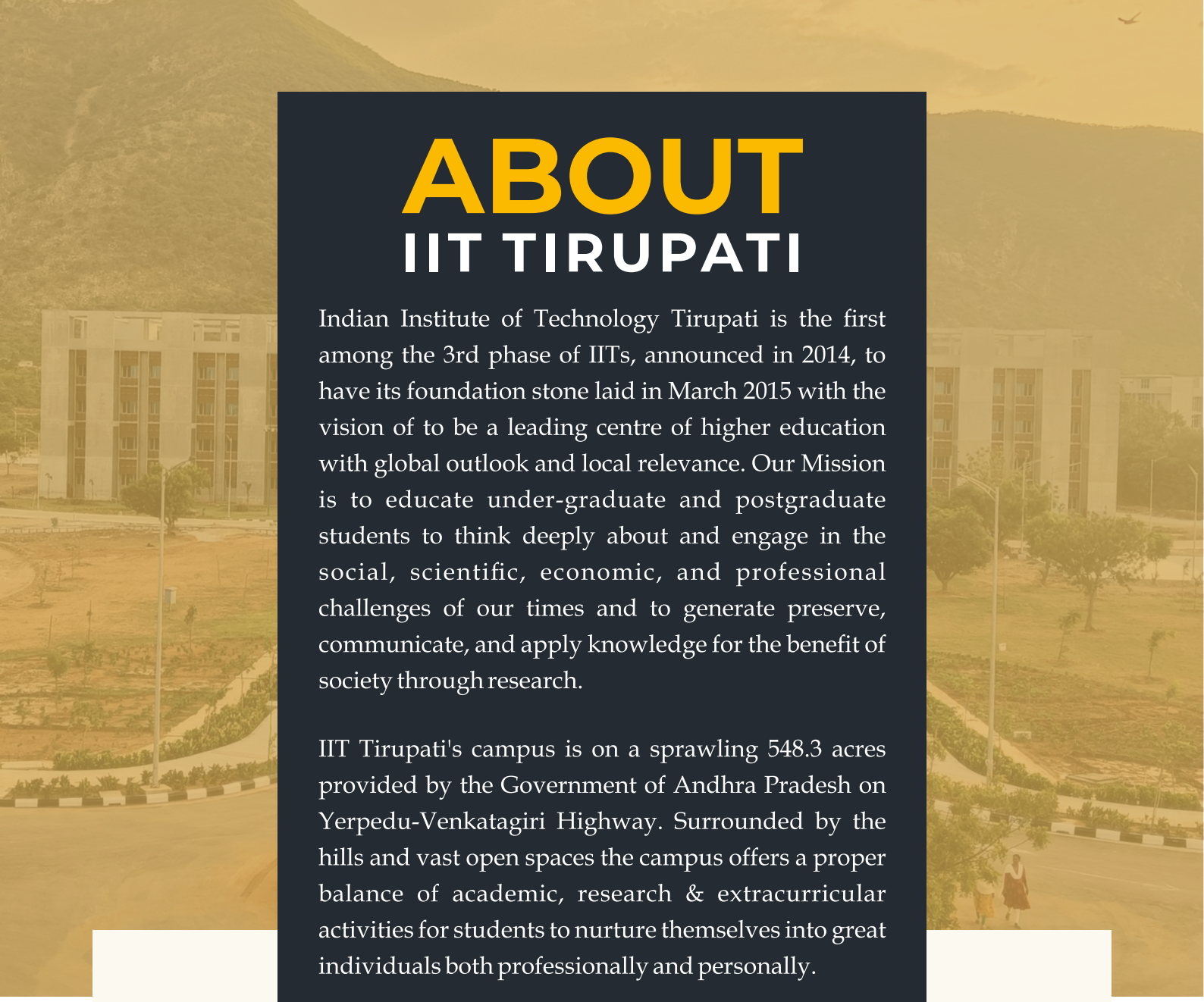
भारतीय प्रौद्योगिकी संस्थान तिरुपति

TIRUPATI

PLACEMENT BROCHURE

2024-25

INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI



ABOUT
IIT TIRUPATI

Indian Institute of Technology Tirupati is the first among the 3rd phase of IITs, announced in 2014, to have its foundation stone laid in March 2015 with the vision of to be a leading centre of higher education with global outlook and local relevance. Our Mission is to educate under-graduate and postgraduate students to think deeply about and engage in the social, scientific, economic, and professional challenges of our times and to generate preserve, communicate, and apply knowledge for the benefit of society through research.

IIT Tirupati's campus is on a sprawling 548.3 acres provided by the Government of Andhra Pradesh on Yerpedu-Venkatagiri Highway. Surrounded by the hills and vast open spaces the campus offers a proper balance of academic, research & extracurricular activities for students to nurture themselves into great individuals both professionally and personally.

At present the Institute has ten departments covering all the major engineering, science and humanities discipline offering B.Tech. in five programs, MTech in eleven programs, M.Sc. in three programs, M.S in five departments, Ph.D. in nine departments and MPP programme which was started in 2022. IIT Tirupati is dynamically and constantly evolving and experienced considerable growth since its founding in 2014 in terms of faculty recruitment, the launch of new academic programs, research activities, and infrastructural expansion. IIT Tirupati has always moved forward with Research and Development as its primary motive. The student life at IIT Tirupati offers a plethora of opportunities to choose from with incredible guidance and mentoring of a young & talented faculty group. IIT Tirupati has retained the 59th position among the best engineering institutions of the country in the 'India Rankings 2023' declared by the National Institutional Ranking Framework (NIRF) of the Union Ministry of Education.

"A rapidly growing 3rd generation IIT "

MESSAGE FROM
THE DIRECTOR

Welcome esteemed recruiters and industry partners to Indian Institute of Technology Tirupati.

Established in 2015, IIT Tirupati aims to lead in higher education with global impact. We offer B.Tech programs in Civil, Chemical, Computer Science, Electrical, and Mechanical Engineering, alongside M.Tech, MS, and PhD programs across disciplines, including new M.Sc. programs in Physics, Chemistry, Mathematics & Statistics, and Public Policy.

Our modern facilities, initially allocated 548 acres by the Government of Andhra Pradesh, support 2,500 students, with 250 faculty members and 275 staff. These include advanced laboratories, classrooms, hostels, department buildings, and a sports complex operational since July 2022. Our faculty, combining dynamic scholars and seasoned academics from global institutions, drives pioneering research. Students gain practical experience through enriching summer internships, bridging theory with real-world applications.

At IIT Tirupati, we foster intellectual curiosity and creativity, evidenced by our students' achievements in national technical events and active participation in extracurricular activities.

Rural engagement is integral, with NSS volunteers enhancing living standards and promoting government initiatives. Students also lead clubs focussed on leadership and teamwork through adventure, photography, astronomy, music, chess, and social outreach. IIT Tirupati is dedicated to cultivating well-rounded individuals prepared to tackle global challenges with innovation and responsibility We eagerly anticipate forging enduring partnerships with you.

We Cordially invite you to IIT Tirupati for the on-campus placement process.

Prof. KN Satyanarayana
Director

WHY RECRUIT AT IITT ?

1. Rapid Development: IIT Tirupati is one of the most rapidly evolving third-generation IITs

2. State-of-the-Art Infrastructure: Our academic environment is cutting-edge and well-equipped.

3. Top-Notch Faculty: We employ faculty from renowned institutes in India and abroad.

4. Personalized Interaction: With an excellent teacher-to-student ratio, students benefit from close interaction with faculty, gaining practical insights and engaging in research.

5. Real-Time Experience: Students combine classroom learning with practical experience, helping you achieve greater heights.

6. Flexible Curriculum: The curriculum allows students to select electives from various streams of science and engineering.

7. Diverse Internship Opportunities: All undergraduate students graduating in 2025 were offered summer internships in various roles across national and international academic and research industries.

8. Student-Led Events: All events are organized by students, enhancing their interpersonal skills.

9. Extensive Partnerships: We have signed 40 MoUs with corporate firms like Nvidia Graphics Private Limited, and international universities such as Canada's University of Calgary, Texas A&M Engineering Experiment Station, and Nagaoka University of Technology (Japan). Additionally, public sector organizations like the Indian Navy and ISRO have established MoUs with us.

ABOUT CDC

Dr. Subbareddy Daggumati
Faculty Advisor Placement

Dr. Sriram Sundar
Faculty Advisor Career Development And Guidance

Dr. Prashanth Vooka
Faculty advisor Internships

Mr. J. Prabhu Kiran
Training and Placement Officer
placement@iittp.ac.in

Mr. Abhinay Irala
Training and Placement Officer
placement_officer@iittp.ac.in

Career Development Centre (CDC) at IIT Tirupati strongly focuses on providing excellent placement and internship opportunities to students, along with a strong emphasis on year-round career development and career guidance activities. CDC acts as a platform for students to interact with industry. The CDC has a dedicated team of faculty and staff for interacting with various leading Indian and International organizations to facilitate career opportunities to the students. A dynamic student team is an integral part of the CDC, which helps in organizing and executing the activities. The primary functions of the CDC are flowing invite industries and organizations of repute to facilitate employment/ internship opportunities for students and assist them in the placement process at the IIT Tirupati campus, To arrange summer internships for B.Tech students after the 6th semester in partial fulfillment of their degree requirements, To conduct career guidance and developments activities which aims to provide information on various opportunities available and help them to choose the one based on their interest and to enhance the skills necessary for facing interviews and to be successful in their chosen career.

ACADEMIC PROGRAMS

B-TECH (BACHELOR OF TECHNOLOGY)

- Chemical Engineering
- Civil & Environmental Engineering
- Computer Science and Engineering
- Electrical Engineering
- Mechanical Engineering

M.TECH (MASTER OF TECHNOLOGY)

- Computer Science and Engineering
- Civil & Environmental Engineering
  - Structural Engineering
  - Transportation & Infrastructure Engineering
  - Environmental & Water Resources Engineering
  - Geotechnical Engineering
- Electrical Engineering
  - Signal Processing and Communication
  - Microelectronics & VLSI
  - RF and Microwave Engineering
- Mechanical Engineering
  - Design and Manufacturing
  - Thermal Engineering and Energy Systems
- Chemical Engineering

M.SC. (MASTER OF SCIENCE)

- Mathematics and Statistics
- Chemistry
- Physics

MPP (MASTER OF PUBLIC POLICY)

- Data Science (DS)
- Science & Management of Sustainability (SM)
- Sustainability & Engineering (SE)

M.S (RESEARCH)

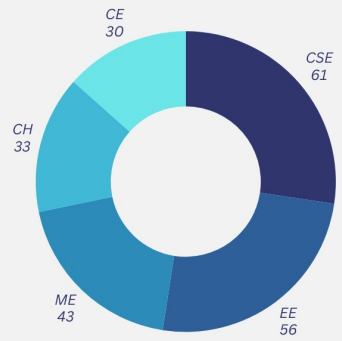
- Chemical Engineering
- Civil & Environmental Engineering
- Computer Science and Engineering
- Electrical Engineering
- Mechanical Engineering

PH.D (DOCTOR OF PHILOSOPHY)

- Engineering
  - Chemical Engineering
  - Civil & Environmental Engineering
  - Computer Science and Engineering
  - Electrical Engineering
  - Mechanical Engineering
- Science
  - Chemistry
  - Physics
  - Mathematics and Statistics
- Humanities and Social Sciences

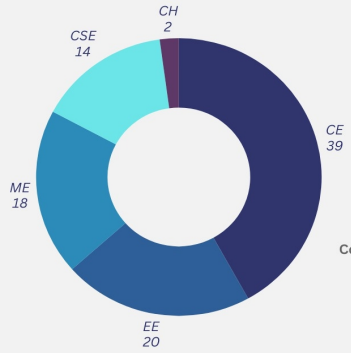
DEMOGRAPHY OF DISCIPLINES

B.Tech



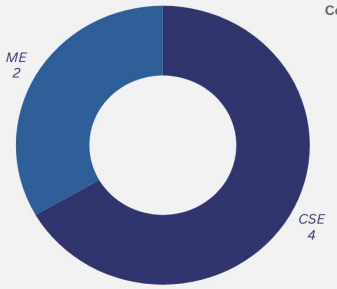
Computer Science & Engineering
Electrical Engineering
Mechanical Engineering
Chemical Engineering
Civil Engineering

M.Tech



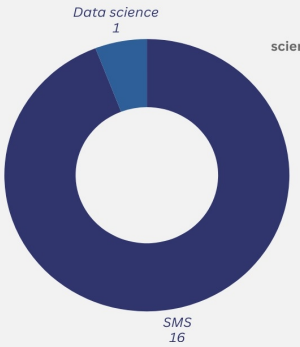
Civil Engineering
Electrical Engineering
Mechanical Engineering
Chemical Engineering
Computer Science & Engineering
Chemical Engineering

MS



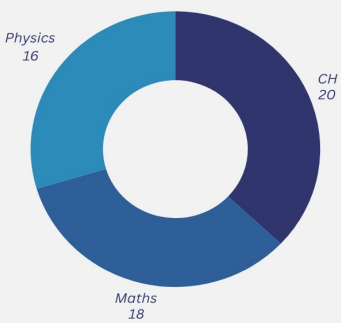
Computer Science & Engineering
Mechanical Engineering

MPP
Master of Public Policy



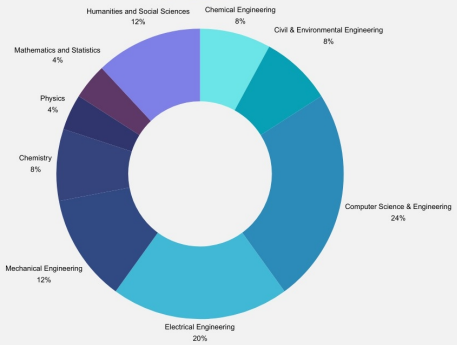
science & Management of sustainabilty
Data science

M.Sc



Maths and Statistics
Chemistry
Physics

PhD



PLACEMENT PROCEDURE

1. The Career Development Centre (CDC) at IIT Tirupati invites recruiters with relevant information

2. Recruiter registers on the online CDC web portal by creating an account

3. Recruiter fills the online job notification of the job profile using the portal

4. If the recruiter is interested in conducting a pre placement talk they can send a request along with the preferred dates

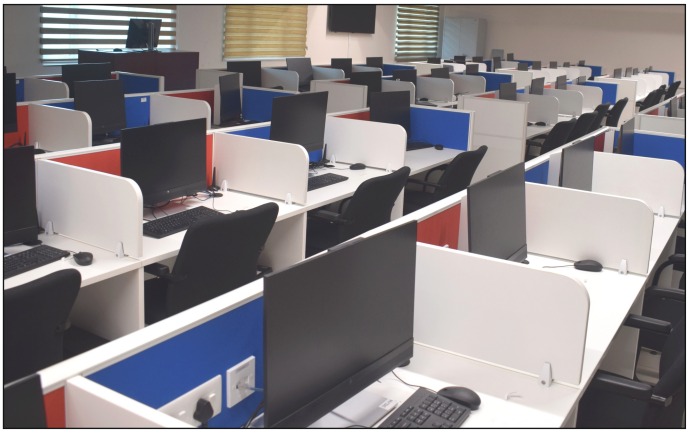
5. The job notification form is made available online to all the eligible students. The students apply online to companies' job profiles

6. The CDC office informs the recruiters of the dates alloted for the on-campus placement process. The Placement at IIT Tirupati would begin from the first week of 1st September 2024 and will continue till the end of 2024-25 academic session

7. Recruiters visit the campus on the alloted date (s) and conduct the selection process

8. The recruiter is required to submit the list of selected and waitlisted (if desired) students to the CDC office soon after the completion of the selection process

COMPUTER SCIENCE AND ENGINEERING



B.TECH. PROGRAMME

Courses Offered : Computer System Design, Artificial Intelligence, Computer Networks, Database Management System, Machine Learning and Deep Learning, Software Engineering, Operating Systems, Compiler Design, Design and Analysis of Algorithms, Theory of Computation, Computer Organization, Data Structures and Algorithms, Discrete Mathematics, Digital Systems, Computational Geometry, Artificial Neural Networks, Industrial Data Science, Distributed Systems, Performance Evaluation of Computer Systems, Stochastic Decision Processes, Stochastic Network Optimization, Parallel Computing, Computational methods in optimization, Deep Learning, and Introduction to Blockchain Technology.

Project Duration: 1 year

Laboratory Courses:

- Computer Systems and Design Lab
- Software Engineering Lab
- Computer Networks Lab
- Operating Systems Lab
- Compiler Design Lab
- Intelligent Systems Laboratory
- Advanced Programming Lab
- Digital Circuits Lab
- Data Structures and Algorithms

M.Tech and M.S. by Research Programs

Note: The M.S. degree is equivalent to an M.Tech degree and qualifies for all M.Tech opportunities. Every scholar credits based on their research area. The duration of M.S. varies from 1.5 years to 3 years.

Courses Offered: Advanced Data Structures and Algorithms, Industrial Software Engineering, Cloud Computing, Computer System Architecture, Distributed Systems, Artificial Intelligence, Machine/Reinforcement Learning, Linear Algebra and Probability Theory, and Computational Methods in Optimization.

Project Duration: 1 year

Laboratory Courses

- Advanced Data Structures & Algorithms Lab
- Computer System Architecture Lab
- Artificial Intelligence & Machine Learning Lab
- Cloud Computing Lab
- Operating System Lab
- Computer Network Lab

Areas of Research:

The program offers research opportunities in diverse areas including Parallel Computing, Algorithmic Engineering, Algorithms, Computational Complexity, Optimisation algorithms, Computer Architecture, Delay Tolerant Networks, Computer Networks, Internet of Things, Machine Learning, Reinforcement Learning, Incremental Learning, Computer Vision, Big Data, Cloud Computing, VLSI Test and Verification, Software Engineering and AI for Software Engineering.

PhD PROGRAMME

Areas of Research

- Parallel Computing
- Algorithmic Engineering
- Algorithms
- Computational Complexity
- Optimisation algorithms
- Computer Architecture
- Delay Tolerant Networks
- Computer Networks
- Internet of Things
- Machine Learning
- Reinforcement Learning
- Incremental Learning
- Computer Vision
- Big Data
- Cloud Computing
- VLSI Test and Verification
- Software Engineering
- AI for Software Engineering.

MECHANICAL ENGINEERING

B.TECH. PROGRAMME

Courses Offered : Materials and Design, Kinematics and Dynamics of Machinery, Manufacturing Technology, Engineering Mechanics, Strength of Materials, Manufacturing process, Applied Thermal Engineering, Design of Machine Elements, Vibrations and Control, Machine Drawing, Fluid Dynamics and Hydraulic Machines, Heat and Mass Transfer, Mechatronics, Industrial Automation.
**This is not the exhaustive list of courses offered*

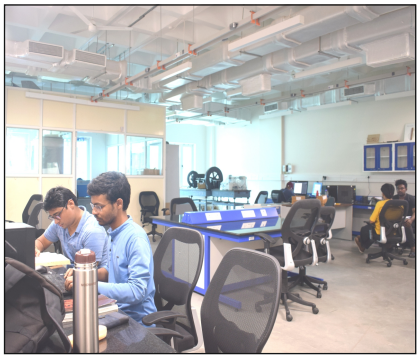
Elective Courses: Computational Fluid Dynamics, Finite element Analysis, Mechanical Vibrations, Design for Manufacturing and Assembly, Composite Materials, Additive Manufacturing.
**Students are allowed to take interdisciplinary courses also, enabling creative solutions to complex problems*

Project Duration: 1 year

Research Areas : Solid mechanics and Design, Advanced Manufacturing, Design and Robotics, Sustainable Energy and Tech, Food processing, Fluid and Thermal Sciences, Precision and Additive Manufacturing, Development of cutting fluids and cutting tools, Thermal study on Porous medium combustion and Metal Hydride Reactors, Advanced welding techniques and numerical study, Nano material composites, Finite Element Computational study on Continuum mechanics, Smart Manufacturing, Nonlinear dynamic systems and vibrations, Fibre reinforced composites and numerical study, Robotics on underwater systems, Hydraulic fracturing, Robotic circuit systems.

Laboratory Courses :

- Applied Mechanics Lab
- Manufacturing Lab
- Engineering Drawing Et Machine Drawing
- Hydraulics and Pneumatics Lab
- Manufacturing Lab
- Heat Transfer Lab
- Metrology Lab



M.Tech and M.S. by Research Programs

M.Tech in Design and Manufacturing

Core Courses: Mechanical Vibrations, Advanced Mechanics of solids, Additive Manufacturing, Product Design and Development, Advanced Manufacturing Process Finite Element Methods in Engineering Mechanics.

Elective Courses: Computational Fluid Dynamics, Advanced Engineering Dynamics, Composite Materials, CAD/CAM, Metallurgy and Computer Aided Inspection, Vibrations of Discrete Systems, Continuum Mechanics, Mechanics and Robotic Manipulators, Joining Technologies, Abrasive Machining and Finishing Processes.

M.Tech in Thermal Engineering and Energy Systems

Core Courses: Advanced Fluid Mechanics, Advanced Thermodynamics, Convective Heat Transfer, Computational Fluid Dynamics.
Elective Courses: Compressible flow, Pollutant Formation and Control in Combustion, Hydrogen Production, Storage, and Safety.

Laboratory Courses:

- Design and Manufacturing Laboratory-1 (Advanced manufacturing and Vibration Analysis)
- Design and Manufacturing Laboratory-2 (Finite Element Analysis)
- Fluids and Thermal Laboratory

M.Tech Project

Project Duration : 1 year

Areas of Research: The program offers research opportunities in diverse areas including Mathematical modeling of fluid flow, Computational fluid dynamics, Computational heat transfer, Thermal energy storage, Hydrogen storage in metal hydrides, Spray dynamics.

PhD PROGRAMME

Areas of Research: The program offers research opportunities in diverse areas including Metal hydride hydrogen systems, Spray and combustion study, Surface coating and tri biological study, Composite materials.

LABS & FACILITIES

The institute has set up laboratories with cutting technology to aid the students in practical learning and research.

Applied mechanics lab gives students hands-on experience to comprehend essential solid mechanics, fluid mechanics, and dynamics standards.

Applied thermal engineering lab provides practical learning on refrigeration systems, IC engines, and heat transfer concepts.

Machine tools lab and Metrology lab provide support to the student projects and hands-on experience over advanced machining and measurement tools.

Joining and Metallography (JAM) lab is developed to train students on the latest joining and metallography studies.

CIVIL & ENVIRONMENT ENGINEERING

B.TECH. PROGRAMME

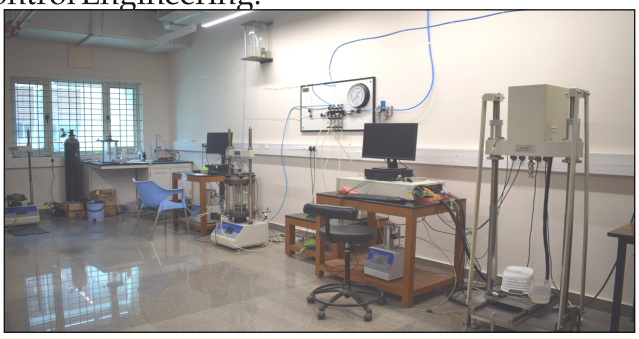
Courses Offered: Engineering Mechanics, Strength of Materials, Surveying, Civil Engineering Materials and Construction, Ecology and Environment, Structural Analysis, Geology and Soil Mechanics, Fluid Mechanics and Hydraulics, Basic Structural Steel Design, Water Resources Engineering, Environmental Engineering, Basic Reinforced Concrete Design, Geotechnical Engineering, Transportation Engineering, Estimation and Construction Management, and Functional Design of Buildings.

Elective Courses: Students can choose from a variety of elective courses to tailor their education according to their interests and career goals. Elective options include Groundwater Hydrology, Integrated Impact Assessment, Solid and Hazardous Waste Management, GIS and Remote Sensing, Nondestructive Testing and Health Monitoring of Civil Structures, Rock Mechanics, Unsaturated Soil Mechanics and Applications, Geoenvironmental Engineering, Advanced Mechanics of Solids, Finite Element Method in Engineering Mechanics, Geotechnical Investigations and Foundation Design, Earthquake and Wind Engineering, Random Vibration and Structural Reliability, Ground Improvement and Geosynthetics, Soil Dynamics and Geotechnical Earthquake Engineering, Advanced Concrete Technology, and Air Pollution Control Engineering.

Project Duration: 1 year

Laboratory Courses:

- Building Materials
- Transportation Engineering
- Geosynthetics
- Surveying
- Structural Engineering
- Hydraulics and Environmental Engg.
- Advance structural engineering
- Computational Engineering / Engineering Drawing
- Building Drawing



M.TECH & M.S. PROGRAMS

Core Courses:

Environmental a water resource engineering: Physicochemical processes in water and waste water engineering, Air pollution control engineering, Surface water hydrology, Groundwater hydrology, Water Resource planning and Management, Biological processes in wastewater engineering.

Geotechnical Engineering: Advanced Soil Mechanics, Geotechnical Investigation and Foundation Design, Pavement analysis and Design, Ground Improvement and Geosynthetics, Soil Dynamics and Geotechnical Earthquake Engg.

Structural Engineering: Advanced design of concrete structures, Advanced Mechanics of solids, Structural stability and design, Structural Dynamics, Advanced design of metal structures, Finite element methods in engineering mechanics.

Transportation Et Infrastructure Engineering: Geotechnical investigation and Foundation design, Traffic engineering and road safety, Pavement analysis and design, Traffic flow modelling and simulation, Pavement materials and construction, Ground improvement and Geosynthetics, Statistical method for engineers.

M.Tech Project

Project Duration : 1 year

PhD PROGRAMME

Areas of Research: The program offers research opportunities in diverse areas including:

- Environmental and water resources engineering: Air quality modeling and management, Water quality assessment, Waste water and solid waste management, Climate change, Remote sensing, Geodesy.
- Structural engineering: Cold-formed steel structural systems, Structural Fire engineering, Concrete 3D printing, Corrosion and durability of concrete structures.
- Geotechnical engineering: Earthquake geotechnics, Geosynthetics, Ground improvement techniques, Geo environmental engineering.
- Transport engineering: Pavement materials and construction, Pavement aging and forensic evaluation, Traffic flow modeling and simulation.

LABORATORY FACILITIES

Structural Engineering Laboratory It consists of state-of-the-art table-top equipment for undergraduate instruction and advanced equipment for research purposes.

Transportation Laboratory The equipment housed in this laboratory allows for undergraduate teaching and postgraduate and doctoral research activities in the areas of sustainable transportation infrastructure and pavements/materials.

Building Material Laboratory The main objectives of experimental studies on building materials and its components are to facilitate quality control and compliance with specifications.

Geotechnical Engineering Laboratory The lab is equipped with basic and state-of-the-art equipment for Undergraduate and Postgraduate studies to characterize the physical, hydraulic, and mechanical properties of soils under static and seismic loading conditions.

Environmental Engineering Laboratory The laboratory is equipped with state-of-the-art facilities to perform advanced water, wastewater, and air quality analyses.

Hydraulics and Water Resources Engineering Laboratory This laboratory allows students to understand the various aspects of fluids at rest and in motion in engineering applications.

Surveying Laboratory This lab is equipped with various equipment like Prismatic Compasses, Vernier Theodolites, Dumpy Levels, Plane Tables, and associated accessories like Ranging Rods, Cross Staff, Arrows, Pegs, etc.

Non Destructive Testing Laboratory In this lab students learn an array of inspection methods that allows us to evaluate and collect data about a material, system, or component without permanently altering it.

ELECTRICAL ENGINEERING

B.TECH PROGRAMME

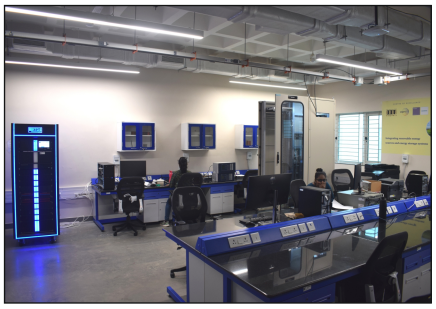
Core Courses : Computer System Design, Artificial Intelligence, Computer Networks, Database Management System, Machine Learning and Deep Learning, Software Engineering, Operating Systems, Compiler Design, Design and Analysis of Algorithms, Theory of Computation, Computer Organization, Data Structures and Algorithms, Discrete Mathematics, Digital Systems, Computational Geometry, Artificial Neural Networks, Industrial Data Science, Distributed Systems, Performance Evaluation of Computer Systems, Stochastic Decision Processes, Stochastic Network Optimization, Parallel Computing, Computational methods in optimization, Deep Learning, and Introduction to Blockchain Technology.

Elective Courses : Students have the opportunity to specialize their education by choosing from a variety of elective courses. Elective options include Machine Learning for Image Processing, Deep Learning: Theory and Applications, Medical Imaging, Computer Vision, Statistical Signal Processing, Queuing Theory, Communication Networks, Advanced Communications, Information Theory and Coding, Multivariable Feedback Control, Robotics and Automation, Compound Semiconductor Devices, MOS Device Modeling and Characterization, CAD for VLSI Systems, Transducers, Embedded Systems, VLSI Fabrication Principles, Microwave Theory and Techniques, Digital VLSI Design, Optimal Control, Advanced Power Electronics, Electric Drives, and Modeling and Control of Electric Machines.

Project Duration: 1 Year

LABORATORY COURSES :

Digital Circuits Lab
Electrical Machines Lab
Digital Signal Processing Lab
Analog Circuits Lab
Electrical CAD Lab
Advanced EE Lab.



M.TECH PROGRAMME

Prominent Areas of Research

Semiconductor Devices, Computer Vision, Medical Imaging, Power electronics and drives, VLSI design, Smart grid Technology, Sensors and Integrated Circuits, Nanoelectronics, Signal Processing with Deep Learning, Distributed Networks, Network Economics, RF and Microwaves, Applied electromagnetics.

M.Tech - RF and Microwave

Courses Offered : Students explore Advanced Microwave Engineering, Advanced Engineering Electromagnetics, Antenna Theory & Design, and RF Transceiver Design.

Elective Courses : Electives include RF-CAD Lab-based Project, Microwave Integrated Circuits, Theory and Design of Gyrotrons, Advanced Communication, RF Microelectronics, Advanced Numerical Methods, Fiber Optic Systems, Advanced Radar Engineering, and Electromagnetic Metamaterials and Plasmonics. This diverse range of electives allows students to delve deeper into specific areas of interest and broaden their knowledge base in RF and microwave engineering.

M.Tech - Microelectronics & VLSI :

Courses Offered: Digital VLSI Design, Analog VLSI Design, MOS Device Modelling and Characterization, Linear Algebra, Probability Theory, Differential Equations, and Statistics for Engineers. Additionally, students delve into specialized subjects such as Compound Semiconductor Devices, Physics and Modelling of Semiconductor Devices, VLSI Fabrication Principles, Transducers, Nanoelectronic Devices, Embedded Systems, VLSI Circuits for Signal Processing, RF Microelectronics, RF & Mixed Signal Design, and Testing & Verification of VLSI Systems.

M.Tech - Signal Processing and Communication :

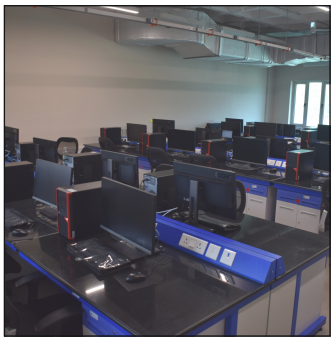
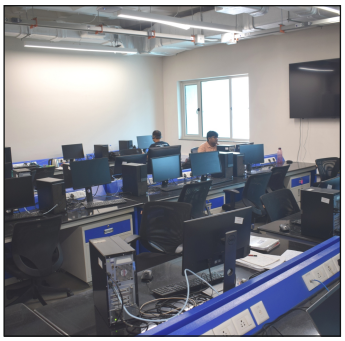
Courses Offered: Machine Learning for Image Processing, Advanced Digital Signal Processing, Computer Vision, Linear Algebra for Engineers, Probability for Engineers, and Differential Equations. Additionally, the curriculum covers subjects like Advanced Communications, Statistical Signal Processing, Deep Learning: Theory and Applications, Information Theory and Coding, Communication Network, Advance Computer Networks, Medical Imaging, Queuing Theory, Statistics for Engineers, VLSI Circuits for Signal Processing, Wireless Communications, Artificial Intelligence and Machine Learning, Speech Signal Processing, Optimal Control, Robotics and Automation, and Multivariable Feedback Control.

PhD PROGRAMME

Areas of Research: The program offers research opportunities in diverse areas including Deep learning for Computer Vision, Applications of Computer Vision in Autonomous driving and Remote sensing, Machine learning for Image processing, Medical imaging, AI for healthcare, Non-invasive Current Measurement Techniques, Analog Front-End Design, Embedded systems, Sensors Signal Conditioning and Interface Circuits, Distributed learning in multi-agent networks, Opinion dynamics in cooperative-competitive networks, Social learning, Modelling of Cyber-Physical Power Systems: Dynamic Modelling and Wide Area Damping Control of Smart Power Grid, Decentralised Control Architecture.

LABS & FACILITIES

- Signal Processing Laboratory
- Advanced Electrical Engineering Laboratory
- Electrical Machines Laboratory
- Integrated Electronics Laboratory
- WCN laboratory
- RF and Microwave Laboratory


CHEMICAL ENGINEERING

B.TECH PROGRAMME

Professional Courses :

The Chemical Engineering program offers a series of professional courses covering fundamental and advanced topics in the field. These include Material and Energy Balances, Fluid and Particle Mechanics, Chemical Engineering Thermodynamics, Process Heat Transfer, Fundamental of Mass Transfer, Homogeneous Reaction Engineering, Computational Techniques for Chemical Engineers, Separation and Purification Processes, Transport Phenomena, Heterogeneous Reaction Engineering, Process control and instrumentation, Process Equipment Design, Process Synthesis and Economics, Process Safety and Industrial Pollution, Bioprocess Engineering, and Applied Process Engineering.

Elective Courses :

Students have the opportunity to choose from a range of elective courses to further specialize their education. Elective options include Microscale Unit Operations, Optimization Technique, Machine Learning in Process Engineering, Introduction to Colloids and Interface, Food Processing Technology, Computational Fluid Dynamics, Introduction to Nano-science and technology, Modern Process Control, Electrochemical Energy Storage, and Introduction to Molecular Dynamics Simulations.

M.TECH PROGRAMME

Core Courses for M.Tech/MS : Analytical Techniques and Instrumentation, Chemical Reactor Analysis and Design, Mathematical Methods for Chemical Engineers, Molecular Thermodynamics, and Transport Processes. Additionally, interdisciplinary courses in Civil and Environmental Engineering.

Area of Research : Process Systems Engineering, Biomolecular and Biomedical Engineering, Energy and Environment, Food Science and Technology, Soft Matter and Nanoscale Materials

Note : M.Tech/MS students may take interdisciplinary and core courses offered in B.Tech as part of their curriculum.

Project Duration: 1 Year

LABS & FACILITIES

The Department is equipped with state of the art equipment and modern research facilities equipment. Our existing experimental facilities are to demonstrate the fundamental chemical engineering principles and enable our undergraduate students to get hands-on experience with various equipment. As a part of our undergraduate curriculum, we have the following experimental laboratories:

- Fluid and Particle Mechanics Laboratory
- Heat Transfer Laboratory
- Mass Transfer Laboratory
- Reaction Engineering Laboratory
- Process Control Laboratory
- Advance structural engineering laboratory
- Geosynthetics laboratory

In addition to experimental Facilities, we also possess computational infrastructure to strongly impart the design, simulation and computational skills to our students in laboratory courses such as:

- Computation Techniques where various numerical techniques are covered and implemented in MATLAB
- Process Equipment Design where students got hands on experience using softwares like Aspen Plus and AutoCAD
- Process Control and Instrumentation where students have learnt to make simulations using Simulink

The department has procured and imported three new and sophisticated equipment related to the domain of reaction engineering. Recently all the lab equipment has been shifted in to the new department blocks where separate laboratories are allotted for the department.

PHYSICS

Courses Offered (Core) : The MSc Programme in Physics offers a comprehensive set of core courses covering foundational and advanced topics in physics, including Classical Mechanics, Mathematical Physics, Classical Electrodynamics, Quantum Mechanics, Applied Electronics, Statistical Physics, Condensed Matter Physics, Computational Physics, Atomic and Molecular Physics, Nuclear and Particle Physics, and Classical and Quantum Optics.

Electives Offered : Students can choose from a variety of elective courses to tailor their education according to their interests. Elective options include Advanced Computational Physics, Advanced Statistical Mechanics, Quantum Collision Theory, Physical Techniques in Material Science, Introduction to Condensed Matter Theory, Magnetism and Superconductivity, Fundamentals of Laser Physics, Basics and Applications of Plasma Physics, Introduction to Quantum Entanglement and Quantum Computing, and Theory of atomic collision and Spectroscopy.

LABS & FACILITIES

- Physics Laboratory-I & II
- Advanced Physics Laboratory,
- Computational Physics Lab, and
- Applied Electronics Lab. al Methods

Project : Duration: 1 year, done in two phases

Areas of Research :

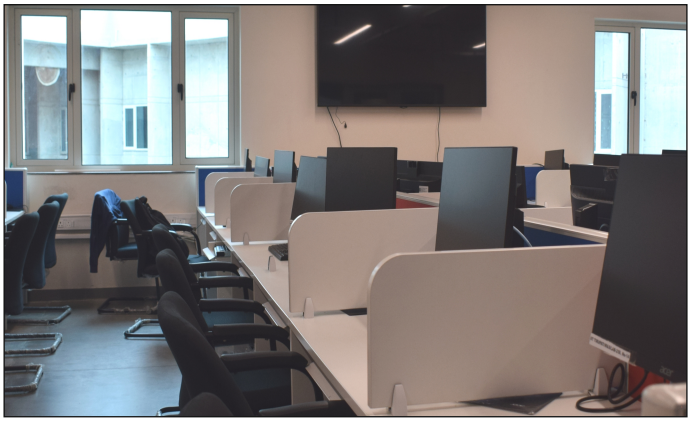
- Strongly Correlated Electron Systems
- Geometrically Frustrated Magnets, Quantum Spin Liquids
- Atomic and Molecular Physics
- Low-Dimensional Quantum Magnets
- Multiferroics, Quantum Information and Quantum Computing
- Polymer Nanofibers and Conducting Polymer
- Photoabsorption Processes in Free/Confined atoms molecules and ions
- Magnetism and Superconductivity, Plasma Physics - Theory and Experiments
- Theoretical Condensed Matter Physics
- Experimental Atomic Molecular and Optical Physics
- Theoretical Ultrafast Physics
- Single Crystal Growth & Novel Material Discovery, Precision Laser Spectroscopy
- Quantum Metrology and Low-dimensional and frustrated Quantum Spin System
- Strongly correlated system with large spin-orbit coupling
- Quantum Communication and Quantum Sensing - Theory and Experiments
- Theoretical Soft Matter Physics and Statistical Mechanics
- High Energy Theory and Phenomenology

PhD PROGRAMME

Areas of Research:

- Computational Physics and Programming
- Experimental Atomi
- Molecular and Optical (AMO) Physics
- Experimental Condensed Matter Physics
- Theoretical Atomic, Plasma Physics
- Theoretical Condensed Matter Physics
- Theoretical Quantum Information and Computation
- High Energy Theory and Phenomenology
- Theoretical Soft Matter

MATHEMATICS & STATISTICS



M.SC. PROGRAMME

Courses Offered :

Real Analysis, Linear Algebra, Discrete Mathematics, Probability Theory, Statistical Inference, Multivariable Calculus and Measure Theory, Ordinary Differential Equations, Algebra, Regression Analysis, Stochastic Processes and Time Series Analysis, Complex Analysis, Sampling Theory and Design of Experiments, Multivariate Statistical Analysis, Numerical Analysis.

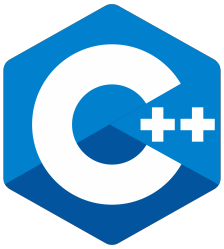
Elective Courses :

Bayesian Statistics, Biostatistics, Categorical Data Analysis, Continuum Mechanics, Distributions and Sobolev Spaces, Fixed Point Theory, Fractal Geometry, Functional Data Analysis, Generalized Linear Models, Linear Integral Equations, Mathematical Modelling, Non-Parametric Statistics, Number Theory, Operational Research, Partial Differential Equation, Spatio-Temporal Modelling, Statistical Analysis of Network, Statistical Finance, Statistical Learning Theory and Applications, Statistical Simulations & Data Analysis, Topology.

Project Duration: 1 semester

Lab Courses :

- Basic programming laboratory: C++ and Matlab
- Data science programming laboratory: Python and R
- Scientific Computing laboratory
- Project works : implementation of SVD from scratch for image compression, developing Linear
- Algebra Package (LAPACK), Data analysis including sentiment analysis, geo pandas



Programming skills in Coursework

Data visualization, Numpy, Pandas, TensorFlow, PyTorch, Seaborn
R programming
Latex : for report writing and presentations
MS Excel : for data analysis

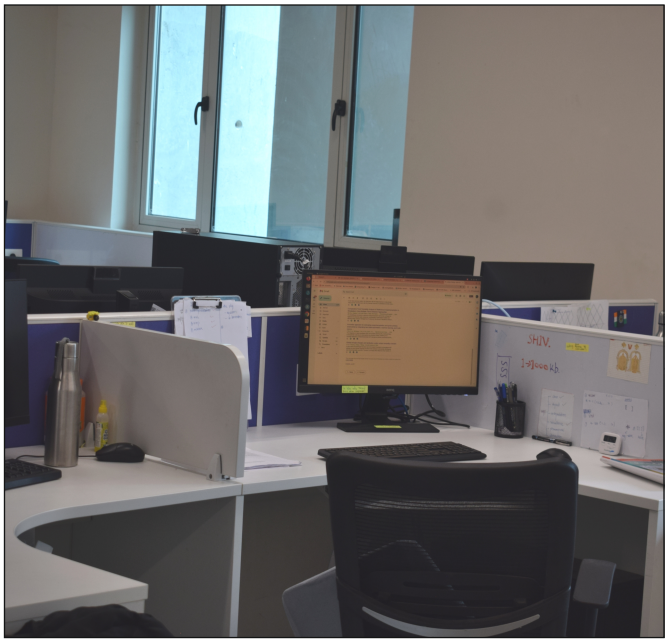
PhD PROGRAMME

Courses Offered:

Advanced Algebra, Advanced Analysis, Advanced Differential Equations, Advanced Probability Theory, Advanced Statistical Inference.

Areas of Research:

The program offers research opportunities in diverse areas including Goodness of Fit tests, Statistical Finance, Hyperbolic Partial Differential Equations, Machine Learning, Multivariate Response Models, Numerical Analysis, Lie Algebras, Additive Number Theory, Quantitative Finance, Representation Theory, Signal and Image Processing, Spatiotemporal Statistics, Vector Finite Element Method, Non-parametric copula estimation, Biostatistics, Fractals, Generalised Linear Models, Inverse problems, Lattice Boltzmann Method.



CHEMISTRY

Courses Offered :

Quantum Chemistry and Chemical Bonding, Transition Metals and Coordination Chemistry, Reactions and Reagents in Organic Chemistry, Thermodynamics and Chemical Kinetics, Main Group and Organometallic Chemistry, Principles of Spectroscopy, Stereochemistry and Organic Synthesis, Symmetry and Group Theory, Bio-inorganic and Environmental Chemistry, Electrochemistry and Chemistry of Solids, Applications of Spectroscopy in Inorganic and Organic Chemistry, and Biomolecules and Chemical Biology. Biophysical Chemistry, P and F block Chemistry, Classical molecular simulation methods and Applications, Nano-chemistry, and Heterocyclic and Natural products.

Elective Courses :

Students can choose from elective courses such as Introduction to Polymer Science, Statistical Mechanics, Pericyclic Reactions and Photochemistry, and Computational Methods in Material Science to tailor their education to their interests.

Laboratory Courses :

- Organic Chemistry Laboratory
- Inorganic Chemistry Laboratory
- Physical Chemistry Laboratory
- Computer Programming and Numerical Methods

Research Areas :

- Protein hybrid nanostructures of diverse Applications
- Biomimetic studies/ drug discovery
- Organic synthesis
- Transition metal catalysis
- Synthesis of biologically important/active Organic Molecules
- Computational Modelling and Geometric information engine
- Theoretical investigation of structure and dynamics of water/aqueous Solutions
- Theoretical Physical chemistry

Project : Duration : 1 year, done in two phases

Masters in Public Policy (MPP) Program

Core Courses offered :

- The MPP Program offers a set of core courses aimed at providing students with a comprehensive understanding of public policy and governance. Core courses include Public Administration
- Public Policy & Governance
- Statistical Technique for Public Policy
- Research Design And Qualitative Method
- Ethics For Public Policy, Communication For Effective Leadership
- Introduction to Program Evaluation
- Public Finance
- Public Organization and Management
- Program Evaluation

Electives offered :

The program provides a wide range of elective courses, allowing students to tailor their education according to their interests and career goals. Elective options include Data Science and Engineering, Data Science Programming Laboratory, Machine Learning, Artificial Intelligence, Deep Learning, Predictive Data Modelling, Artificial Neural Networks, Computational methods in Optimization, Linear Algebra for engineers, Probability for engineers, Differential Equations for Engineers, Bayesian Statistics, Non-parametric Statistics, Statistical Simulations and Data Analysis, Time Series Modeling, Introduction to Energy and Environmental Policy, Sustainable Human Resource Management, Applied Econometrics, Integrated Impact Assessment, GIS and Remote Sensing, Programming Lab, Network Economics, Big Data for Sustainable Science – 1 and 2, Sustainable Infrastructure, Water Resources Planning and Management, Solid and Hazardous Waste Management, Groundwater Hydrology, Surface Water Hydrology, Physicochemical Processes in Water and Wastewater Engineering, Air Pollution Control Engineering, Biological Processes in Wastewater Engineering, Applied Hydraulic Engineering, Hydroinformatics Laboratory, and Environmental Monitoring Laboratory, Traffic Engineering and Road Safety.

Laboratory :

- Statistics & Data Lab – STATA, SPSS
- GIS and RS Lab
- Programming Lab

Major Areas of Research :

- The MPP Program covers major areas of research including Economics of Climate Change
- Development Economics, Empirical Asset Pricing
- Financial Engineering
- Risk Management
- Sustainability and Public Policy
- Industrial & Organizational Psychology

ACHIEVEMENTS

- 10+ research papers in Q1-Q2 2024 at prestigious conferences/ journals including ICPP, COMSNETS, VTC, VISAPP, EASE, ICSA, IST.
- Smart India Hackathon winners - 2023.
- Secured Bronze medal in 12th Inter-IIT Tech Meet held at IIT Madras for a Cybersecurity Problem Statement given by CERT-In.
- Prof. Krishna Prapoorna, Professor (Civil & Environmental Engineering) Elected as Fellow of the Institution of Engineers (India), March 2024.
- Secured the first place in the MechAura 2022, a contest organized by Collins Aerospace, Raytheon Technologies.
- A team from IIT Tirupati was a finalist at Smart India Hackathon.
- Two teams had been selected for ICPC Regionals 2021. One Team reached Asia West Finals in ICPC 2022.
- Secured 1 Silver and 2 Bronze medals at 11th Inter-IIT Tech Meet held at IIT Kanpur.
- 2nd prize at the Shaastra Cosmic Innovation Challenge organized by IIT Madras.
- Two students have won the Hack 3D Summer Challenge hosted by the New York University Center for Cybersecurity in the month of July 2022.
- Published a paper in IEEE TIFS with title Role of Shared Key for Secure Communication over 2-user Gaussian Z-interference Channel.
- Performance Analysis of Wiretap Channel with Friendly Jammer under Finite Blocklength has been published in IEEE GLOBECOM workshop.
- Short Packet Communication over 2-user Non Orthogonal Multiple Access Channel with Confidential Message has been published in IEEE NCC.
- Featured in THE HINDU, NDTV and other Indian newspapers and national media for SurviveCovid-19, a game aimed towards improving awareness on health measures against Covid-19.
- Featured in THE HINDU and national media for work on Mood Of India During Covid-19, a web-based portal towards depicting mood of India through Covid-19 related posts on twitter.
- Presented at Software Engineering Research in India (SERI) 2023 Update Meeting, 2nd June - 3rd June 2023.
- Presented at The 20th IEEE/ACM International Conference on Mining Software Repositories (MSR) 2023, 15th May - 16th May 2023.

ACHIEVEMENTS

- Presented at The 31st IEEE/ACM International Conference on Program Comprehension (ICPC) 2023, 15th May - 16th May 2023.

- Presented at The 30th IEEE/ACM International Conference on Program Comprehension (ICPC) 2022, 16th May - 17th May 2022.

- Presented at The 24TH ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW) 2021, 23rd October - 27th October 2021.

- Presented at The 43rd International Conference on Software Engineering (ICSE) 2021, 25th May - 28th May 2021.

- Presented at The 29th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), 19th - 28th August 2021.

- CSAW is the most comprehensive student-run cyber security event in the world, featuring 7 cyber competitions, workshops, and industry events. Two of our institute undergraduates won the Hack 3D Summer Challenge hosted by the New York University Center for Cybersecurity in the month of July 2022.

- One undergraduate from Mechanical engineering has won first place in the MechAura 2022, a contest organized by Collins Aerospace, Raytheon Technologies, where over 1000 students from across India took part. The competition is a platform for female students to showcase their creativity and inspires them to come up with innovative engineering solutions and ideas that can be practically implemented.

- Two representatives from the Astronomy club (Gagan Vedhi) of IIT Tirupati have achieved a noteworthy accomplishment of securing the 2nd prize at the Shaastra Cosmic Innovation Challenge organized by IIT Madras which had over 160 participants from various colleges across India.

- One student from Master of Public Policy, was selected as a delegate for the G20 summit organized in Bengaluru.

CO-CURRICULAR AND EXTRA CURRICULAR ACTIVITIES

Tirutsava : 6 years ago, we at the Indian Institute of Technology Tirupati envisioned a fest that would give the student fraternity an experience to learn, enjoy and cherish a technical festival named "Anfang". Soon we extended this into a holistic and rich techno-cultural festival and began the journey with the name TIRUTSAVA. It makes days of absolute ecstasy, providing budding technocrats and artists with a platform in diverse fields such as music, dance, games and nail-biting technical events. The three-day extravaganza boasts various technical events like maze solver, RC car road rash, coding and hacking, etc. Cultural events include fierce debates, geeky quizzes, mesmerizing dance nights, jaw-dropping musical duels and so on. There are many other events to cater to diverse interests like blind art, treasure hunt, foot bite, paintball (real-life shooting) etc.





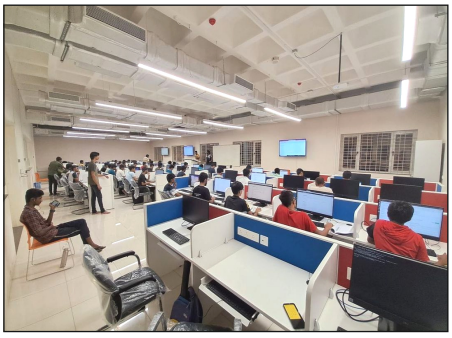




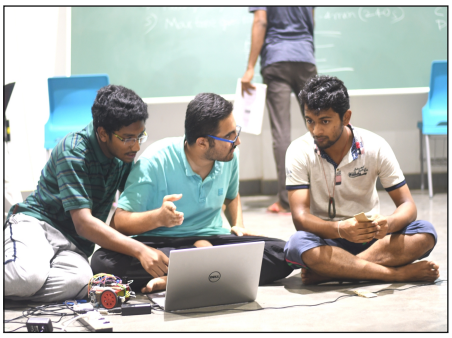



CO-CURRICULAR AND EXTRA CURRICULAR ACTIVITIES

Digital Wizards : Students from various branches can participate in this club's encouraging, participatory environment. Students that are proficient in coding help their classmates. In coding competitions, faculty also lend a hand. The ability to code and accomplish various activities, including object identification, app creation, and web design, is taught to students.



TechManiacs (Robotics Club) : Students create and refine new solutions to challenges that already exist. The club assists in understanding current technologies, such as fusing Al and robotics to carry out jobs like agricultural surveillance for spotting plant diseases. By planning activities like seminars, workshops, and other opportunities where students can interact directly with robots, this group helps students comprehend the use and construction of robots.



Winged Voyage (Automobile Club) : The club is the college's Formula student team. A group dedicated to understanding the development, production, and operation of automobile systems make up this club.

Gagan Vedhi : Astronomy and astrophysics are the club's primary interests. They frequently host a range of Talk Shows, Workshops, and Competitions. They also emphasize the engineering components of astronomy, such as space technology and rocket science.

Literary, Sports, and other clubs : Students have actively participated in non-technical events like cultural and sports meets. Literary clubs like the Debate and Oratory club and the Quizzing club help the student by conducting several fun-filled, innovative & skill-building events. Sports Clubs like Aranya (adventure sports club of IIT Tirupati) and Fitness club help students not only relax but also take care of their fitness and enjoy.

CO-CURRICULAR AND EXTRA CURRICULAR ACTIVITIES

Entrepreneurship Cell : The E-cell organizes regular talks on Entrepreneurship and workshops on current technologies. It also encourages students to devise innovative solutions to real-world problems by conducting competitions.

Additionally, there are a few cultural clubs like Sargam (the music club), Actomania (the drama club), Xcite (the dance club), Artista (the art club) and PFC (the photography and filming club). These non-technical clubs aid their growth in all spheres.

PLACEMENT RECRUITERS

INTERNSHIP RECRUITERS

CAREER DEVELOPMENT CENTRE

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