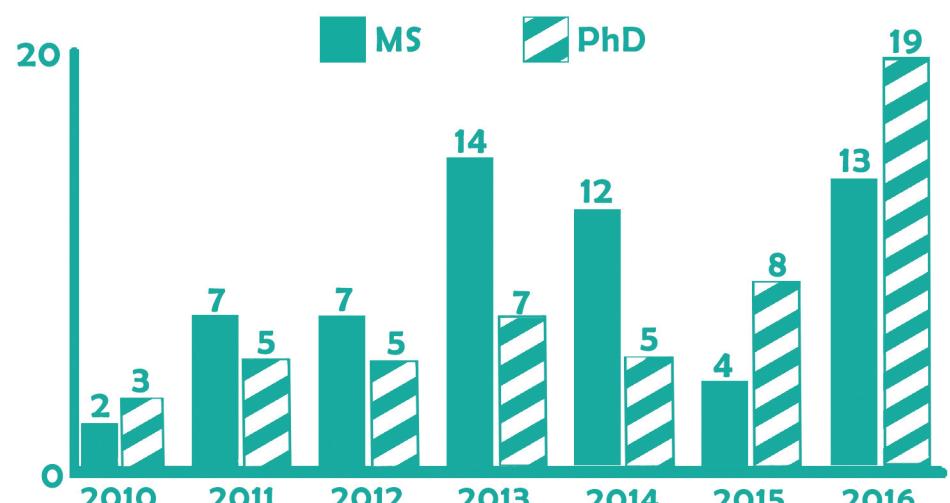
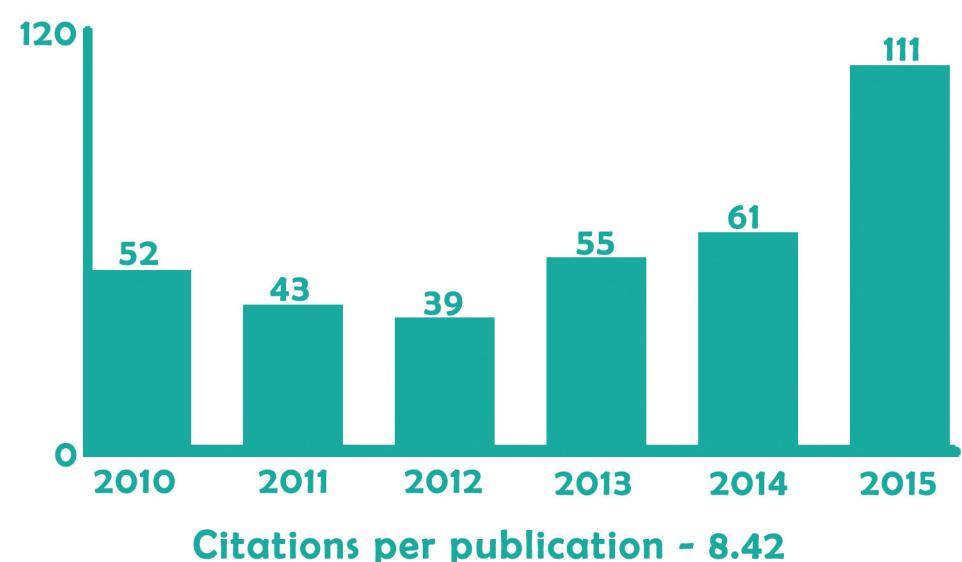


MS & PhD Degrees Awarded



Publications



Industrial Outreach

Our faculty members have contributed to 3 projects each on average during the last five years on industrial consultancy and sponsored research. A typical list of our active collaborators include ARDB, Aspiration Energy, BHEL, Caterpillar, CMC Vellore, CSIR, Dr. Agarwal's Eye Hospital, DBT, DRDO, DST, Eaton, Forbes Marshall, GE, Gexon, GM, HCL, IGCAR, ISRO, L&T, MHRD, NPOL, Renault Nissan, Sankara Netralaya, Shell, SRMC Hospital, URS Corporation (USA), etc... The value generated per faculty is approximately INR 2.2 million per faculty member per year

Representative Advanced Courses

- Biomechanics
- Biomedical imaging systems
- Biomedical instrumentation
- Haptics & Biomedical sensors
- Physiology for engineers
- Atomisation and sprays
- Computational fluid dynamics (CFD)
- Flow induced vibrations
- High performance computing for engineering applications
- Turbulence – Theory & Modelling
- Composite structures & Smart materials
- Dynamics of structures
- Engineering fracture mechanics
- Finite element methods (FEM)
- Materials, Mechanics & Design

Typical Research Facilities

- Biaxial testing machine
- Dexterity sensors, Laproscopic simulator
- Emission monitoring rig
- High performance cluster
- Goniometer, Digital polariscope
- Ultrasonic research platform, Laser doppler Flow meter
- Mammalian cell culture & fluorescence microscope
- Nanoindenter
- Optical sources, detectors & spectrometers, IR cameras
- Thermo-electro-magneto-mechanical characterization
- Thermographic PIV, μ PIV, PLIF, High speed imaging
- Vibration testing facility with real time control
- Wind tunnel testing

Degrees Offered

- PhD; Direct PhD; MS (by Research)
- MTech (Computational and Experimental Mechanics)
- MTech (Biomedical Engineering)
- *Provision to upgrade MS/MTech to PhD

Contact Us

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Department of Applied Mechanics

Indian Institute of Technology Madras



Message from HOD

Established in 1959, the Department of Applied Mechanics is one of the earliest departments in IIT Madras. The department consists of three groups: Biomedical Engineering, Fluid Mechanics and Solid Mechanics. Applied Mechanics is truly interdisciplinary in its core with diverse faculty expertise and research interests. Our department actively nurtures collaborative research with leading government R&D labs, industrial partners as well as with universities of international repute. Our faculty and research scholars publish routinely in leading peer-reviewed international journals and present their work at well-known international forums.

BIOMEDICAL GROUP



Arun K Thittai (PhD, Univ. of Houston, USA)

Biomedical Ultrasound Laboratory

Ultrasound Imaging, HIFU Application in Therapy, Acoustic Radiation Force Application in Mechanics, Photoacoustics

Manivannan M (PhD, IISc, Bangalore)
Touch laboratory
Haptics, Medical Simulation, Biomechanics,
Virtual Reality, Computational Geometry and Physiology



Ramakrishnan S (PhD, IIT Madras)
Non-invasive Imaging and Diagnostics Laboratory
Biomedical Instrumentation, Signal Analysis,
Brain Image Analysis



Ramasubba Reddy M (PhD, IISc, Bangalore)
Biomedical Instrumentation and Signal Processing Laboratory
Bio-signal Processing, Bio-instrumentation



Saumendra K Bajpai (PhD, Johns Hopkins Univ., USA)
Cell-Mechanics Laboratory
Cell Mechanics, Tissue Mechanics, Biophysics of Tumours,
Vascular Mechanics



Sujatha N (PhD, Nanyang Technological Univ., Singapore)
Biophotonics Laboratory
Biomedical Imaging, Speckle Metrology,
Non-invasive Tissue Characterization



S K M Varadhan (PhD, Penn State Univ., USA)
Neuromechanics Laboratory
Neural Control of Human Movement, Neuro Mechanics
and Biomechanics



V V Raghavendra Sai (PhD, IIT Bombay)
Biosensors Laboratory
Bio-Sensor for Healthcare, Fiber Optic Sensor
and Instrumentation, Nanotechnology



FLUID MECHANICS GROUP



Abhijit Chaudhuri (PhD, IISc, Bangalore)

Computational Geoscience Laboratory

Modeling Hydrothermal System, Water Waves,
Mass Transfer in Heterogeneous System

Anubhab Roy (PhD, INCASR, Bangalore)

Flow Instabilities and Complex Fluids Laboratory

Hydrodynamic Stability, Micohydrodynamics,
Geophysical Flows, Living Fluids



Arul Prakash K (PhD, IIT Kanpur)

Thermo-Fluid Dynamics Laboratory

CFD and Heat Transfer, LES and Related Techniques,
Thermal Hydraulics, Cooling Technologies, Bio-fluid dynamics



Baburaj A P (PhD, IISc, Bangalore)

Laser Velocimetry and Fluorescence Laboratory

Coherent Structures in Turbulent Convection,
Interfacial Phenomena and Transport Across Membranes



Mahesh V Panchagnula (PhD, Purdue Univ., USA)

Multiphase Flows Laboratory

Spray Combustion and Atomization, Surface Tension
Phenomena, Multiphase Flows



Prasad Patnaik B S V (PhD, IIT Madras)

Vortex Fluid Dynamics Laboratory

Computational Fluid Dynamics, CFD Tools for FSI,
Micro, Bio-Fluid Flow Systems



Rinku Mukherjee (PhD, North Carolina State Univ., USA)

Unsteady Aerodynamics and Post-Stall Flow Prediction Laboratory

Applied Aerodynamics - Flow Modeling, Unsteady Wake
Phenomenon, Dynamic Stall and Formation Flight, CFD



Sarith P Sathian (PhD, IIT Madras)

Micro and Nano-scale Transport Laboratory

Rarefied Gas Flows & Nano Fluidics



Satyanarayanan Seshadri (PhD, Texas A&M, USA)

Energy and Emissions Laboratory

Aerosol Mechanics, Air Quality - Sensors, Control Equipment
Renewable Thermal Energy - WHR/Solar



Vagesh D Narasimhamurthy (PhD, NTNU, Norway)

Computational Flow, Turbulence and Combustion Laboratory

CFD, DNS, Turbulence, Transition, Bluff-body Flows,
Premixed Combustion, Multiphase Flows



Vengadesan S (PhD, Kobe University, Japan)

CFD Laboratory

CFD & Turbulence Modeling – Basics, Advanced Topics and
Applications to Engineering Problems, FSI, BioFluid Flows



SOLID MECHANICS GROUP



Anuradha Banerjee (PhD, Univ. of Glasgow, UK)

Fracture and Fatigue Laboratory

Fracture and Fatigue Analysis in Metals, Composites,
Bio-materials, Brittle Materials



Arockiarajan A (PhD, Univ. of Kaiserslautern, Germany)

Smart Material Characterization Laboratory

Smart Materials, Composites, Material Modeling,
Computational Mechanics and Experimental Mechanics



Ganesh Tamadapu (PhD, IIT Kharagpur)

Soft Matter Mechanics Laboratory

Mechanics of Elastomers, Encapsulated Microbubbles,
Tensegrity Structures



Lakshmana Rao C (DSc, MIT, USA)

Piezoelectric Sensors and Actuators Laboratory

Impact Mechanics, Fracture Mechanics, Modeling of
Smart Materials, Numerical Approach



Pijush Ghosh (PhD, North Dakota State Univ., USA)

Nanomechanics and Nanomaterials Laboratory

Nanomechanics, Mechanics of Thin Films,
Bio-materials, Molecular Dynamics Simulation



Ramesh K (PhD, IIT Madras)

Photomechanics Laboratory

Digital Photomechanics, Fracture Mechanics,
Computer Applications in Experimental Mechanics



Sayan Gupta (PhD, IISc, Bangalore)

The Uncertainty Laboratory

Vibrations, Nonlinear Dynamics, Probabilistic Mechanics,
Structural Reliability



Shaikh Faruque Ali (PhD, IISc, Bangalore)

Vibration Control and Energy Harvesting Laboratory

Vibration & its Controls, Smart Structures
and Energy Harvesting



Sivakumar M S (PhD, Louisiana State Univ., USA)

Active Material Structures and System Laboratory

Smart Materials and Structures, Inelasticity / Plasticity,
Fatigue of Materials