

Department of Mechanical Engineering



About the Institute

The establishment of the Indian Institute of Technology Tirupati (IITT), as a 3rd Generation IITs, was announced in 2014 by the Government of India. This is one of the fast growing IIT. IIT Tirupati launched its academic programs on August 5, 2015, from a temporary campus situated on Tirupati-Renigunta Road, Tirupati, and has started partly functioning from its 548 acres Permanent Campus in Merlapaka Village on Yerpedu-Venkatagiri Highway in the fourth year of its operations.

The Institute has witnessed immense growth in faculty recruitment, new academic programs, research initiatives, and infrastructure development. IIT Tirupati Transit Campus project has been awarded the GRIHA Council Award for exemplary demonstration of Sustainable Building Material/Technologies. It is the First Prize winner of the HUDCO Design Awards 2018 under the category of Green Buildings. The Ministry of Human Resource Development also recognized the Transit Campus of the Institute as a Swachh Campus in the year 2019.



Central Library

Message from the Director



Prof. K.N. Satyanarayana

The students at IIT TIRUPATI are fully availing the research opportunities with various research laboratories and institutions of international repute in India and abroad. As part of their curriculum, the graduating batch students completed their summer internship in top-class companies, academic and research institutions. Along with academics, students actively participate in sports, cultural events, and in numerous clubs such as astronomy, music, social outreach, etc., which have helped them hone collective responsibility skills and leadership qualities.

Being a new Institute, IIT Tirupati is nimble and aggressively pursuing opportunities to collaborate with leading Indian & multinational companies, public sector organizations, financial institutions, and others. We highly value our partnership with the Industry and remain committed to making your recruiting experience with IIT Tirupati productive and positive. We cordially invite you to IIT Tirupati for the placement and internship process.

MOU signing with Texas A&M University, USA



About the Department

The department of Mechanical engineering is one of the first four departments introduced at IIT Tirupati. The courses have been structured to ensure students strong foundation in the fundamentals of Mechanical Engineering alongside with concerted lab work, projects and high-quality research on burgeoning subjects.

The department electives offered ensure students are introduced to thriving fields of Mechanical Engineering as well as have a chance to explore conventional subjects in-depth. The faculty members of the department work for the quality education of the students alongside contributing for their respective research areas which include Composite Materials, Computational Metrology, Contact Mechanics, Liquid Atomization, Hydrogen Storage, Adsorption Heating and Cooling Systems, Experimental and Analytical Fluid Mechanics, Advanced Materials and Manufacturing, Material Processing, Welding Science and Technology, Computational Mechanics, Wind Energy.



Dr. A. Madan Mohan



Message from the HOD

The Department of Mechanical Engineering at IIT Tirupati is dedicated to provide high quality education. We have started our journey in the year 2015. We have a strong undergraduate program in Mechanical Engineering and masters (M. Tech) in Design and Manufacturing specialisation. We are also offering MS by research and PhD programs. We are in the process of developing state of art academic and research laboratories. The faculty of the Department are with excellent academic credentials and very active in research. Multi-disciplinary approach, global collaborations and industrial problem solving are integral part of our curriculum. We have active collaborations with R&D institutions and foreign universities.

Why recruit at IIT Tirupati?

- ▲ IIT Tirupati, established in 2015 as a **3rd generation IIT**, is explicitly invested in promoting an excellent atmosphere to think, create, study and do research. At IIT Tirupati, teaching and research go hand in hand, reinforcing each other.
- ▲ Students are exposed to **cutting-edge research** and are encouraged to take interdisciplinary courses and projects.
- ▲ Students participate in various **extra-curricular activities**, including Cultural Events, National Service Scheme, SPICMACAY, Inter IIT Annual Meets, which are aimed at overall personality development, team participation thus breaching the language barriers and culture.
- ▲ Despite the **COVID-19** pandemic crisis, the students at IIT Tirupati, have not been perturbed and have continued to attend their online classes conducted via a digital platform. They have also carried out various R&D in different forms and helped frontline warriors battling the pandemic crisis.
- ▲ IIT Tirupati has signed **MoUs** with several public and private organizations which include CSIR labs, CMTI Bangalore, SBI, CPWD, Nagaoka University of Technology (Japan), University of Calgary (Canada), Texas A&M Engineering Equipment Station, Toshiba Software India, Analog Devices India Pvt. Ltd., to ensure that the students get an opportunity to work and learn in the leading labs and industries in the world.



B.Tech Programme

Courses Offered*

- ▲ Materials and Design
- ▲ Kinematics and Dynamics of Machinery
- ▲ Manufacturing Technology
- ▲ Engineering Mechanics
- ▲ Strength of Materials
- ▲ Turbomachines
- ▲ Internal Combustion Engines
- ▲ Design of Machine Elements
- ▲ Instrumentation and Control Engineering
- ▲ Refrigeration and Air Conditioning

**This is not the exhaustive list of courses offered*

Laboratory Courses

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

Elective Courses

- ▲ Computational Fluid Dynamics
- ▲ Finite Element Analysis
- ▲ Mechanical Vibrations
- ▲ Design for Manufacturing and Assembly
- ▲ Advanced Manufacturing Processes
- ▲ Advanced solid Mechanics

Research Areas

- ▲ Advanced Manufacturing
- ▲ Design and Robotics
- ▲ Sustainable Energy and Tech.
- ▲ Food processing

B.Tech Project

Duration: 1 Year



M.Tech & M.S Programme

Courses Offered

- ▲ Mechanical Vibrations
- ▲ Advanced Mechanics of solids
- ▲ Additive Manufacturing
- ▲ Product Design and Development
- ▲ Advanced Manufacturing Processes
- ▲ Design for Manufacturing and Assembly
- ▲ Finite Element Methods in Engineering Mechanics
- ▲ Fracture and Fatigue
- ▲ Advanced Engineering Dynamics
- ▲ Composite Materials
- ▲ CAD/CAM
- ▲ Numerical Modelling of Manufacturing Processes
- ▲ Non-linear Dynamics
- ▲ Continuum Mechanics
- ▲ Robotics and Manipulators
- ▲ Joining Technologies
- ▲ Abrasive Machining and Finishing Processes

Laboratory Courses

- ▲ Advanced Mechanical Engineering Lab

NOTE

- ▲ M.Tech project duration - 1 year
- ▲ Every M.S scholar credits courses based on his/her area of research.
- ▲ The duration of M.S course varies from 1.5 years to 3 years.

Research Areas

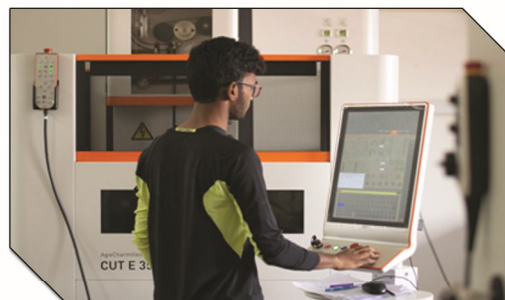
- ▲ Solid mechanics and design
- ▲ Advanced Manufacturing
- ▲ Design and Robotics
- ▲ Sustainable Energy and Tech.
- ▲ Food processing
- ▲ Fluid and Thermal Sciences



Lab facilities

The institute has setup laboratories with advanced equipments to aid the students in learning and research.

- ▲ An applied mechanics lab which supports the learning of Fluid Dynamics and Solid mechanics,
- ▲ A heat transfer lab which supports the learning of Heat Transfer.
- ▲ Manufacturing Lab and Metrology which supports learning of manufacturing processes and measurements, respectively have been set up in the institute.
- ▲ As the students “learn-by-doing”, they map their theoretical knowledge to practical world easily and develop confidence to make their own projects independently.



Achievements

- ▲ IIT Tirupati participated in the 8th Inter IIT Tech Meet 2019 held at IIT Roorkee and secured 11th position out of the 23 participating IIT's in Overall Championship.

Some of the key highlights of the events were,

- Ashoka's Tech For Change Challenge - **Gold medal**
- BOSCH's Route Optimization Algorithm - **Silver medal**
- DIC's Terrace Farming Robot for Hilly Areas - **Bronze medal**
- ▲ A team from IIT Tirupati have won the competition "Make Your Robo Tick" conducted by France institute ESIGELEC and Manipal Institute of Technology. The team stood first out of 51 teams across India.
- ▲ One of our MS students won Young Professionals Grant Competition that facilitated participation in the 49th International Congress on Noise Control Engineering, 2020.
- ▲ One student received Best Paper Award at 7th International on Advances in Energy Research at IIT Bombay for Thermodynamic performance, analysis of adsorption cooling and resorption heating system using ammoniated halide salts.

Co-curricular and Extra curricular Activities

Robotics Club

The Robotics club of IIT Tirupati promotes friendly learning of many difficult tasks and topics, and encourages young minds to develop different kinds of robots and, in the process, gain inter-disciplinary knowledge. The club believes in promoting technology and innovation in the college. This is a student run club that conducts various competitions through the academic year. Alongside competitions, the club ensures conduction of workshops to help introduce newer students to the construction and design of robots to get them to be more involved and help encourage their interest

Technical Festivals

The students have avidly participated in contests held at various technical festivals across the country like Shaastra, TechFest, and Technex along with Inter IIT Tech Meet. Students in large numbers participate in competitions conducted in Tirutsava, our annual techno-cultural festival. The competitions encompass various fields like coding, robotics, computer vision, quizzing, software development etc.

Literary, Quizzing, Sports and Music Club

Students have taken a keen interest in various cultural and sports activities. The Literary club is among the most active clubs at the Institute. It helps develop an interest towards humanities and sciences and encourages participants to work on bettering their communication skills and bringing a clarity of ideas. The music club conducts various competitions and events throughout the year, helping the students to hone their skills in music.



Faculty



DR. MADAN MOHAN
Assistant Professor

PhD - IISC Bangalore

Area of interest:
Liquid Atomization,
Combustion



DR. N.N. KISHORE
Professor

Ph.D - IIT Kanpur

Area of interest:
Composite Materials



Dr. MAMILLA RAVI SANKAR
Associate Professor

Ph.D - IIT Kanpur

Area of interest:
Advanced Materials and
Manufacturing, Ultra
Precision Machining



SRIRAM SUNDAR
Assistant Professor

Ph.D - The Ohio State University,
Columbus, Ohio, U.S.A

Area of interest:
Vibrations,
Contact Mechanics



DR. DEGALA VENKATA KIRAN
Assistant Professor

Ph.D - IIT Bombay

Area of interest:
Welding Technology



Dr. AJAY KUMAR
Assistant Professor

Ph.D - IISC Bangalore

Area of interest:
Metal Forming, Materials
Processing and Mechanical
Behavior of Materials



Dr. ANUP BASAK
Assistant Professor

Ph.D - IIT Kanpur

Area of interest:
Solid Mechanics,
Computational Mechanics



DR. N. VENKAIAH
Associate Professor

Ph.D - IIT Madras

Area of interest:
Computational Metrology,
Optimization Techniques



DR. ANIL KUMAR EMADABATHUNI
Associate Professor

Ph.D - IIT Madras

Area of interest:
Hydrogen Storage,
Thermal energy storage



DR. BALAJI SUBRAMANIAN
Assistant Professor
Ph.D - Swiss Federal Institute of
Technology (ETH) Zurich,
Switzerland

Area of interest:
Wind Energy, Fluid Mechanics,
Aerodynamics and Signal-
Conditioning Circuits



DR. P. VENKATRAMAN
Assistant Professor

Ph.D - Nanyang Technical
University

Area of interest:
Hydraulic Fracturing,
Multiscale Modelling



Dr. GIRISH KUMAR RAJAN
Assistant Professor

Ph.D - Pennsylvania State
University, PA, USA

Area of interest:
Fluid Mechanics and Applied
Mathematics Secrecy



Dr. SUBBAREDDY DAGGUMATI
Assistant Professor

Ph.D - Ghent University, Belgium

Area of interest:
Advanced Fibre Reinforced
Composite Materials,
Computational Solid
Mechanics

Placements



Internships



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CENTRAL MANUFACTURING
TECHNOLOGY INSTITUTE

A RAPIDLY GROWING 3RD GENERATION IIT



Contact us

CAREER DEVELOPMENT CENTRE

placement@iittp.ac.in



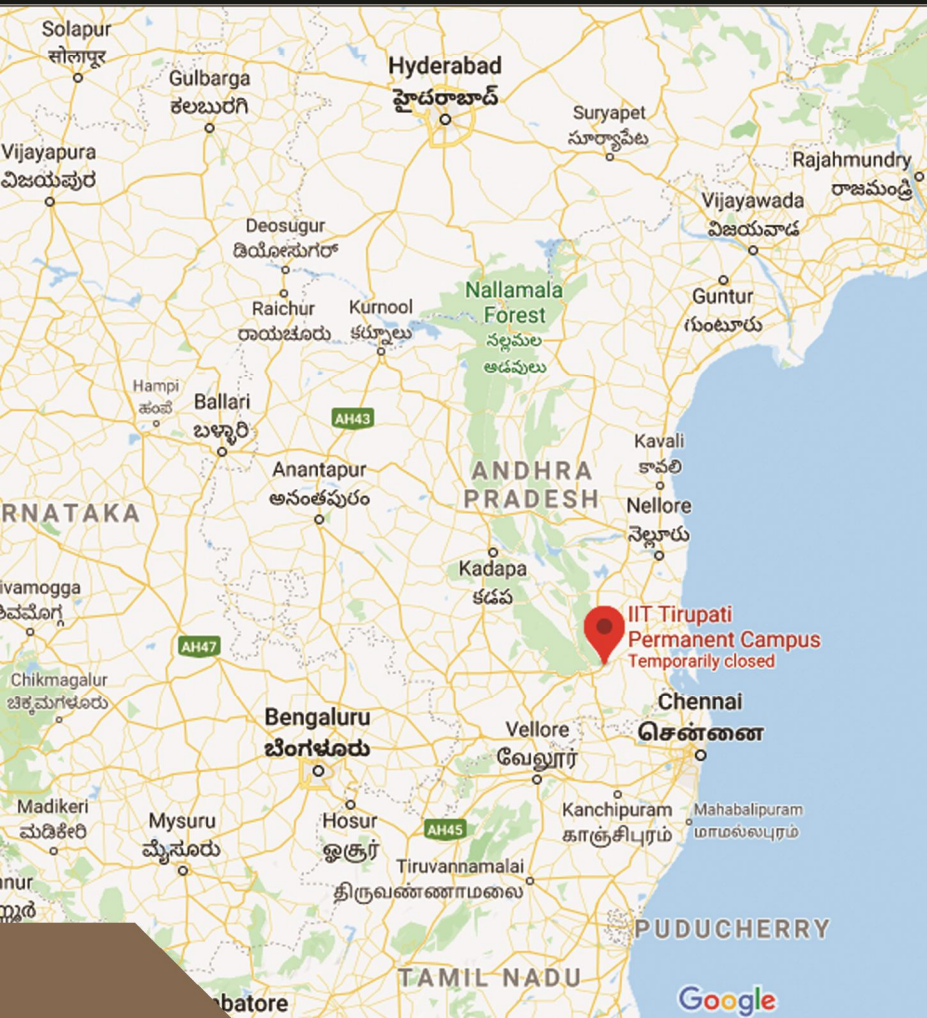
+91 877 2503672



+91 9000431899



www.cdc.iittp.ac.in



Location Map of IIT Tirupati