training program on Python programming was to show how clean language design, ease of extensibility, and the great wealth of open source libraries for scientific computing and data visualization are available for scientific simulations and data analysis, etc. In this regard, expected outcomes are Knowledge of basics of Python Programming, Mathematical libraries, Visualization, Stats libraries in Python, PDE solving using python, Machine Learning in Python, and Applications of Python in scientific research and industry.
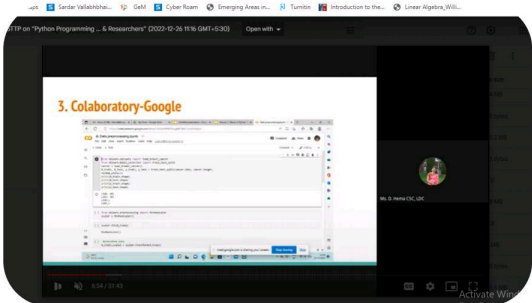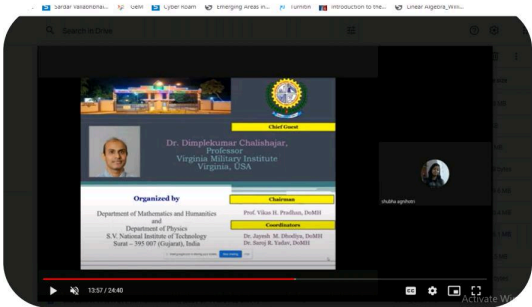
National Mathematics Day

The Department of Mathematics and Humanities organized National Mathematics Day 2022 on December 22-23, 2022 to commemorate the birthday of great Indian mathematician Srinivasa Ramanujan.
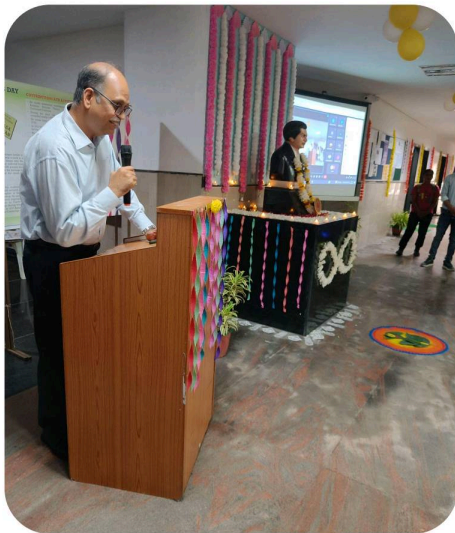
The inaugural ceremony came to an end, and refreshments were provided. The programme continued, and the events began at 11:00. Before Day 1, On December 21, M.Sc. Pre events (online) were organized. The first rounds of the Math up event, Flowing in X-Y event, were organized from 9:00 to 10:50 and 11:00 to 11:50 respectively. Then the Hex tournament was successfully completed from 16:00 to 17:50.

The M.Sc. (online) events were continued and Ph.D. (offline) events started from 11:00 onwards on Day 1. The paper presentations in both online and offline mode were successfully completed from 11:00 to 12:20. The second round of Flowing in X-Y concluded the event organized from 12:30 to 13:10. At 14:00, the first round (online) of Physical Sciences Based Modeling was organized. From 16:00 to 16:50, the first round (online) of Integration Bee was conducted. Then the event, Risk, Riddle, Rule commenced at 17:00 and concluded by 18:50. In offline mode, the events, Poster Presentation, Spell-A-thon, Magic Squares, Cross Math were organized successfully from 14:00 to 17:50.

On December 23, the day began at 8:30 with various events. In the morning session, the offline events, Communication Gap, Bizz Quiz, Quiz Hunt were successfully organized from 9:00 to 12:30. The online events, Integration Bee (round 2), Quiz, Math Up (round 2) were organized simultaneously. After a lunch break, in the afternoon session, Decipher in online mode and Pictionary in offline mode were organized from 14:00 to 16:00.

To have some fun among the team, at 17:00, a small musical chair event was organized, during which everyone was praised for their dedication to the fact that they had worked hard all day. Further, Prof. Chalishajar has joined the event and enjoyed reliving his childhood memories.

The valedictory ceremony began at 18:00. Dr. Dhodiya has appreciated the team and mentioned the ongoing activities and various initiatives that were started in the department. Prof. Chalishajar has congratulated the whole team for putting a lot of efforts into organizing such a wonderful program. Prof. Pradhan has congratulated the team for their dedicated, persistent hard work. The vote of thanks was delivered by Sai Charan Gannamaneni. After singing the National Anthem, the event ended at 19:00.

International Day of Mathematics 2023

The Department of Mathematics and Humanities, SVNIT Surat has celebrated the International Day of Mathematics 2023 on March 14, 2023, which is proclaimed by UNESCO in 2020.

The programme started at 10:30 by Ms. Kruti Tamakuwala. Dr. Jayesh M. Dhodiya, head of the department, addressed the gathering regarding the latest initiatives of the department in recent months.

Following the speech, AMaThing 4.0 was released by Dr. Jayesh M. Dhodiya, the Head of the Department, along with the Professors.

The programme further moved on with the speeches of Prof. A. K. Shukla, in which Prof. Shukla urged students to focus on the foundations of mathematics, followed by Prof. V. H. Pradhan, in which Prof. Pradhan motivated students to pursue quality research in mathematics. Prof. Neeru Adlakha has delivered a speech on the beauty of mathematics.

Mr. Pavan Patel, a doctoral student at DoMH, has delivered a speech entitled "π day." Following the speech, Newsletter 2023 Issue 1 was released by Dr. Jayesh M. Dhodiya, the Head of the Department, along with the Professors. The programme was concluded by a vote of thanks given by Ms. Aaishwarya Bajaj. The first edition of newsletter 2023 is released by Dr. Jayesh M. Dhodiya, Head, Dr. Saroj R. Yadav, Faculty Coordinator, Dr. Syeda Beenish Naqvi and the team.

Technical events started at 14:00. The following events were conducted: Fish in the Bowl, Telephone, and Pictography.

NET/GATE Sessions

The Department of Mathematics and Humanities has started the NET/GATE sessions from August 25, 2022 and they will be organized at 16:00 on Thursday of every week. The intuition of the sessions is to improve the problem-solving abilities of the students, which will directly help them to crack NET/GATE. As of now, five sessions have been set up, and different Ph.D. students in the department have delivered talks in the sessions. There is a good response from students and the Department intends to continue the session for the benefit of M.Sc. students which will also help Ph.D. students in improving their teaching skills.
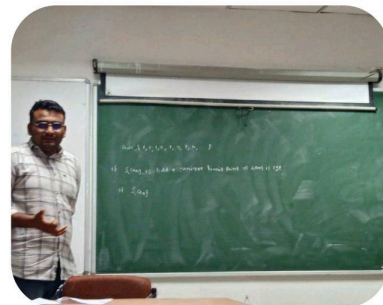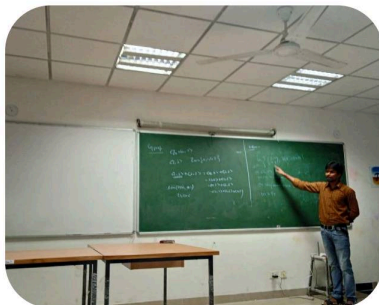
List of NET/GATE sessions conducted until October, 2022.

Date	Name	Topic
25/08/2022	Lalchand Verma	Group Theory
01/09/2022	Lalchand Verma	Group Theory
08/09/2022	Jayesh Savaliya	Real Analysis
15/09/2022	Jayesh Savaliya	Real Analysis

Interaction with Prof. V. P. Saxena

The Department of Mathematics and Humanities organized a series of talks by Prof. V. P. Saxena. There were three sessions by the professor, where the first two talks were delivered on the 30th August 2022. The first session was started by Dr. Jayesh M. Dhodiya, Head of the Department, by inviting Prof. V. H. Pradhan to present a bouquet and introduce prof. V. P. Saxena. Then the first session continued by Prof. V. P. Saxena, where he interacted with the faculty members of the Department. In this session, he gave his insights to the faculty members on the importance of a wide range of research areas. Then the second session was organized on the same day, where he interacted with the research scholars of the department. At first, he began the session with an expert lecture and then continued to talk about the importance of mathematics in a variety of fields and gave some useful tips on how to work on improving their research work. Then the final session was organized on the 31st August 2022. for the M.Sc. students, where he interacted with the students and clarified various queries.


Then the sessions were concluded with a vote of thanks and high tea.

Expert Lecture on "Basics of FEM and solution of singular perturbation problems, singular problem with cubic B-splines"

The Department of Mathematics and Humanities organized an expert talk on 4th August, 2022 entitled "Basics of FEM and solution of singular perturbation problems, singular problem with cubic B-splines" by Dr. K N S Kasi Viswanadham. Dr. K. N. S. Kasi Viswanadham is a Professor of Mathematics at National Institute of Technology, Warangal.

The session was started by Dr. Jayesh M. Dhodiya, Head of the Department where the head welcomed and presented a bouquet to Dr. Viswanandham. The session was handovered to the speaker and the speaker has gone through the basics of Finite Element Method and further moved on with solutions of perturbation problems using cubic B-splines. During the session, the speaker has provided various examples to showcase how the process progresses. The session concluded with a vote of thanks and high tea.
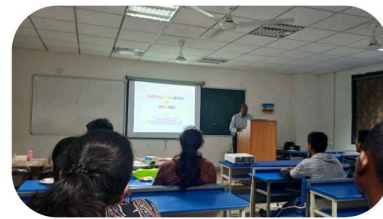
Interaction with Prof. Madhu Jain

The Department of Mathematics has organised an interaction talk with Prof. Madhu Jain, Professor, Department of Mathematics, Indian Institute of Technology Roorkee, on March 17, 2023. The session started with Dr. Jayesh M. Dhodiya, Head of the Department, inviting Prof. Jain, following which a bouquet was delivered by him. Dr. Dhodiya has briefed about the history, students, and recent achievements of the department. The session was then handed over to Prof. Jain, where she interacted with the doctoral students.

She urged the students to perform societal-oriented research, which will help in uplifting the lower sections of society. Further, Prof. Jain has briefed about the Department of Mathematics at IIT Roorkee as well as the visiting places in and around Roorkee.

After her talk, she enlightened students by resolving their queries. The session has ended with a vote of thanks delivered by Dr. Jayesh M. Dhodiya, followed by a high tea.

Pramiti Inauguration

The Department of Mathematics and Humanities organized an event to release the 1st edition of Pramiti, Departmental Annual magazine. Dr. Jayesh M. Dhodiya, Head of the Department, began the session welcoming and presenting a bouquet to Prof. A. K. Shukla, Prof. V. H. Pradhan, and Prof. Neeru Adalaka. Then the three faculty members continued the session addressing the release of the magazine. Afterwards, the session was continued by Dr. Jayesh M. Dhodiya by presenting the document to the members present in the session. Then the session continued by appreciating the committee members involved in preparing the document. Then a photo session was arranged with faculty and students of the annual magazine committee.The session concluded with a vote of thanks and high tea.

Teachers' Day

The Department of Mathematics and Humanities organized an event on the occasion of the birth anniversary of Dr. Sarvepalli Radhakrishnan, which is celebrated as Teachers Day. Ms. Vandana Kakran opened the session by discussing the works of Sarvepalli Radhakrishnan. The session was followed by presenting the Departmental video. Then the session was continued by presenting a bouquet to the faculty members and teaching assistants. A cake cutting ceremony was arranged on the occasion of teachers' day celebration. Then the session ended with a vote of thanks given by Mr. Sarvesh, Academic Affairs Secretary. The event concluded with tea and snacks.

Workshop on "Article Writing"

The Department of Mathematics and Humanities organized an Article Writing Workshop on August 24th and 25th, 2022. The aim of the programme is to enable students to creatively write articles without malpractice. The workshop was inaugurated by Dr. Jayesh M. Dhodiya on the 24th. He welcomed the speakers, Prof. V. H. Pradhan, Dr. Urvashi Kaushal, and Miss. Nisha Pokharna, and all the participants, and he mentioned that they should avail of the opportunity by learning for the workshop and later publishing the same articles in AMaThing.

The first session of the workshop was taken by Prof. V. H. Pradhan. In a talk called "Basics and Importance of Article Writing," which Prof. Pradhan gave, he told students to be creative when writing articles. The second session of the talk was taken by Dr. Urvashi Kaushal, titled "How to Write an Article." Dr. Kaushal has given a brief introduction to the use of grammar and various resources which could help in writing, framing, and finalizing a good article.
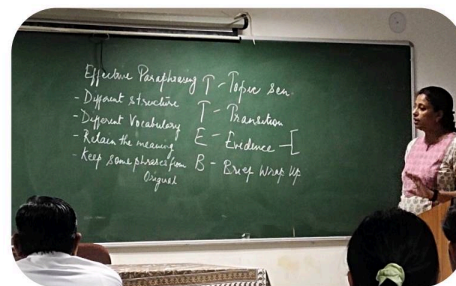

The third session of the talk was taken by Miss. Nisha Pokharna and was titled "Poem Writing." Miss Pokharna has provided various methods for writing poems creatively, which include observing nature, precision and appropriate choice of words etc. The workshop was concluded for the first day.

The fourth session of the workshop was taken by Dr. Jayesh M. Dhodiya on the 25th, titled "How to Write an Article in a Real World Scenario". Dr. Dhodiya has given the participants the inspiration to write the article using real-world ideas. He gave the participants a few keywords and helped them figure out how to write their articles. The workshop concluded with a vote of thanks and high tea.

Rangoli Competition

The Department of Mathematics and Humanities organized a Rangoli Competition on the theme "Mathematical Pattern" for students on October 19th 2022. In total, six teams have participated in the competition. The competition began at 16:00, and participants were provided with the guidelines of the competition along with colors. During the competition, snacks and tea were provided to the participants. The competition came to an end at 18:15. The Judge Team for the competition, composed of Prof. V. H. Pradhan, Dr. Urvashi Kaushal, and Dr. Saroj R. Yadav, have observed the rangolis, and participants in each team have provided information regarding the Mathematical Pattern behind the rangoli. The judges decided the winning teams to be Team 2 and Team 6 (tie). The judges motivated the participants, and the competition came to an end.
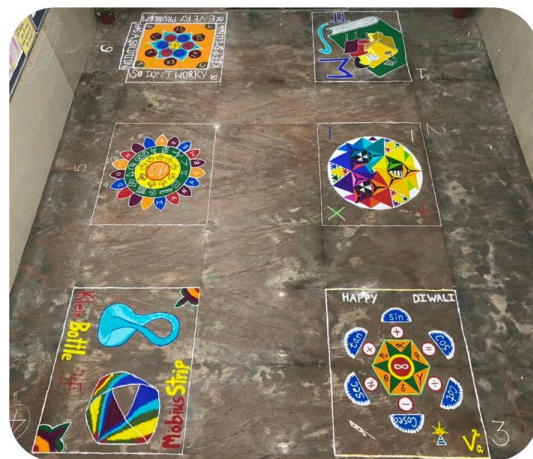
Mock Interviews

The Department of Mathematics and Humanities organized mock interviews for M.Sc., final year students from 23 August to 26 August, 2022. These sessions were intended to polish and prepare students for upcoming interviews for job and research opportunities. Students turned out for practice interviews in significant numbers, proving the sessions to be fruitful. The head of the department, Dr. Jayesh M. Dhodiya, began the session with his motivational speech. Additionally, Dr. Urvashi Kaushal provided valuable insights into effective communication during interviews, considering both verbal and non-verbal communication.

The approach she took was to place an emphasis on the strengths of the students and to provide them with strategies to deal with their weaknesses. Mock interview sessions were conducted by Mr. Sudhakar Rathod and Dr. Syeda Beenish Naqvi, who guided students and helped them to overcome from their concerns about the interview process. In mock interviews, the goal was to provide ample opportunities for students to flourish and stay confident. There were around 25 students who participated in the mock interviews, and they found the sessions beneficial.

Group Discussion Sessions

The Department of Mathematics and Humanities has initiated Group Discussion session in August 2022. The intent of the sessions is to make students think, analyse critically, and provide their opinions within a stipulated time. The following is a list of sessions that were conducted during the foregoing timeline.

| Date	Topic
12/01/2023	Online Education System
19/01/2023	Influence of other countries on India
02/02/2023	Indian Democracy Good or Bad?
09/02/2023	National Education Policy, 2020
23/02/2023	Speech of Savajibhai Dholakiya

Award Ceremony 2023

The Department of Mathematics has organised the Award Ceremony 2023 on April 20, 2023. The award ceremony 2023 was organised to hand over medals and certificates from various events and competitions that took place during the academic year 2022–23.

The programme started at 12:30 with the anchors, Ms. Samiksha Mahajan and Ms. Ekata Jain. Dr. Jayesh M. Dhodiya, the Head of the Department, addressed the gathering regarding the various activities, events, and programmes that took place during the entire academic year. The Head has congratulated all the winners and runners of the programme and motivated the gathering to work on real-world mathematical problems that could help in social development.

Further, Ms. Aaishwarya Bajaj, a doctoral student at DoM, has delivered a speech entitled "An Overview of Ph.D. Events during the AY 2022–23." Following which, the awards and certificates for various Ph.D. events were distributed.

Towards the end, certificates were distributed for NET and GATE speakers. The programme was concluded by a vote of thanks delivered by Ms. Ekata Jain.

Further, Prof. A. K. Shukla, Prof. V. H. Pradhan, and Prof. Neeru Adlakha have delivered small motivating talks for students about the importance of extracurricular activities in academic life. Mr. Sai Charan Gannamaneni, a master's student at DoM, has delivered a speech titled "An Overview of M.Sc. Events during the AY 2022–23." Following which, the awards and certificates for various M.Sc. Events were distributed. Further, Ms. Aaishwarya Bajaj, a doctoral student at DoM, has delivered a speech entitled "An Overview of Ph.D. Events during the AY 2022–23." Following which, the awards and certificates for various Ph.D. events were distributed.
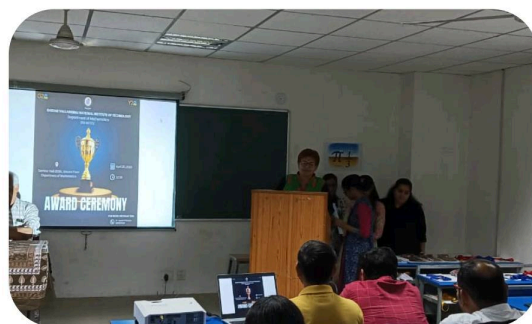
Moving further, certificates were distributed for NET and GATE speakers. The programme was concluded by a vote of thanks delivered by Ms. Ekata Jain.

M.Sc. Final Year Program 2023

The Department of Mathematics organized the final year program on May 19, 2023. The program was organized to reminisce the journey of class of 2023. The program was started at 12:30 by Ms. Aaishwarya Bajaj. Dr. Jayesh M. Dhodiya, the Head of the Department, welcomed the students and faculty members.

Prof. A.K. Shukla and Prof. V.H. Pradhan congratulated the students and gave some useful tips in their future endeavors. Dr. Urvashi Kaushal and Dr. Ranjan Kumar Jana addressed the students and talked regarding their journey in the institute and department, and gave some insights in their careers. Few final year students have shared their memories of the Department of Mathematics.

At 13:00, a buffet was arranged in the Ramanujan Foyer for the students, teaching and non-teaching staff. Then a photo session was arranged for the students and faculty members. At 14:00, games were arranged for the final year students organized by Dr. Twinkle R. Singh, Dr. Saroj R. Yadav, and Dr. Sudeep Singh Sanga. The program ended with a vote of thanks delivered by Dr. Jayesh M. Dhodiya followed by high tea.

IntERAct Seminar

Internship Experience and Research Activities Seminar which is abbreviated as IntERAct Seminar was started by Dr. R. K. Jana in 2017 with the help of a few final year students. The following is a list of sessions that were conducted during the foregoing timeline.

Date	Topic	Speaker(s)
07/09/2022	Model Theoretic Proof of Tarski-Seidenberg Theorem	Vaibhav Gupta
14/09/2022	Chain conditions on M-cyclic submodules	Theophilus Gera
21/09/2022	Real-World Application of Linear and Interger Optimization using Python	Suryam Gupta
10/02/2023	Remote Sensing Data Analysis using Python	Mansi Shah and Nishant
17/02/2023	An Introduction to Artificial Intelligence	Praveen Kumar
24/02/2023	Is Math Complete?	Gumma Surya Vamsi

Achievements

Faculty

Dr. Ajay Kumar Shukla

- Council Member of the Indian Mathematical Society (IMS) w.e.f. 01.04.2022 for three years.
- Member of Executive Council of International Academy of Physical Sciences (IAPS) Allahabad.
- Member of Executive Council of Society of Special Functions and Their Applications.

Dr. V. H. Pradhan

- Appointed as a member of Board of Studies for Mathematics at Indian Institute of Teacher Education (IITE), Gandhinagar.
- Appointed as a member on Board of Studies in Applied Science & Humanities (University Nominee) by Dr. Babasaheb Ambedkar Technological University, Lonere, Maharashtra at R C Patel Institute of Technology, Shirpur.
- Appointed as a member of Board of Studies in Applied Mathematics, under the Faculty of Technology & Engineering, M. S. University of Baroda.

Dr. Jayesh M. Dhodiya

- Appointed as a member of Board of Studies for Mathematics at Veer Narmad South Gujarat University, Surat, Gujarat.
- Appointed as a member of Board of Studies for Mathematics at Uka Tarsadia University, Bardoli, Gujarat.

Dr. Syeda Beenish Naqvi

- She has cleared the highest grade in the "Communication Skills" exam conducted by Trinity College of London with distinction on January 10, 2023.

Postdoctoral Fellows

Dr. Mahesh Kumar

- He received International Travel Grant Support from Science and Engineering Research Board, Government of India to attend the 92nd Annual meeting on Applied Mathematics and Mechanics organized by RWTH Aachen University during August 15-19, 2022.

Integrated Master of Science 2018-23 Batch

Velankar Niraj Yashwant

- He was selected for Science Academies' Summer Research Fellowship Programme for Students and Teachers 2022 and worked on the topic "Voronoi Reduction Theory" under the supervision of Dr. Madhusudan Manjunath at Indian Institute of Technology, Bombay between May 16, 2022 - August 15, 2022.

- He was selected and attended for CREST School 2022: Applied Combinatorics- Cryptography and Combinatorial Topology organized by TCG CREST, Kolkata during July 11-23, 2022.

Singh Priya Birendra Kumar

- She was selected for DAAD-WISE (Working Internships in Science and Engineering) Fellow - 2022 and worked on the topic "Bass Proof of determinant formula" under the supervision of Dr. Anton Deitmar at University of Tübingen, Germany during May-August, 2022.

- She was winner at GMNVT (Ganesh Memorial Night Volleyball Tournament) while representing final year at SVNIT, Surat.

Rakesh Matcha

- He has scored the third-highest in the GMAT examination.

Ankit Bhatia

- He was the Captain of SVNIT Volleyball Team during A.Y. 2022-23.

- He has represented the MSc Team and won the Ganesh Memorial Night Volleyball Tournament (GMNVT) 2023 held at SVNIT during April 21-23, 2023.

- He represented the MSc Team and won Inter year Basketball Tournament 2023, held at SVNIT during

- He represented the MSc Team and runner-ups of the Ganesh Memorial Night Volleyball Tournament (GMNVT) 2022 held at SVNIT during April 8-10, 2022.

Mihir Hiteshkumar Khambhati

- His paper named "Efficient Deep-Learning Models for Future Blockage Prediction and Beam Selection for mmWave Systems" has been presented in 36th IEEE/IFIP Network Operations and Management Symposium (NMOS 2023) at Samsung, Miami, Florida, United States of America during May 8-12, 2023.

Integrated Master of Science 2019-24 Batch

Dudekula Abdul Rahiman

- He has completed Web Development Internship in Edureka from April to September, 2022.

Ayushi Singh

- She has completed an internship as a research intern at IIM Visakhapatnam and she worked on "Analysis of Annual Filing Reports of US Based Companies" under the supervision of Dr. Bhavya P. S. during February-April, 2023.

- She has been selected for Research and Training Internship at Space Application Centre, Indian Space Research Organization, Ahmedabad from May-July, 2023.

Solanki Mansi Rameshbhai

- She was a part of team who won the Silver Medal in the Inter NIT Volleyball Women Tournament held at NIT Surathkal during January 20-22, 2023.

- She was a part of team who won the Silver Medal in the Ganesh Memorial Night Volleyball Tournament hosted by SVNIT during April 21-23, 2023.

Sakshi Hirani

- She has completed a Data Analysis Internship at Tonic Worldwide, Mumbai during June 6-August 6, 2022

Naman Rohilla

- He has been granted an Innovation Patent (Patent No.:-2021106999) by the Australian Government for his innovative creation.

Integrated Master of Science 2020-25 Batch

Tarang Bambole

- He emerged victorious and won the gold medal at the Gujarat State Powerlifting competition, held at Mahida Bhavan, Ichhanath, Surat on October 15, 2022.

- He earned a gold medal in powerlifting and a bronze medal in bodybuilding at the prestigious All India Inter NIT competition held at NIT Surat during February 17-18, 2022.

Integrated Master of Science 2021-26 Batch

Shah Mansi Parasmal

- She successfully completed an internship at V Square Tech LLP, specializing in the domain of machine learning and worked on the project named "Perfume Recommendation System" under the guidance of Mr. Vivek Sancheti during February-March, 2023.

Gadariya Priya

- Her team has secured 3th prize in Antaragnee during Blithchron '23 at IIT Gandhinagar on February 19, 2023.

Niraj Velankar (I18MA005)

He has done an internship between May 16, 2022 - August 15, 2022 at Indian Institute of Technology, Bombay.

His work in his words:

I did an internship in Mathematics Department of IIT Bombay under the guidance of Dr Madhusudan Manjunath. During the internship, I studied the PhD thesis of Frank Vallentin titled 'Sphere Coverings, Lattices and Tilings (in Low Dimensions)'. The thesis is divided in two parts. In first part, the Voronoi's Reduction Theory is discussed and the concept of Duality between Delaunay Polytopes and Dirichlet-Voronoi polytopes is described.

My study began by understanding some introductory concepts like Positive Definite Quadratic Forms and how they are related with symmetric matrices. Then we defined Lattice as a discrete subgroup of the Euclidean Inner Product space. Following that, the bijection between arithmetical equivalence classes of positive definite quadratic forms and isometry classes of lattices was discussed.

The study of Voronoi's Reduction Theory was started with an introduction to a specific subdivision of the Euclidean space, known as Delaunay (aka Delone) subdivision. This subdivision is obtained using the Positive Definite Quadratic Forms. Then we computed the secondary cone of all such Positive Definite Quadratic Forms, which obtain same Delaunay Triangulation Delaunay Triangulation is a Delaunay subdivision containing simplices only.Then we discussed the Main Theorem of Reduction theory which states that, 'The topological closure of secondary cones of Delaunay Triangulations give a facet-to-facet tiling of the cone of positive definite quadratic forms. Moreover, under the action if the group GL(Z), there are only finitely many non-equivalent secondary cones.

Continuing further, I studied some properties of Parallelohedra. A parallelohedron is a polytope that gives facet-to-facet tiling of the Euclidean space by translates. Later, the Dirichlet-Voronoi Polytope was defined. This polytope is in fact a parallelotope. Before concluding the internship, I studied the duality between the Dirichlet-Voronoi polytope and the Delaunay polytope.

Priya Singh (I18MA010)

She has done an internship between May 20, 2022 - August 1, 2022 at Eberhard Karl University of Tübingen.

Her work in her words:

The project was focused on geometric zeta functions of simplicial complexes. For the prerequisite we studied about Graph Theory and Reimann zeta function. Then we learnt about Ihara zeta functions, from Audrey Terras's book.

During this, we learnt how to define zeta functions for various types of graphs and several results regarding Ihara zeta function. We also studied about Bass's proof of the Ihara three-term determinant formula.

Later on we studied about simplicial complexes and labelling, and started working on generalisation of Ihara zeta function to higher dimensions using Bass's approach.

Vaibhav Gupta(I18MA013)

He has done an internship as an DAAD wise scholar at University of Münster between May-July, 2022.

His work in his words:
    This project is centered about O-Minimal Approach and the application of Pila Wilkie Counting Theorem. In this project, we started with the proof of Tarski - Seidenberg Theorem. For the pre requisite we read about the Real Closed Fields from the Lang's book. Then we introduced some concept of Model Theory which were used to prove our theorem. Then we started learning about O minimality and then shifted focus to Pila-Wilkie Counting theorem. For this, we read Cell Decomposition Theorem, Re parameterisation theorem and Diophantine Approximation. We used these three results to prove our Pila Wilkie theorem.

    The important application of this theorem is in Lang Conjecture, which we proved by this theorem. We used some observations from Algebra and then used Pila Wilkie and Galois Cyclotomic Extension for the upper and lower bounds respectively.

Polamarasetty Desik (I18MA024)

He has done an internship at Duke and Clyde between May-July, 2022.

His work in his words:
    Worked as a technical consultant where I worked on building an end to end multi speaker text to speech synthesis model. I worked on the crucial part of the model that converts text into speech using various deep learning techniques and trained the model using GPU .

Gannamaneni Sai Charan (I19MA002)

He has done an internship between May 16, 2022 to July 20, 2022 at Sardar Vallabhbhai National Institute of Technology.
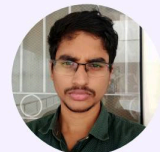
His work in his words:
    During the summer of 2022, I got an opportunity to work under Dr. Sudeep Singh Sanga, SVNIT in the field of Queueing Theory. During my internship, I was given a paper on strategic joining for M/M/1 retrial to study and then extend the work to double orbit retrial queues. My work mainly concerned on developing observable and unobservable models for double orbit retrial queue with customers balking. With the developed theory of models, I have done the numerical comparison between individual and social benefits of customers based on equilibrium joining probabilities of the customers using MATLAB. We can observe the application of the model in electric vehicle charging station for two types of electric vehicles. Lastly I would like to thank Sudeep for giving me the opportunity to work under him during the summer vacation.

Mridul Sehgal (I19MA006)

He has done an internship between June 2, 2022 to July 30, 2022 at Infiniqe Marketing.

His work in his words:

I worked there as a Fullstack developer. My task was to build a Content management system(CMS) for clients working in real-estate business. The techStack I was working on was core PHP, mysql, laravel, WordPress.

Ayushi Singh (I19MA009)

She has done an internship between May 17, 2022 to July 16, 2022 at Sardar Vallabhbhai National Institute of Technology.

Her work in her words:

Topic - Bankruptcy detection using statistical tools and Machine learning.

Used Machine learning to predict the Bankruptcy of over 6819 firms. The data were collected from the Taiwan Economic Journal for the years 1999 to 2009. Company bankruptcy was defined based on the Taiwan Stock Exchange business regulations. The data set had a huge imbalance with 96.774% non-bankruptcy enterprises and 3.226% bankruptcy enterprises.

Performed Data Visualization and Data Analysis on the data set and used Over-sampling technique to balance the data. Used different Statistical and Machine Learning models such as Logistic Regression, K Nearest Neighbour, Support Vector Machine, Decision Tree Classifier, and Random Forest Classifier. Made a report on the Mathematics used behind the working of the algorithms. Concluded the results for two scenarios:

1. When all the features were used for prediction.

2. When a lesser number of features were used after applying feature selection.

Sagar Saini (I19MA011)

He has done an internship at Sardar Vallabhbhai National Institute of Technology during the May 25, 2022 to July 25, 2022.

His work in his words:

In the summer of 2022, I got a research work on the topic Topological Manifolds under the guidance of Dr. Amit Sharma, Sardar Vallabhbhai National Institute of Technology, Surat. I've followed the book ""An Introduction to Topological Manifolds."" by John M. Lee. Firstly, I've studied general topology with an emphasis on manifolds. With the formal definition of Locally Euclidean, Manifolds, and Manifolds with boundary (mathematically speaking, they may or may not be manifolds) author did a great job in profound theory and problems.

After this, I learned how to create new spaces from the old ones. It includes Subspaces, Product, Disjoint Union, Quotient, and Adjunction Spaces with their characteristic property and uniqueness.

With many known manifolds, it was time to play with their topological properties, such as connectedness, compactness, locally compactness, paracompactness, and proper maps. Now, I've shifted to Algebraic Topology with a brief introduction to cell complexes and compact surfaces, homotopy, and the Fundamental Group. By the end of this literature study, I have good knowledge of topological manifolds.

After completing the given work on topological manifolds, I have decided to pursue the field: the convergence of manifolds with boundary and Smooth manifolds."

Priyanshi Chandra (I19MA012)

She has done an internship at Indian Statistical Institute, Kolkata during May 15, 2022 to July 16, 2022.

Her work in her words:
Studied about various types of methods in regression. Parametric approaches like Least Square regression, least absolute deviation regression, quantile regression were studied.

And analysed real life data using these techniques. Analysed the robustness properties of different regression equations and their different use cases according to it.

Among the non parametric approaches, I studied the generalised linear models, projection pursuit regression, piece wise constant and linear spline regression. All of them were studied on real data as well. Their drawbacks and advantages were analysed. Lastly, I studied the construction and nuances of regression trees and estimation of regression function using it.

Sakshi Hirani (I19MA016)

She has done an internship between June 06, 2022 - August 06, 2022 at Tonic Worldwide.

Her work in her words:
Worked on a methodology called Gipsi – a unique insight mining practice that uses AI + HI (Artificial Intelligence + Human Intelligence) and maps the data with interests and searches, coupled with unique HI perspectives.

Worked for ORM (Online Reputation Management) – helped craft strategies to shape/influence the public perception of a brand using search engine marketing, public relations strategy, and studying crisis management, and competition benchmarking abilities.

Analyzed and studied performance, and traction using Google Analytics, curated growth reports for campaigns deriving strategies for better marketing via social.

Deepshikha Rathore (I19MA018)

She has done an internship between May 16, 2022 to July 16 2022 at Sardar Vallabhbhai National Institute of Technology.

Her work in her words:

The project analyses the trends in Housing Prices in Indian Metropolitan Areas based on the data procured by Kaggle platform. Mumbai, Delhi, Chennai, and Hyderabad are four metropolitan cities of India that have been taken for project.

This project includes prediction using various regression techniques such as Decision Trees, Random Forest Tree, and Extreme Gradient Boosting Regression. Prediction of house prices from the dataset was done using all of the above techniques to find the best among them and allow people to predict exactly when they will buy their homes. Some of the related factors that impact the cost were also taken into considerations such location, Area and No. of bedrooms. Also, create a website which predict house price using longitude, latitude, Area and No. of bedroom as a parameter

Gouri Chirag (I19MA020)

He has done an internship at Sardar Vallabhbhai National Institute of Technology during May 16, 2022 to July 16, 2022.

His work in his words:

In this Intership I have tried to figure out "Data Mining" Techniques. I have Used DNA, RNA and Protein Database of various Organism's and used fuzzy and vague set to prepare various models for comparision and identification of organisms.

Dinesh Kumar (I19MA023)

He has done an internship between June 01, 2022 to July 05, 2022 at IISER Mohali.

His work in his words:

The fundamental ideas, tenets, and techniques of Functional Analysis and its applications. Normed spaces, banach spaces, completeness, compactness, boundedness, functionals, inner product space, hilbert space, hahn banach theorem, duality, orthogonality, orthogonal sets and sequence, operators and Hilbert adjoint operator are the topics covered along with the fundamental lemma and theorems like Zorns lemma, Hemil basis (application of Zorns lemma), Riesz theorem , Hahn banach theorem and it's extension along with its applications

Suryam Gupta (I19MA038)

He has done an internship between May 15, 2022 to July 15, 2022 at Indian Institute of Management Ahmedabad (IIMA).

His work in his words:

I worked with Linear/Integer Optimization using Python (pulp library) and AMPL software. For real life problems having an objective function (which either needs to be minimised or maximized) and bound to constraints, I developed their Mathematical Models and implemented them by writing their codes in Python using the pulp library and also in AMPL, a propriety software exclusive for Linear Programming problems.

Dhanani Jatin (I20MA022)

He has done an internship at Technocolabs Softwares during May 16, 2022 to July 4, 2022.

His work in his words:

In my Internship; We have done a project on Mortage Backed Securities Prepayment Ability Prediction. In this project first we done a data cleaning on 2,60,000 raws data. And then we performed an EDA(Exploratory Data Analysis) using statistical techniques and interpret data. Then we carried out a feature engineering and use Binary Encoding Technique and Hash Encoding to encode categorical variable. To build a machine learning model, we tried different scaling techniques. We used Random Forest Classifiers and Linear Vector Classifier for model building. For deployment we used Django and Flask in backend; and had a final deployment on heroku."

InterNIT Participation

- Ankit Bhatia-Volleyball Men (NIT Surathkal) and Athletics Men (MNIT Jaipur)
- Polamarasetty Desik-Kabaddi Men (NIT Surathkal)
- Bhukya Rambabu-Athletics Men (MNIT Jaipur)
- Mansi Solanki-Volleyball Women (NIT Surathkal)
- Banavath Anil Naik-Kabaddi Men (NIT Surathkal)
- Deepshikha Rathore-Kho Kho Women (NIT Rourkela)
- Yashwardhan Banta-Basketball Men (MNIT Jaipur)
- Tarang Bambole-Powerlifting and Weightlifting (SVNIT Surat)
- Ishika Sanghavi-Volleyball Women (NIT Surathkal)
- Rajesh Mortha-Volleyball Men (NIT Surathkal)
- Pawan Meena-Athletics Men (MNIT Jaipur)
- Punam Singh-Athletics Women (MNIT Jaipur) and Kho Kho Women (NIT Rourkela)
- Helly A. Goswami-Kabaddi Women (NIT Surathkal)
- Khushi Toshniwal-Basketball Women (MNIT Jaipur)
- Veer Kamdar-Basketball Men (MNIT Jaipur)

IMA Selection

Vishal Agarwal
I17MA022

DAAD Fellow 2023
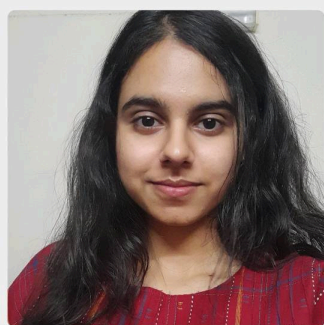
Priyanshi Chandra
I19MA012

Think Swiss 2023

Suryam Vivek Gupta
I19MA038

SRFP Fellows

Rajarapu Mahesh
I20MA002

Shruti Shah
I20MA003
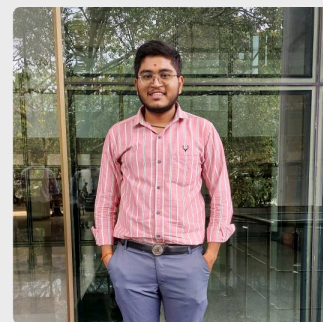
Tarang Pansuriya
I20MA005

Dharmik Patel
I20MA020

Jatin Dhanani
I20MA022

GATE 2023 Qualifiers

Singh Priya B.
I18MA010
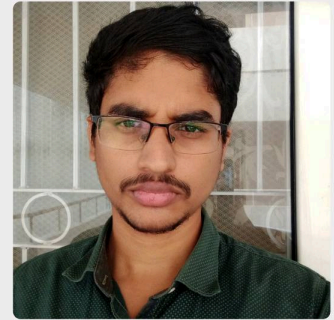AIR-121

Prakurti Kisor Kalsaria
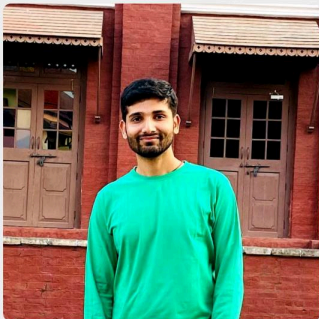I18MA006
AIR-212

Niraj Velankar
I18MA005
AIR-268

Ayushi Singh
I19MA009
AIR-548

Mansi Solanki
I19MA015
AIR-875

G. Sai Charan
I19MA002
AIR-999

Chanchal Kumar Jaiswal
I19MA044
AIR-2241

Theophilus Gera
I19MA024
AIR-2241

Disha Parmar
I19MA001
AIR-3155

GSET 2022 Qualifiers
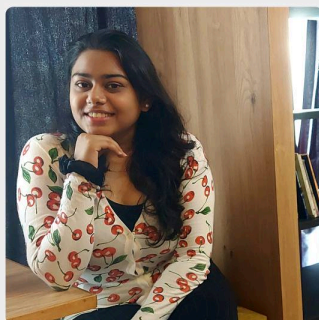
Prakruti Kalsaria
I18MA006

Dhruvi Nakrani
I18MA015

Bhukya Rambabu (I18MA034)

- He has represented SVNIT in The All India Inter NIT Athletics Tournament 2020 at NIT Rourkhela in 4×100 Metres Relay, Javelin Throw, Discus Throw in which he won Silver Medal in the Discus Throw.

- He has represented SVNIT Surat as an Athletics Captain in All India Inter NIT Athletics Championships 2022-23 at MNIT Jaipur in a delegation of 23 athletes.

- He won at Silver medal in Javelin Throw and Bronze medal in Javelin Throw at All India level competition.

- In June 2022, he went to World Chess Olympiad, 2023 as a volunteer.

- He has participated in National University Games representing SVNIT at Southwest Athletics Championships 2023 in the events of Javelin and Decathlon.

Ph.D. Awarded

Mathematics

SOSA JAYDEEPKUMAR MULAJIBHAI (D16MA001)

Thesis Title: A Study on Multi-Objective Transportation Problems with Genetic Algorithm based Hybrid Solution Approach

Supervisor: Dr. Jayesh M. Dhodiya

JUHI KESARWANI (D17MA001)

Thesis Title: Computational Study of Forced Imbibition Phenomenon in Two-Phase Fluid Flow Through Water-Wet Cracked and Fractured Porous Media Arising in the Oil Recovery Process

Supervisor: Dr. Ramakanta Meher

SHETH SHRUTI SURESHKUMAR (D18MA005)

Thesis Title: Mathematical Modelling of the Growth and Control of Gliobastoma Brain Tumor Cells

Supervisor: Dr. Twinkle R. Singh

VARSOLIWALA ARCHANA CHANDRAKANT (D18MA004)

Thesis Title: Solution of Different Mathematical Models by Elzaki Adomian Decomposition Method

Supervisor: Dr. Twinkle R. Singh

BANSU HITESH NARENDRABHAI (DS14MA003)

Thesis Title: Numerical Studies on Some Fractional Mathematical Models in Physics and Biology using Collocation Method Based on Radial Basis Functions and Chebyshev Polynomial

Supervisor: Dr. Sushil Kumar

VANDANA YASHWANT KAKRAN (DS17MA002)

Thesis Title: A study on Some Variants of Transportation Problem Under Uncertain Environment

Supervisor: Dr. Jayesh M. Dhodiya

VINOD KUMAR JATAV (D19MA006)

Thesis Title: A Study on the Laguerre Type Polynomials

Supervisor: Dr. Ajay Kumar Shukla

PATEL FARHATBANU HASMATALI (D19MA009)

Thesis Title: A Study on Extended Generalized Bessel Function

Supervisor: Prof. Ajay Kumar Shukla and Dr. Ranjan Kumar Jana

SURBHI NAVNIT TILVA (D18MA003)

Thesis Title: Solution of Some Uncertain Multi-Objective 0-1 Integer Programming Problems by Hybrid Meta-Heuristic Approach

Supervisor: Dr. Jayesh M. Dhodiya

English

PILLAI ANILA ARAVINDAKSHAN (D18EN001)

Thesis Title: Leadership Skills form the Retelling: Fore-shadowing 'The Other' in the Mahabharata

Supervisor: Dr. Urvashi Kaushal

PAREKH KRUPALI SANJAYBHAI (D17EN001)

Thesis Title: A Study of Violence in the Works of Tahmima Anam and Sorayya Khan

Supervisor: Dr. Urvashi Kaushal

P h. D.

Postdoctoral Fellows

Guide : Dr. Ranjan Kumar Jana

DR. MAHESH KUMAR   **PDF**

Research Area Applied Mathematics

Ph.D. Students

Mathematics

Guide : Dr. A. K. Shukla

YOGESH MOHANLAL THAKKAR (DS19MA004)   **PEC**

Research Area : Special Functions

FIR   **MAHAJAN SAMIKSHA SATISH (DS21MA003)**

Research Area : Special Functions

GAJERA SAGARKUMAR BHARATBHAI (DS21MA006)   **FRS**

Research Area : Special Functions

Guide : Dr. A. K. Shukla and Dr. Dhanajay Gopal

NIKAM VISHAL EKNATH (D18MA002) — PEC

Research Area : Fixed Point Theory

Guide : Dr. Sushil Kumar and Dr. A. K. Shukla

ARVIND KUMAR MISHRA (DS17MA001) — PEC

Research Area : Numerical solution of fractional differential equation using Legendre collocation method

Guide : Dr. V. H. Pradhan

PALAV MANSI SUBHASH (DS20MA001) — FIR

Research Area : Fluid Flow through Porous Medium, Numerical Methods

FIR — GOSIYA SANJAYBHAI LILABHAI (DS20MA002)

Research Area : Fluid Flow through Porous Media, Numerical Methods

Guide : Dr. Neeru Adlakha

KOTHIYA ANKIT BABUBHAI (DS19MA008) — FRS

Research Area : Biomathematics

FIR — VEDIKA MISHRA (D20MA001)

Research Area : Computational Biology
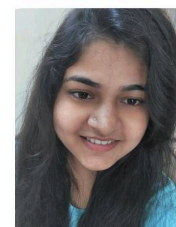
VAISHALI (D20MA002)   FIR

Research Area : Computational Biology

FIR   **YOGITA (D21MA009)**

Research Area : Mathematical Modelling

Guide : Dr. Sushil Kumar

RUPALI GUPTA (D18MA007)   FRS

Research Area : Numerical method of fractional differential equation

FIR   **ROHIT VERMA (DS18MA001)**

Research Area : Numerical Simulation of non-Fourier Bioheat Equation with and without Phase change Using RBF Meshfree Method

SAKARIYA HARSHADKUMAR H. (DS19MA001)   FIR

Research Area : Non linear fractional partial differential equations

FRS   **BHAGYA SHREE MEENA (DS19MA006)**

Research Area : Collocation method for the fractional partial differential equation using Chebyshev polynomials Radial basis function with application in bioheat transfer

RAKESH KUMAR MEENA (D20MA006)   FRS

Research Area : Semi-Analytical Solutions of NPDEs using the RPS method

FIR   **RAVI SHANKAR PRASAD (DS22MA004)**

Research Area : Biomathematics

Guide : Dr. Jayesh M. Dhodiya

BHOI SUNIL BHAIDAS (D18MA001)   **PEC**

Research Area : University Course Scheduling Problem

FIR   **SHUBHA AGNIHOTRI (D19MA001)**

Research Area : Non-dominated sorting genetic Algorithms to solve multi-objective solid transportation problem in uncertain environments
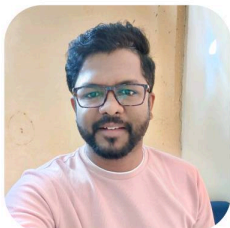
TODKAR ANIKET SARKERAO (DS19MA009)   **FIR**

Research Area : Multi-objective Optimization

FIR   **AAISHWARYA BAJAJ (D20MA003)**

Research Area : Optimization in Multi-Objective Problem

RADADIYA HARDIKKUMAR SURESHBHAI (D22MA001)   **FRS**

Research Area : Evolutionary approach to solve Multi-Objective Transportation Problems

FIR   **EKATA JAIN (DS22MA005)**

Research Area : Multi-objective optimization techniques

Guide : Dr. Twinkle R. Singh

JANI HARESHKUMAR PRAKASHBHAI (D19MA007)   PEC

Research Area : Fluid Dynamics

FIR   **YADAV JYOTI UGRASEN (DS19MA003)**

Research Area : Fluid Dynamics

RACHHADIYA BHAVINBHAI MANSUKHBHAI (D20MA008)   FIR

Research Area : Hermite-Hadamard Inequality

FIR   **AKSHEY (D21MA005)**

Research Area : Fractional Mathematical Modeling

Guide : Dr. Ranjan Kumar Jana

RITUPARNA MONDAL (D19MA003)   FIR

Research Area : Inventory Model

FRS   **ANIMESH MONDAL (DS19MA010)**

Research Area : Operations Research

GAJERA JEET BHOVANBHAI (D20MA007)   FRS

Research Area : Special Functions and Integral Transforms

FIR   **BHAMMAR KANUBHAI MADHUBHAI (D21MA003)**

Research Area : Special function

KANCHAN KUSHWAHA (D21MA008)   **FIR**

Research Area :   Operations Research

FRS   **JAYDIP RAMAJIBHAI CHAUHAN (DS22MA002)**

Research Area :   Mathematical Analysis

Guide : Dr. Ramakanta Meher
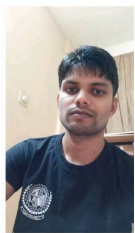
LALCHAND VERMA (D19MA005)   **FRS**

Research Area : Fluid mechanics and fuzzy fractional differential equations

FIR   **PARTHKUMAR P. SARTANPARA (DS19MA002)**

Research Area : Fluid Dynamics
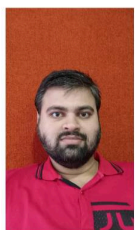
DARSHAK P. PANDYA (DS19MA011)   **PEC**

Research Area : Analytical and numerical Study of different types of nonlinear equations arising in fluid flow through porous media

FRS   **AJAY KUMAR (D20MA009)**

Research Area : Fluid Dynamics and fractional differential equation

VISHALKUMAR JAYANTIBHAI PRAJAPATI (D20MA010)   FIR

Research Area : Fractional Differential Equations, Fluid Dynamics

FIR   **KIRAN DHIRAWAT (DS21MA007)**

Research Area : Fluid dynamics

Guide : Dr. Indira P. Tripathi

NISHA POKHARNA (DS19MA012)   FIR

Research Area : Operations Research

FIR   **ARORA MAHAMADSOHIL ANVAR (DS21MA004)**

Research Area : Semi-infinite programming

Guide : Dr. Shailesh Kumar Srivastava

DEVAIYA SACHIN BHIKHALAL (DS19MA007)   FRS

Research Area : Approximation Theory

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Research Area : Trigonometric Fourier Approximation

Guide : Dr. Shailesh Kumar Srivastava and Dr. Dhananjay Gopal

JAYESH SAVALIYA (DS19MA005)   **FIR**

Research Area : Fixed Point Theory

Guide : Dr. Raj Kamal Maurya

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Research Area : Statistical Inference

FIR   **VAIBHAVBHAI NARESHBHAI DHAMELIYA (DS21MA001)**

Research Area : Reliability theory, Survival Analysis

Guide : Dr. Amit Sharma

ADITI (D21MA004)   **FIR**

Research Area : Algebraic Coding Theory

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Research Area : Algebraic Coding Theory

Guide : Dr. Sudeep Singh Sanga

ANTALA KHUSHBU SHANTILAL (DS21MA002)   **FIR**

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FIR   **NIDHI (D22MA004)**

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PANCHAL VIJAYKUMAR AMRUTLAL (D22MA005)   **FRS**

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Research Area : Fluid Dynamics

FIR   **PATEL PAVAN KESHAVLAL (D22MA002)**

Research Area : Fluid Dynamics

Guide : Dr. Sourav Gupta
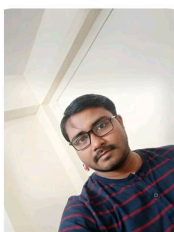
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Research Area : Fluid Dynamics (Linear Water Waves)

FIR   **MANSI GHANSHYAMBHAI BODAR (DS22MA001)**

Research Area : Fluid Dynamics (Linear Water Waves)

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Research Area : Adoption of Industry 4.0 in auto-mobile manufacturing industry in India

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Research Area : A Study on Students' and Faculties' Behaviour towards Online Learning

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PEC   **GOPAL GOSWAMI (DS19MG001)**

Research Area : Management Research / PMAY Scheme

MRIDUL TRIVEDI (DS19MG002)   FIR

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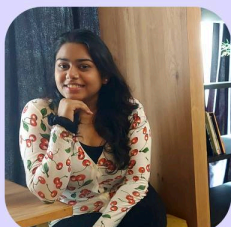
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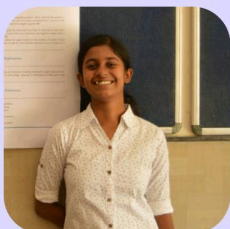
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Deep Learning Methods for Classifying Diamond on Virtue of its Fluorescence
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Theory of Deep Neural Network: Examining the Relationship between Network Architecture and Expressivity
Guide: Dr. Mayukh Mukherjee and Dr. Sudeep Singh Sanga
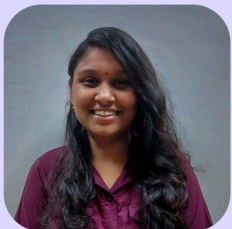
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On the Development of Homotopy Analysis Method for Solving Hyperbolic Conservation Systems
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Study of Mathematical modelling in Fluid Flow
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Computing the Geometric Intersection Number of Curves
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M/M/1 Retrial Queue with Server Breakdown and Discouraged Customers
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Solution of ODEs by Artificial Neural Networks (ANN)
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Optimality Conditions and Duality for Fractional Interval Valued Optimization Problem with LS-CONVEXITY
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Mathematical Modeling and Simulation of Optimal Control Problem in Ebola Disease using First and Second Vaccination
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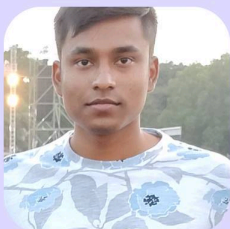
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Modelling the Polio Transmission among Children with Vaccination
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Indefinite Linear Algebra
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A weighted Finite Difference Method for the Fractional Diffusion Equation Based on the Riemann–Liouville Derivative
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Application of Linear Algebra in PCA
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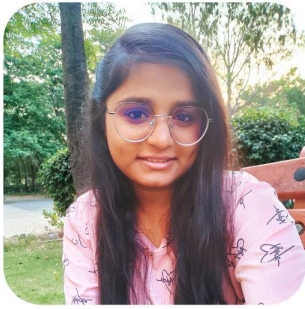
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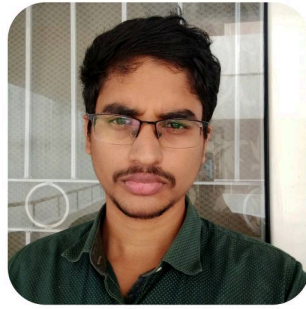
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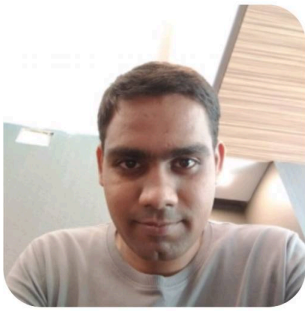
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Theophilus Gera
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Budda Reddy Gari Ajay
Kumar Reddy
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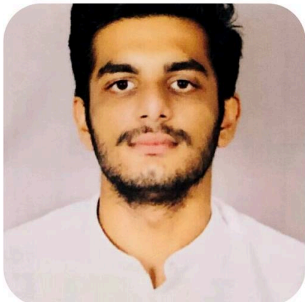
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Vamsi Krishna Marumalla
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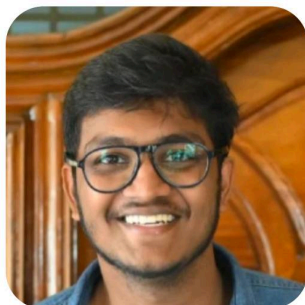
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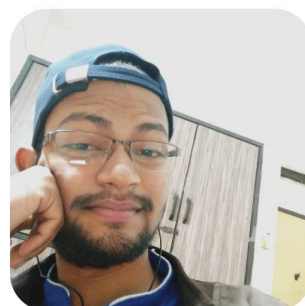
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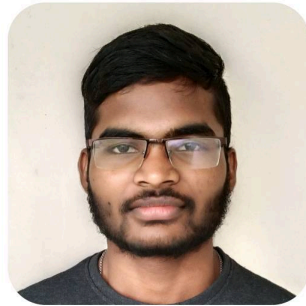
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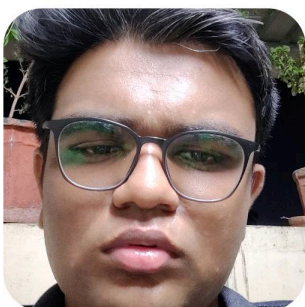
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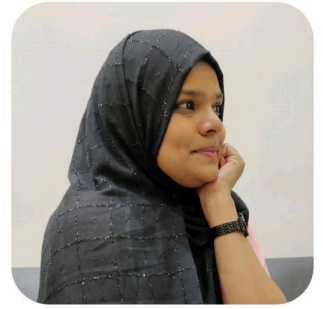
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Podili Mohammed Imran
I20MA038
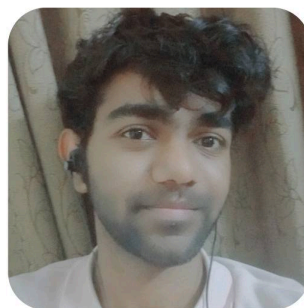
Hemant Kumawat
I20MA039

Tirumandyam Saiteja
I20MA041

Bommu Chakravarthi
I20MA042

Bosmiya Aman Rajubhai
I20MA043

Bombale Tarang Kishor
I20MA044

Raj Kumar Sah
I20MA045

Mahesh Kumar
I20MA046

Chandan Saraf
I20MA047

Pawan Meena
I20MA048

Meghna R Patel
I20MA050

Rohit Rai
I20MA051

Prashant Shrivastava
I20MA052

Mortha Rajesh
I20MA053

Rajveer Singh
I20MA056
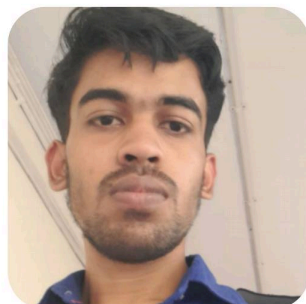
Deepak Singh
I20MA060

Adarsh Kumar
I20MA061

Mini Project Details of 3rd Year

Name	Title	Guide
Abhijeet Bansod (I20MA006)	On Quadratic Residue Codes	Dr. Amit Sharma
Rahul Maurya (I20MA030)		
Soumyadeep Mandal (I20MA004)		
Adarsh Kumar (I20MA027)	A Study of Some Practical Studies of Mechanics	Prof. V. H. Pradhan
Pawan Meena (I20MA048)		
Rajveer singh (I20MA056)		
Adarsh Kumar (I20MA061)	Analysis of Different Mathematical Models by Mathematical Methods	Dr. Twinkle R. Singh
Chandan Saraf (I20MA047)		
Hemant Kumawat (I20MA039)		
Athul Raj K. (I20MA035)	Monte Carlo Methods for Approximating the Rendering Equation	Dr. Sourav Gupta
Abhishek Vijay Deshmukh (I20MA015)		
Tarang Kishore Bombale (I20MA044)		
Chetan Kunjera (I20MA018)	Variational Iteration Method to Solve Differential Equations	Dr. Saroj R. Yadav
Unnati Parmar (I20MA026)		
Urmik Bhavsar (I20MA029)		
Dushyant (I20MA034)	Solving a Rubik's Cube using Group Theory and Python	Dr. Ranjan Kumar Jana
Prashant Shrivastav (I20MA052)		
Saupranika Nair (I20MA021)		
Gurram Mahipal (I20MA010)	Noise Reduction using Spectral Gating	Dr. Ramakanta Meher
Satyam Singh (I20MA031)		
Sahina Mithani (I20MA032)		
Guru Preetham L. (I20MA001)	A Study on Finite Difference Method for Second Order Boundary Value Problems	Dr. Sushil Kumar
Shruti Shah (I20MA003)		
Raj Kumar Shah (I20MA045)		
Mahesh Kumar (I20MA046)	Numerical Simulation of Calcium Distribution in Astrocyte cell	Prof. Neeru Adlakha
Rohit Rai (I20MA051)		
Deepak Singh (I20MA060)		
Ninad Joshi (I20MA025)	Pro-GAN Implementation	Dr. Amit Sharma
Gaurav Gupta (I20MA019)		
Siddhart Sreevatsa (I20MA024)		
Pansuriya Tarang Bharatbhai (I20MA005)	A Study on Causation and Causal Models	Dr. Raj Kamal Maurya
Shaikh Khalid Shammi (I20MA008)		
Dharmik Patel (I20MA020)		
Sanghavi Ishika Sandeep (I20MA011)	Loan Eligibility Prediction Using Machine Learning	Dr. Jayesh M. Dhodiya
Dhanani Jatinbhai Chimanbhai (I20MA022)		
Fatema Maksood Bhatt (I20MA028)		
Rajarapu Mahesh (I20MA002)	Chronic Kidney Disease Prediction Using Different Machine Learning Techniques	Dr. Indira P. Tripathi
Meghna Patel (I20MA050)		
Shivkesh Meena (I20MA036)	Integral Transform	Prof. A. K. Shukla
Amit Halder (I20MA037)		
Aman Bosmiya (I20MA043)		
Vankudothu Ramesh (I20MA017)	Admission Control F-Policy for M/M/1/K Queueing Model with Retrial and Working Vacation	Dr. Sudeep Singh Sanga
Bommu Chakravarthy (I20MA042)		
Mortha Rajesh (I20MA054)		
Yerrapati Venkata Subbaiah (I20MA012)	A Study on Portfolio Analysis	Dr. Indira P. Tripathi
Harsh Parmar (I20MA013)		
Shruthi Chippakurthi (I20MA014)		

Nishant
I21MA001

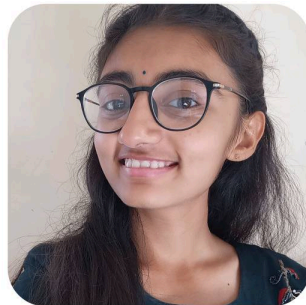Vaghasiya Jansi Sureshbhai
I21MA002

Tanay Parikh
I21MA003

Shrusti Gaurang Upadhyay
I21MA004

Shah Mansi
I21MA005

Panchal Vidhi Vimalkumar
I21MA006

Veer Kamdar
I21MA007

Yash Bansal
I21MA008

Sohan Nayak
I21MA009

Darain Shahedi
I21MA010

Govind Gupta
I21MA012

Abhishek Bisoyi
I21MA013

Punam Singh
I21MA014

Mohit Raj
I21MA015

Shashwat Rajwade
I21MA016

Parmar Vidhi
I21MA017

Trivedi Tirthkumar
I21MA018

Devarala Lalith Kumar
I21MA019

Mahajan Lekesh Dilipbhai
I21MA020

Pittaliya Bhavya
Rakeshkumar
I21MA021

Shrihan Ashutosh Pande
I21MA022

Kritika Goyal
I21MA023

Adarsh Radheshyam Singh
I21MA024

Patel Chals Chetankumar
I21MA026

Khushi Toshniwal
I21MA027

Vatsal Pugalia
I21MA029

Verma Divyansh Ravindra
I21MA030

Rohit Kumar
I21MA032

Garima Batra
I21MA034

Dharmarajula Vamsi
I21MA035
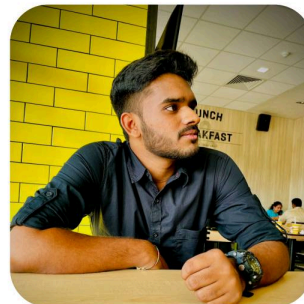
Manikanth Gaddam
I21MA036

Gadariya Priya
I21MA037

Kanhai Gupta
I21MA038

Saurav Suresh Tembhurkar
I21MA039

Patel Nirdeshkumar
Mukeshbhai
I21MA040

Hriteek Roushan
I21MA042

Nai Jigarkumar
I21MA043

Bhawesh Jain
I21MA044

Rahul Shah
I21MA045

Aman Petwal
I21MA046

Raval Kartikkumar
Harichandra
I21MA049

Akshat Kumar
I21MA050

Sanjyot Signapurkar
I21MA051

Abhishek Kumar
I21MA053

Aslam Ansari
I21MA054

Shalini D Pandey
I21MA055

Maddineni Poornachandra
Rao
I21MA056

Thutan Tsomu
I21MA058

Polimetla Sanhith Raju
I21MA060

Vishal Madrecha
I21MA061

Lalit Agrawal
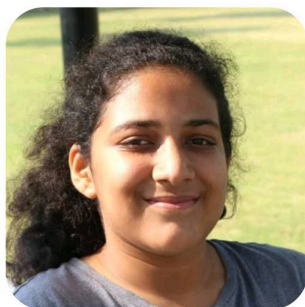I21MA062

Helly
I21MA063

Ahir Rahulbhai Asyabhai
I21MA064

Pathak Pushya
Chandraprakash
I21MA065

Pipaliya Rajan
I21MA066

Poojita Mukundan
I22MA001

Shrishti Malhotra
I22MA002

Patil Mahavir Sunil
I22MA003
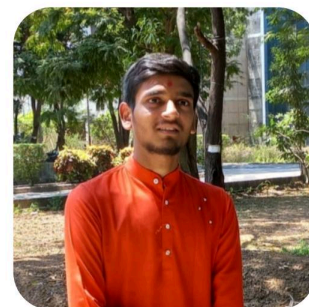
Mangukiya Raj
I22MA004

Choudhary Manish
I22MA005

Riyansh Bharti
I22MA006

Bhavik Dodda
I22MA007

Adarsh Krishnanand Tiwari
I22MA008

Ansh Gupta
I22MA009

Mandapaka Harini
I22MA010

Priya Patel
I22MA011

Smruti Bhalodiya
I22MA013

Parthivi Jain
I22MA014

Suvagiya Vaibhav
Mukeshbhai
I22MA015

Priyanshu Kumar
I22MA017

Sachin Jat
I22MA018

Tadela Sai Chandu
I22MA019

Varun Samdani
I22MA020

Aryan Singh
I22MA021

Shrinivas Karekar
I22MA022

Abhinav Kumar
I22MA023

Pal Manish Mangaru
I22MA024

Sunil Kumar
I22MA025

Moti Singh
I22MA026

Gambhir Aditya Sandip
I22MA027

Tanmay Anil Baviskar
I22MA028

Anapana Bharat Reddy
I22MA029

Lalit Mohan Deval
I22MA030

Tanishk Varshney
I22MA031
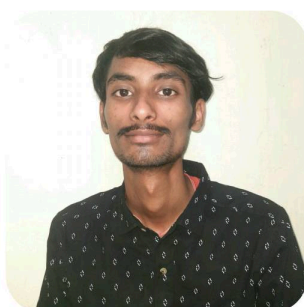
Trivedi Rajkumar
Jitendrabhai
I22MA032

Der Payal Hebhabhai
I22MA035

Guguloth Sangeetha
I22MA036

Pandey Amritanshu Umesh
I22MA037

Raj Kumar
I22MA038

Patel Drashti Mukeshbhai
I22MA039

Om Bharatkumar Panchal
I22MA040

Nishant
I22MA041

Prajapati Abhishek
Radheshyam
I22MA042

Banoth Manikanta
I22MA043

Surya Pratap Yadav
I22MA044

Peddinti Seshunadh Tanuj
I22MA045

Suraj Kr Mishra
I22MA046

Gogada Sharath Kumar
I22MA047

Avinash Raj
I22MA048

Sanjay Kumar
I22MA049

Balgari Ruchitha
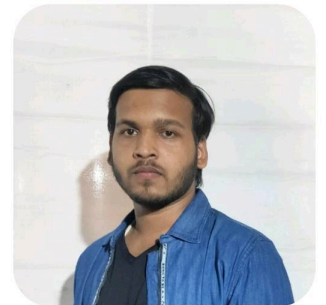I22MA050

Aman Tiwari
I22MA051

Pallav
I22MA052

Repalle Gyana Prakash
I22MA053

Kavit Chugh
I22MA055

Sudhanshu Kumar
I22MA056

Abhijeet Kumar
I22MA057

Banoth Yakub
I22MA058

Harsh Kumar Mishra
I22MA059

Manish Raj
I22MA060

Chandra Pratap
I22MA062

Lunasiya Kishan Pravinbhai
I22MA063

Limbachiya Yashkumar
Mukeshbhai
I22MA064

Vadhel Jaydipkumar
Chimanbhai
I22MA065

Rohit Kumar
I22MA066

Mahla Vishalbhai
Prakashbhai
I22MA067

Rahul Ahirwar
I22MA068

Sukhda Bakuna
I21MA052

Alumni

Paritosh Jha (Class of '12)

Current Position: Grade C Officer, Reserve Bank of India

Life is simple. Don't complicate it with your ego and past feelings. Live in the moment and make the best out of it to feel better tomorrow.

Vishal Agarwal (Class of '22)

Current Position: Analyst at Deloitte USI, Hyderabad

At SVNIT, you all are at an excellent launchpad to give flight to your dreams and aspirations. No place is perfect, but we can endeavour to utilize what we have in the best possible manner and also continuously make it better over time so that the people coming after can reap the benefits. That's the perspective with which you should view the institute. Always leave a place better than you found it, instead of complaining or blaming others, after a point.

Besides that, you need to realize that you are the absolute creme of the country, in terms of talent and opportunities, and capable, well-educated people like you should create an attitude to give back to not only your families but also your society and nation so that in the long run, our cities and villages and our country prospers. The best piece of advice or message that I have for the current students, irrespective of the goal they are looking to pursue, would be for people to read the Bhagavad Gita and really try to understand and absorb and apply the philosophy within, for it can help you cultivate happiness and a strong, positive attitude. In particular, the 2nd chapter should be read by everyone, and especially students. I sincerely wish everyone all the best for their future endeavours in life. Keep faith in yourself and build yourself up.

Creative Corner

विषय है इनके विस्तृत मानो शशि की कला
ज्ञान के सागर ऐसे हमारे सर A.K. शुक्ला

रखे ख्याल की आने ना पाये कोई व्यवधान
छात्र हित के सजग प्रहरी हमारे सर V.H. प्रधान

अब बात करे उनकी जो है विभाग के मुखिया
सम्पूर्ण समर्पण से करे काम हमारे सर J.M. डोढीया

नारीत्व का ऐसा रूप सदा रहा है अनदेखा
लुटाती स्नेह का भंडार हमारी मैम नीरू अदलखा

आने ना दे कोई शिकन मुस्कान रखे हरपल
जिंदादिली से भरपूर है, हमारी मैम टिवंकल

समय के मोल को इन्होंने खूब है जाना
वर्षों से चाक चौबंद हमारे सर R.K. जाना

नई कला सीखने को सदा रहे प्रयत्नशील
जिज्ञासु ऐसे है हमारे सर सुशील

व्यस्त रहना पसंद है जिन्हे दिन का हर प्रहर
कर्मठ ऐसे है हमारे सर रमाकांत मेहर

काम करने का तरीका इनका बड़ा ही विशेष
हर पल सीखे कुछ हमारे सर शैलेश

करती है हर कार्य को लग्न से पूरा
सरल स्वभावी है हमारी मैम इंदिरा

वर्षों से है जुड़ी किया ना व्यर्थ एक भी रोज
स्टूडेंट से टीचर बनी हमारी मैम सरोज

उद्देश्य जिनका है बढ़ाना विभाग का गौरव
कठिन परिश्रमी ऐसे है हमारे सर सौरव

हर हाल में जलाए सकारत्मकता का दीप
रहे सदा प्रसन्नचित हमारे सर सुदीप

काम करने की अथक भावना है इनमें निहित
रहे हमेशा तैयार तत्पर हमारे सर अमित

पडे ना किसी चर्चा में कार्य करे अविरल
निश्छल ऐसे है हमारे सर राजकमल

~निशा पोखरना

Loss

The loss of your presence,
 Is the intense loss of self.

Although for years,

Being in a state of despair,
gloom and dejection

In a yearning mode with
Emptiness and destitution

With a hope to be knitted
again,
but never knitted back.

Alas,
Gradually evolved the art
of living
But, with the pang—
profound and deep.

Dastaan Mukhtasar
(داستان مختصر)

A tale
Long ago told

Of love and compassion
Of serene and
serendipity
Of emotions and
expectations
Of goodness and
morality
Of culture and values
Of unification and
consolidation
Of harmony and peace
Of contentment and
placidity
Of faiths and practices

But since...
A tale now to be told is

Of hatred and
detestation
Of rigidity and grimness
Of fear and fright
Of bigotry and
parochialism
Of violence and cruelty
Of inspect and insist
Of insecurities and
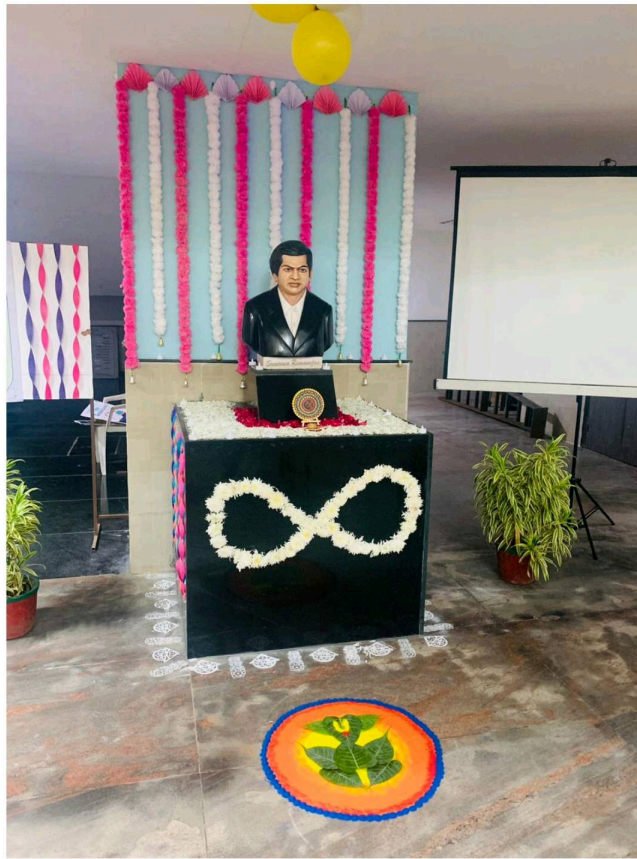vulnerability
Of discrimination and
prejudice
Of pain & agony

written by Dr. Syeda Beenish Naqvi

A picture of the decorated entrance to the Department

A picture of landscape of the Department

A picture of the Ramanujan Bust in the Department

A picture during Teacher's Day Celebration

A random picture of the gathering during National Mathematics Day 2022

A random picture of the gathering during International Day of Mathematics 2023

Pramiti 2023 Committee

Faculty

Dr. Jayesh M Dhodiya

Dr. Urvashi Kaushal

Dr. Indira P. Tripathi

Dr. Raj Kamal Maurya

Dr. Saroj R. Yadav
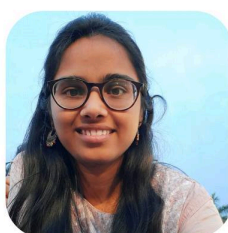
Dr. Syeda Beenish Naqvi

Students

Sai Charan Gannamaneni

Mahesh Rajarapu

Venkata Subbaiah Yerrapati

Ekata Jain
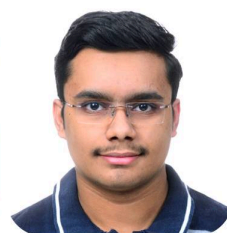
Theophilus Gera

Ramesh Vankudothu

Gadariya Priya

Vaghasiya Jansi Sureshbhai

Panchal Vidhi Vimalkumar

Pittaliya Bhavya Rakeshkumar

Shrusti Gaurang Upadhyay

Mathematics is a great motivator for all humans...Because its career starts with zero and it never ends(infinity).

DEPARTMENT OF MATHEMATICS

SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY

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https://www.svnit.ac.in/web/department/maths/