

## Admission to Ph.D and M.S. (Research) Jan-2020 Semester

Indian Institute of Technology Tirupati is the first among the 3G IITs, announced in 2014, to have its foundation stone laid in March 2015. It started functioning with the support of its mentoring institute, IIT Madras from the academic year of 2015-16. Currently, the Academic Programs in B.Tech are Chemical Engineering, Civil Engineering, Computer Science & Engineering, Electrical Engineering and Mechanical Engineering. The curriculum has emphasis on theoretical knowledge and practice oriented laboratories. Courses are planned to nurture innovation, creativity, quality, teamwork, communication skills, ethics and societal interaction. Subsequently, M Tech, M. Sc, M.S (Research) and PhD programmes were also started.

Applications are invited for admission to the M.S. (Research) and Ph.D. programmes starting in January 2020 Semester, as per details given below:

### **Doctor of Philosophy (Ph.D.)**

#### **Research Areas**

##### **1. Engineering**

###### ***Chemical Engineering:***

Additive Manufacturing for Materials development, Biofuels, Process Control, Process Optimisation, Machine learning for Process Systems, Membrane Materials, Microfluidics, Water and Wastewater Treatment.

###### ***Civil Engineering:***

Concrete Structures, Traffic Engineering, Water Resources and Environmental Engineering

###### ***Computer Science & Engineering:***

Computer Architecture and Accelerator Design, Test and Verification of VLSI, Parallel Computing, Software Engineering, Reinforcement Learning, Stochastic Approximation Algorithms.

###### ***Electrical Engineering:***

Communication and Networking, Integrated Photonics, Digital VLSI Design, Semiconductor Devices, Power Electronics and Drives.

###### ***Mechanical Engineering:***

Fluid Mechanics, Heat Transfer, Turbomachines, Renewable Energy, Sprays and Combustion, Energy Storage and CFD, Solid Mechanics, Computational Mechanics, Composites, Vibrations and Dynamics, Interaction between plasticity and martensitic phase transformations in crystalline solids., Manufacturing, Metrology, Advanced Manufacturing, Micro-Nano Machining, Additive Manufacturing, Tribology.

## **2. Sciences & Humanities and Social Sciences**

### **2.1. Sciences:**

#### ***Chemistry:***

Theoretical and Computational Chemistry: Quantum Theory of Molecules & Materials; Chemical Dynamics and Spectroscopic Modelling; Statistical Mechanics.

Experimental Chemistry: (i) Bioinorganic Chemistry; (ii) Protein - Inorganic hybrids for biomimetic reactions; (iii) Chemosensors: Design, Synthesis, Development & Applications; (iv) Protein based nano-materials and their applications.

#### ***Mathematics:***

Number Theory, Fractals, Fixed Point Theory, Probability & Statistics: Machine Learning, Environmental Statistics and Statistical Finance.

#### ***Physics:***

Experimental Atomic, Molecular and Optical Physics: Precision Laser Spectroscopy and Cold molecules, Laser cooling, Ion trapping, Cavity QED, Nitrogen Vacancy centers, Auto resonance cooling.

Theoretical Condensed Matter Physics: Strongly correlated systems, Quantum transport and periodically driven many body systems.

### **2.2 Humanities and Social Sciences:**

**Organizational Behavior/Human Resources Management:** All Areas

**Finance:** All areas

**Philosophy:** Indian Philosophy, Continental Philosophy, Ethics, Social and Political Philosophy

#### **Categories of Admission:**

Candidates will be admitted to the Ph.D. programme of the Institute under one of the following categories:

- (a) Regular full-time scholars.
- (b) Research scholars under the external registration programme, sponsored by and employed in industry/organisation/national laboratories having R&D facilities and recognised by DST or by IIT Tirupati. A Research Scholar under the external registration programme will normally carry out part or all of his/her research work in the industry/organization/ national laboratory employing the scholar under the supervision of a guide employed in the same organization and a guide at IIT Tirupati. The candidate must have at least two years' experience in the parent organization.

### **Eligibility: Ph.D. in Engineering**

- (a) Candidates with a Master's degree in Engineering/Technology or a Master's degree by Research in Engineering/Technology with a good academic record.
- (b) Candidates with Master's degree in Sciences with a good academic record and of exceptional merit are eligible for the relevant Engineering discipline. They should have a valid GATE score or UGC/CSIR-NET/NBHM or equivalent qualification in the relevant area tenable for the year of registration.
- (c) Candidates who have qualified for the award of Bachelor's degree in Engineering/Technology from a Centrally Funded Technical Institute (CFTI) with an exceptionally good academic record in an eligible discipline will be considered for direct admission to Ph.D. provided he/she has a minimum CGPA of 8/10.

### **Eligibility: Ph.D. in Sciences**

- (a) Master's degree in Sciences with a good academic record and having a valid GATE score or UGC/CSIR-NET/NBHM/INSPIRE/JEST or equivalent qualification tenable for the current year in the relevant area. Master's degree holders in Engineering/Technology are also eligible.
- (b) ME/M.Tech or MS by Research in Engineering or 2 year M.Sc from IITs (entry through JAM) with CGPA 8.0 and above/ BS+MS (5 year integrated) from CFTI
- (c) Candidates who have qualified for the award of Bachelor's degree in Engineering/Technology from a Centrally Funded Technical Institute (CFTI) with an exceptionally good academic record in an eligible discipline will be considered for direct admission to Ph.D. in Sciences provided he/she has a minimum CGPA of 8/10.

### **Eligibility: Ph.D in Humanities and Social Sciences**

Master's degree in an eligible discipline with a good academic record or equivalent and having a valid GATE score or UGC/CSIR- NET/NBHM or equivalent qualification tenable for the current year in the relevant area.

# **Master of Science (Research) [M.S. Research]**

## **Research Areas**

### **1. Engineering**

#### ***Chemical Engineering:***

Additive Manufacturing for Materials development, Biofuels, Process Control, Process Optimisation, Machine learning for Process Systems, Membrane Materials, Microfluidics, Water and Wastewater Treatment.

#### ***Civil Engineering:***

Concrete Structures, Traffic Engineering, Water Resources and Environmental Engineering

#### ***Computer Science & Engineering:***

Computer Architecture and Accelerator Design, Test and Verification of VLSI, Parallel Computing, Software Engineering, Reinforcement Learning, Stochastic Approximation Algorithms.

#### ***Electrical Engineering:***

Power Engineering and Smart Grids, Communication and Networking, Power Electronics and Drives

#### ***Mechanical Engineering:***

Fluid Mechanics, Heat Transfer, Turbomachines, Renewable Energy, Sprays and Combustion, Energy Storage and CFD, Solid Mechanics, Computational Mechanics, Composites, Vibrations and Dynamics, Interaction between plasticity and martensitic phase transformations in crystalline solids., Manufacturing, Metrology, Advanced Manufacturing, Micro-Nano Machining, Additive Manufacturing, Tribology.

### **Category of Admission:**

- (a) Regular Full-Time Scholars
- (b) Research scholars under the external registration programme sponsored by and employed in the parent industry/organisation having R&D facilities and recognized by DST or IIT Tirupati. A Research scholar under the external registration programme will normally carry out part or all of his/her research work in the industry/organisation/national laboratory employing the scholar under the supervision of a guide employed in the same organisation and a guide at IIT Tirupati. The candidate must have at least two years' experience in the parent organisation.

## Eligibility for M.S. by Research

The minimum educational qualifications for admission to the M.S. by research degree for full time scholars are as follows:

- (a) Candidates with a Bachelor's degree in Engineering/Technology in the relevant departments with valid GATE score.
- (b) Candidates having Associate Membership of the following professional bodies are also eligible for admission to the M.S. programme of their parent discipline provided they have a valid GATE score and have passed both part A and part B of the Membership examinations with a good academic record: The Institution of Engineers (India) (Civil/Mechanical/Electrical and Electronics/Electronics and communications), The Institute of Electronics and Tele-Communication Engineering.
- (c) Engineering graduates from IITs and other Centrally Funded Technical Institutes (CFTI) with a CGPA of at least 8/10 are eligible for seeking admission, without GATE score, to the MS Programme and they can be offered HTRA, if selected.
- (d) Candidates under External Registration should have the same qualification as in (a) however, valid GATE score is not required.

## General Remarks

- **Applicants should apply through the online portal only.**
- Shortlisted candidates will have to appear for an interview and/or a written test.
- Reservations for SC/ST/EWS/OBC-NCL/PwD shall apply as per GOI rules.
- Financial Assistance is available (HTRA) as per MHRD or other funding agency norms.
- **More details may be found in the** Information Broucher.
- The last date for submission of applications is **28.10.2019 (Monday)**.
- The admissions shall be governed by regulations given at IIT Tirupati website.
- No queries will be entertained.