

## Mahindra University

[www.mahindrauniversity.edu.in](http://www.mahindrauniversity.edu.in)

### **Ph.D. Program Admission Notification (Spring 2025 Semester starting in January, 2025)**

Mahindra University, notified by the Government of Telangana vide Telangana Ordinance No. 1 of 2020 dated 20th May 2020, announces the launch of its 10<sup>th</sup> Batch of **Ph.D. admissions** in the Spring 2025 Semester starting in January, 2025.

The Doctor of Philosophy (Ph.D.) degree is acknowledged to be the highest university degree that is conferred on a doctoral student, who successfully defends her/his Ph.D. thesis in front of a panel of experts in the field appointed by the University after having spent a stipulated time and having achieved publications in reputed international journals and conferences.

The first year would require the Ph.D. candidate to go through a set of prescribed course work followed by initiation to research and comprehensive examination and carrying out actual research with the Ph.D. Adviser. The journey to earning Ph.D. degree typically goes through a cycle of four phases involving preparation, challenges, small and big successes and ultimate joy of successful defense of the written thesis. Completion of a thesis, depending on individual performance, typically may take about 4 years.



## The Mahindra Edge

Ph.D. students at Mahindra University would have great opportunities for interdisciplinary research by working closely with our faculty, some of who are at the forefront of their fields (may like to check faculty profiles on our website). Our research infra-structure in terms of state-of-the-art laboratories in science and engineering are of high quality and are being continually upgraded. Government of India funding agencies like SERB, BRNS, DRDO, MeitY, etc., have already funded several research projects as well as international collaboration projects granted by DST's International Division.

Ph.D. programs are offered in Engineering and Applied Sciences. For those who wish to pursue liberal arts at Ph.D. level, we have a strong Humanities and Social Sciences program, which is backed by high-quality Media and Design Thinking laboratories and Entrepreneurship cell.

## Specialized areas in which Ph.D. students, if found suitable, would be admitted in Spring 2025 semester Ph.D. Specializations for Spring 2025 semester: ( Jan'25 Intake )

- **Physics:**

Active Metamaterials, Dielectric Meta-surfaces, Metamaterials and Metasurfaces, Quantum Computing, Soft Photonics, TMDC Meta-surfaces, TMDC based Quantum Technologies, Quantum Machine Learning, Photonic Time Crystals, Exceptional Point Photonics, Topological Photonics, Novel Optical Fibers, Nanotechnology and Advance Functional, Energy Materials, Solar Cell, Spintronic Devices, Neutrino Physics, Astroparticle Physics, Fiber and guided wave optics, Silicon photonics, Multifunctional Materials and Devices, Photo-Physics, Quantum Optics.

- **Mathematics:**

Numerical Analysis; Differential Equations; Analysis of Partial Differential Equations; Image Processing; Stochastic Control; Probability and Statistics; Fluid Dynamics; Operations Research-Scheduling and Timetabling in Industry and Education, Supply Chain Optimization; Finite Group Theory; Numerical Linear Algebra; and Machine Learning, Financial Mathematics, Optimal Control Theory.

- **Humanities and Social Sciences:**

**English Literature, Cultural Studies-** Women's Writing, Indian Writing in English, Cultural Studies, Urban Studies, Postcolonial Literature, Digital Humanities, Medical Humanities, Energy Humanities, Posthumanism, South Asian Fiction, Literatures from the Global South, Graphic Narratives

**Philosophy-** Philosophy of Mind, Philosophical Logic, Consciousness, Ethics, Professional Ethics, Indian Philosophy. Analytical Philosophy,

**English Language Education (ELE)** – English as Second Language Studies (ESL), Teacher Training and Professional Development, Classroom-based Research

**Economics-** AI in Economics, Random control Trial in Economics, Natural experiments in Economics, Law and economics, Stochastic production frontier analysis, Political Economy, Macro Economics, Labour Economics, Development Economics, Economics of Climate Change, Agricultural Economics, Environmental Economics, Energy Economics.

Indian Ocean History; Economic Anthropology; Political Science, Sociology of Migration, Borders and Social and Political Anthropology, History

Cognitive Science, Cognitive Linguistics, Applied Linguistics, Speech perception, Syntax, Semantics, Cognitive linguistics, Cultural linguistics, Discourse analysis, Sociolinguistics

**Literature:** American Literature, British Literature, Popular Literature, Contemporary Literature, Women Playwrights

**Accounting & Finance:** Corporate finance, Banking, Micro finance, Financial markets, Financial Engineering and Accounting.

- **Civil Engineering:**

**Structural Engineering:** Geopolymer concrete, Structural Engineering of Heritage Structures and Civil Structural Health Monitoring with sensors, Advanced Structural Cementitious Composites, Earthquake proof civil structures, Seismic Risk Assessment, Engineering Seismology, Engineered Bamboo, monitoring corrosion of Infrastructure, Sustainable materials, Engineered nano cementitious composites, Ultra high performance concrete composites, Structural distress and strengthening systems, Precast elements with 3D concrete printing and Performance based design of Precast structural elements.

**Transportation Engineering:** Travel Behaviour and Choice Modelling, Mobility as a Service (MaaS), Shared Mobility, Sustainable Urban Transportation Systems, Road Safety Audit. Intelligent Transportation Systems, Driver Behaviour, Road Safety Education, Road Traffic Noise. Transportation and Environment- transportation systems modelling, GIS applications and optimization in transportation infrastructure modelling and development, high-speed rail infrastructure planning, and metaheuristics in alignment development and facility location. Driver Behavior, Safety Implications of Electric Vehicles, Road Safety Education, Pedestrian Safety, Intelligent Transportation Systems, Road Traffic Noise.

**Geotechnical Engineering:** Geosynthetics, Sustainable/recycled/secondary pavement materials, Geothermal pavement, and NDT Testing.

**Water resources Engineering:** Watershed management, hydrological modelling, and GIS application in catchment area/drainage basin.

**Environmental Engineering:** Indoor environmental quality, Water quality monitoring, Micropollutants, Photocatalysis, Nanomaterials synthesis for air and water pollution mitigation, Microalgal biofuels.

**Construction Management:** Project management, Stakeholder management, Risk management in mega construction projects, Sustainability in construction projects, Lean Construction, and Circular economy.

- **Mechanical and Aerospace Engineering:**

**Fluid & Thermal Engineering:** Solar Thermal Power, Refrigeration and Air-Conditioning, Cell modelling, Experimental study on Battery thermal management, Direct/indirect cooling of Lithiumion battery pack, ageing, thermal runaway of Lithium-ion cell, Heat transfer, Microfluidics, Biofluid Dynamics, Biomechanics Modelling and Simulation.

**Solid mechanics:** Computational Mechanics, Theoretical solid mechanics, Computer Aided Design,

**Materials and Manufacturing Process:** Nano materials, Cyber-Physical Systems, Advanced manufacturing systems, Sheet metal forming of Titanium Alloy Ti6Al4V, Forming, Rolling of Aerospace materials, Manufacturing process simulation for aerospace materials, Additive manufacturing, Numerical Modelling and Simulation of additive manufacturing, advance finishing process, Smart Manufacturing, Industrial Engineering, Tribology,

**Robotics:** Robotics, Cable-Driven Robotics, Exoskeletons, Exosuits, Unmanned Aerial Vehicles, etc.

**Aerospace Engineering:** Gas turbine Combustion, Computational Turbomachinery, Scramjet Propulsion with hydrogen and hydrogen fuel, Regenerative Cooling in high speed flow, Turbulence modelling, Combustion modelling, Large Eddy Simulation, Direct Numerical Simulation, Turbulencechemistry interaction, Laminar to Turbulent Transition, CFD code development in high speed reacting and non-reacting flows, Numerical Modelling of Heterogeneous Solid Propellant Combustion, Combustion Instability.

Mechanics of 3D printed cellular materials, functionalized 3D print resins (modelling + development)

- **Electrical and Computer Engineering:**

**VLSI Design & Embedded Systems:** IoT architecture, Fault tolerant and resilient embedded systems, Embedded/Edge AI, VLSI designs beyond CMOS, Machine learning applications in VLSI, Algorithms for physical design automation, Semiconductor Devices, High Electron Mobility Transistor modelling for High Frequency applications, Memristor logic for low power logic implementation, Low power reliable memories for In memory compute (IMC), SRAM for space applications, Design of digital circuits and memories using Quantum-dot Cellular Automata (QCA), Synthesis of high k nanomaterials for semiconductor applications, hardware security.

**Renewable Energy System & Smart Grid:** Hybrid Energy Storage Systems, Cyber Physical Systems, Cyber Security for Power Electronic Systems, Fuel Cell.

**Power Electronics and Electric Drives:** Sensorless Electric Drives, Electric Vehicles, EV charging, Cyber Physical Systems, Cyber security for Power Electronic systems, fuel cell, Hybrid Energy Storage systems

**Communications and Signal Processing:** Biomedical Signal Processing, Biometrics and Computer vision, Wireless communications, 5G, and massive IoT, High performance sense amplifier design, Deep learning for wireless communication, Radio Resource Management, MIMO communication, Nonorthogonal Multiple Access Technologies, Optimization in PHY and MAC layers, Dynamic Spectrum Access, Error correction coding for 5G and IoT communication, underwater optical communications, underwater object identification, and ocean optics

- **Life Sciences:**

Genomics, Immuno-technology, Host-Pathogen Interactions, Plant Metabolic Engineering, Genetic Disorders, Cancer biomarkers, Gene Therapy, Computational Genomics, Computer-Aided Drug Discovery, Clinical Informatics, Bioprocess Technology, Food Processing & Nutrition, Agri-Biotech

**Eligibility:**

Programme	Minimum qualification required for admission	Admission Process
<b>Ph.D. (Full Time / Part Time)</b>	<p>Master's degree in Engineering/Technology/Science/Humanities/Social Sciences with a minimum CGPA of 6.00 on a 10-point scale or 60% marks in aggregate. Full time students who do not possess M.Tech. or equivalent degree and instead possess B.Tech. or equivalent degree with a minimum CGPA of 7.00 on a 10-point scale or 70% aggregate marks are required to have a valid GATE score or UGC/CSIR/DBT/INSPIRE Fellowship Examination for Sciences/Humanities and Social Sciences disciplines.</p> <ul style="list-style-type: none"> <li>- The requirement of GATE/National examination can be waived off for possible admission to Ph.D. programs for all graduates from Centrally Funded Technical Institutes with a B.Tech./B.E./Integrated M.Sc. (or any other program of minimum four years duration, admission to which was on the basis of JEE) with CGPA of 8.00 and above at the time of graduation.</li> <li>- The requirement of GATE/National Examination can be also waived off for M.Sc. graduates from IITs with a CGPA of 8.00 and above.</li> </ul>	Interview

**Note:** M.Sc. students in Physics and Mathematics are also eligible to apply for Ph.D. specializations offered by the Department of Mechanical and Aerospace Engineering **Ph.D. Entrance Test:**

Candidates not having valid GATE score or UGC/CSIR/DBT/INSPIRE will have to appear in the written Test to be conducted by ECSE-MU, followed by an interview for the shortlisted candidates.

**Mahindra University Ph.D. Entrance Test:** 5-Jan'25 ( Sunday ) at Mahindra University Campus

**FEE STRUCTURE & Ph.D. ASSISTANTSHIP ( Free Boarding & Lodging ):**

**INR 50000/-**  
PER ANNUM

**INR 20000/-**  
SECURITY DEPOSIT  
(ONE TIME PAYMENT)

**Ph.D. Assistanship**  
(for full time scholars)  
INR 30000/- PER MONTH\* (plus Boarding & Lodging)  
\*8 hours/week TA duty is mandatory

**Important Dates (\* Subject to revision):**

Last Date for submission of applications	21 <sup>st</sup> Dec, 2024
Shortlisting of candidates for interview	28 <sup>th</sup> Dec, 2024
Ph.D. Entrance Test / Interview	20 <sup>th</sup> Jan, 2025
Announcement of Results	27 <sup>th</sup> Jan, 2025
Commencement of the Spring 2025 Semester Teaching	30 <sup>th</sup> Jan, 2025

[Please click here to view Application Procedure for Ph.D. Program](#)

[Please click here to Apply](#)