“The Applied Mechanics department offers a unique combination of courses in its M Tech. programme. The students get a firm grounding in the fundamentals related to the areas of Fluid Mechanics, Materials Science and Solid Mechanics along with rigorous training in the use of current analytical, experimental and computational tools. This equips them to analyse complex engineering systems and undertake their design with proficiency.”

“Dr. Puneet Mahajan
Head of Department, Applied Mechanics

Dr. Sawan S Sinha
Professor In charge T&P, Applied Mechanics

“The students graduating from our department are among the brightest in the nation and are well trained in various cutting-edge technology domains. They have achieved top positions in various leading organizations in the past and are always highly sought-after by leading organizations worldwide owing to the level of skills they acquire at IIT Delhi. I welcome the recruiters for the campus placement and I am confident that you will find exceptionally talented engineers for your organization.”
About Us

Department of Applied Mechanics was established in 1964 with a perspective of being a specialized branch involving teaching, research and consultancy works. Various national and international collaborative projects are being undertaken by the faculty of the department. Students of the department can deal with a wide range of technical and on-field challenges through the experience that they gain from our industrially-oriented projects.

**Programs Offered:** Master of Technology in Engineering Analysis and Design
Master of Science (Research) in Applied Mechanics.

**Admission Criteria:** Students with a minimum of 99 percentile in GATE are shortlisted followed by a separate written test. The two-stage rigorous selection process ensures that only the best and the brightest make it to the department.
## Domains

There are three broad focus areas (and the respective basket of courses) available to M.Tech. Students

<table>
<thead>
<tr>
<th>PRODUCT DESIGN</th>
<th>SOLID MECHANICS</th>
<th>FLUID MECHANICS</th>
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<tbody>
<tr>
<td>- Project Feasibility</td>
<td>- Composites</td>
<td>- Fluid Structures Interaction</td>
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<tr>
<td>- Product Design</td>
<td>- Failure Analysis</td>
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<tr>
<td>- Design Methodology</td>
<td>- Dynamics and Vibrations</td>
<td>- CFD</td>
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<td>- Design Optimization</td>
<td>- Metal Forming Analysis</td>
<td>- Thermal Analysis of flows</td>
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<td>- Finite Element Analysis</td>
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<td>- Hydrodynamic Instability</td>
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<td>- CAD &amp; CAM</td>
<td>- Large Deformation</td>
<td>- Industrial Aerodynamics</td>
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<tr>
<td>- Product Reliability</td>
<td>- Modelling &amp; Analysis</td>
<td>- Multi phase Fluid Flows</td>
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<td>- Failure Analysis and Prevention</td>
<td>- Smart Materials</td>
<td>- Pipeline Engineering</td>
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<td></td>
<td>- Bio-mechanics</td>
<td>- Flow diagnostics</td>
</tr>
</tbody>
</table>
Academics
Design Engineering

This stream has been consistently attracting bright students and is one of the most popular M. Tech. programs among the students as well as recruiters. Product design is becoming increasingly interdisciplinary, requiring the knowledge of electronics, instrumentation etc. in addition to solid mechanics, fluid mechanics and material science. Students take a wide range of specialized elective courses which enable them to successfully design and develop products.

Important Courses

- Product Design & Feasibility
- Design Optimization
- Finite Element Methods
- Modelling and Analysis of Mechanical Systems
- Fracture Mechanics
- Properties & Selection of Materials
- Continuum Mechanics

- Advanced Fluid Mechanics
- Mechanics of Composite Material
- Advanced Dynamics
- CAD
- CFD
- Product Reliability & Maintenance
Ongoing Projects (Design Engineering)

Simulations based on commercial FEA, CFD and other packages

- Impact behavior and reliability assessment of light weight composite armors.
- Design and Analysis of Lightweight electric motorcycle frame.
- Impact Analysis and Optimization of Motorcycle Helmet.
- Flutter and divergence analysis of vertical axis wind turbine.
- Residual stress analysis of welded vessel joints with random system properties.

Simulations with self written codes

- Computational Design of human foot for deformity correction.
- Product design of a novel mini screw dental implants.
- Modeling and design of smart material based artificial muscle actuators.

Experimental and Fabrication related projects.

Design of moving belt for dispersion studies in a wind tunnel.
- Design of magnetostrictive material based energy harvesting device.
- Design of soft actuators
- Design, fabrication and testing of Unmanned Underwater Vehicles and Unmanned Aerial Vehicles
- Automated optimal evaporative room cooling system.
Engineering Mechanics

A broad area of Applied Mechanics, which focuses on research, analysis and development of computational and experimental tools for solving problems in areas of solid mechanics and fluid mechanics. Students of the department are equipped to deal with a wide range of technical and on-field challenges through the experience that they gain from the research as well as our industrially-oriented projects. The research and project works are intended at giving thrust to the development in the areas of:

**Solid Mechanics**
- Dynamics and Vibration
- Nonlinear Finite Element Analysis
- Light Weight Structural Materials
- Failure Analysis

**Fluid Mechanics**
- Turbulence Modelling
- Computational Fluid Dynamics
- Pipeline Engineering
- Fluid Structure Interaction

**Important Courses**
- Finite Element Analysis
- Theory of Plates and Shells
- Advanced Dynamics
- Advanced Solid Mechanics
- Applied Elasticity and Plasticity
- Physics of Turbulence
- Continuum Mechanics
- Computational Fluid Dynamics
- Advanced Fluid Mechanics
- Turbulence & its Modelling
- Fracture Mechanics
- Mechanics of Composites
- Advanced Finite Element Method
Ongoing Projects (Engineering Mechanics)

Computational Modelling and Analysis using in-house code

- Modeling of magneto-electro-elastic membranes for soft actuator applications.
- Finite Element Analysis and DVC studies of Femur Bone
- Development of computer program for generating heat balanced diagram of thermal power plants.
- Asymptotic modelling of pneumatic elastomers
- Large eddy simulation of volumetrically heated jets in the presence of stratification.

Simulation using commercial FEA and CFD packages

- Extension-torsion-inflation coupling in compressible electro elastomeric thin tubes.
- Study of wrinkling instability in magnetoelastic membranes for soft actuator applications
- Musculoskeletal Modelling and Simulation of movement for human upper limb
- Static analysis of shape memory polymer plates

Experimental Analysis

- Turbulent dispersion of pollutants in an urban environment
- Analysis of pre- and post-heating effect on the residual stress distributed in welded vessel joint.
- FE modelling and experiments on impact of 3D composites.
Research Facilities

- Computational Fluid Dynamics Laboratory
- Fluid Mechanics Laboratory
- Strength of Materials Laboratory
- 3D Printers
- Laser Cutter Machine
- Gas Dynamics Laboratory
- Stress Analysis Laboratory
- Experimental Method and Analysis Laboratory
- Impact Mechanics Laboratory
- Computational Laboratory
- Well-equipped Workshop
Softwares
Sample Design Projects

Integrated 8 stationed open gym

Foldable bicycle

Shoe Drier

Staircase Climbing Aid
Past Recruiters

Mercedes-Benz
GE
Boeing
GM
CAT
Caterpillar
Cummins
IndianOil
Schlumberger
Oceaneering
Siemens
Ingenuity for life
Applied Materials
Havells
Pentair Water
Atlas Copco
Eaton
ANSYS
Altair
Bosch
Invented for life
Hero
Bajaj
Mahindra
Ashok Leyland
Renault Nissan Mitsubishi
John Deere
Escorts
Capgemini
Tata Capital
ELGI
Kalyani
Sonalika International
AGNIKUL
Bharat Forge
We only do what’s right for you
Always Better
Always Better
Recruitment Procedure

Process

✓ Student in-charge or placement officer, Training and placement cell shall provide the company a job notification form (JNF)

✓ JNF requires details of the job offer - role offered, pay package, place of posting, eligible department

✓ Once the filled-in JNF with all required details is received, companies are assigned username/password to access their online account at http://tnp.iitd.ac.in

✓ Companies are also assigned space on the server on which they may upload any presentation, videos, data or other information they want the student to see
Recruitment Procedure

Process

✓ The JNF has to be frozen on the OCS (formally T&P) website by company till a deadline

✓ Student shall be able to view all the details, and the eligible candidate may apply

✓ After the application deadline for students, the resume are visible to company. The company submits shortlist on its online account before a deadline

✓ Short-listed students get notified
Recruitment Procedure

Process

✓ The placement office allots the dates for campus interviews

✓ After the completion of selection procedure on campus, company is required to announce the final list of the students on same day itself

✓ If a student is selected, the job is registered against him/her and he/she would not be allowed to appear for more interviews as per placement policy

Resume Verification

✓ All claims made by students in resumes submitted for campus placement are duly verified by the Placement Office. The verification standards are uniform throughout the Institute.
Office of Career Services, Formerly Training & Placement Unit

3rd Floor, Synergy Building, IIT Delhi-110016
Phone: +91-11-2659-1731, +91-11-2659-1732

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