MEEM DEPARTMENT FACULTY EXPERTISE

Department of Mechanical Engineering and Engineering Mechanics

ENERGY-THERMOFLUIDS (ETF) **January - 2022**

Students seeking detailed advice on technical electives, graduate school, or career opportunities in specific disciplines are encouraged to talk to the appropriate faculty member(s) listed below.

Faculty	Technical Electives Taught	Expertise
J. Allen Room no.810, 487-2349 jastallen@mtu.edu	MEEM 4200, MEEM 5290, MEEM 5999, MEEM 6999	Capillary flow; Interfacial transport phenomenon; Fuel cell; Phase change heat transfer; Microgravity; Fluid physics; Near-field; Optical diagnostics; Porous media
E. Bar-Ziv Room no.1012, 487-3151 ebarziv@mtu.edu	MEEM 4240	Clean coal combustion; Biomass torre faction; Thermal treatment of carbonaceous material for clean energy
S. Bigham Room no.1015, 487-2747 sbigham@mtu.edu	MEEM 5280	Phase change heat transfer; Transport phenomena; Multiphase flow; Thermal management; Energy systems; Micro and Nanofabrication techniques; Micro and Nanoengineered materials
C. Cai Room no.1013, 487-3286 ccai@mtu.edu	MEEM 5210, MEEM 5240	Computational fluid dynamics; Fluid dynamics; non-equilibrium and rarefied gas flows; Plasma flow simulations; Gas kinetic theory
C. K. Choi Room no.832, 487-1463 cchoi@mtu.edu		Microfluidics; Cellular sensing; Micro and Nanofabrication; Micron and sub-micron optical visualization; Microscale heat and mass transfer
A. Dyreson Room no.930, 487-1773 adyreson@mtu.edu		Renewable energy; Solar energy; Climate change impacts on power systems; Thermal power plant modeling; Electricity grid modeling
J.E Johnson Room no.817, 487-3433 jenesbit@mtu.edu	MEEM 5990 (IC Engines 1-MEEM 4220)	Sprays and combustion; Thermodynamics; Optical diagnostics; IC engines; Alternative fuels
L.B King Room no.1014, 487-2683 lbking@mtu.edu	MEEM 5210, MEEM 5990 (Plasma Dynamics)	Fluid mechanics; Plasma physics; Space system designs; Space simulations, Laser diagnostics; Space propulsion
S.Y. Lee Room no.927, 487-2559 sylee@mtu.edu	MEEM 5270	Thermodynamics; Sprays and combustion; Chemical kinetics; Air breathing propulsion; Laser diagnostics; CFD combustion models

Michigan Technological University

MEEM DEPARTMENT FACULTY EXPERTISE

ENERGY-THERMOFLUIDS (ETF), Continued		
Faculty	**Technical Electives Taught**	**Expertise**
H. Masoud Room no.824, 487-3025 hmasoud@mtu.edu	MEEM 5210, MEEM 5230	Fluid mechanics; Heat transfer; Thermodynamics; Methods of applied mathematics; Numerical modeling
S. Miers Room no.904, 487-2709 samiers@mtu.edu	MEEM 4220, MEEM 5200	Thermodynamics; Internal combustion engines; Alternative and renewable transportation fuels; Heat transfer; Regulated and unregulated emissions; Wireless telemetry
J. Naber Room no.1011, 487-1938 jnaber@mtu.edu	MEEM 4220, MEEM 5250, MEEM 4295/5295, MEEM 4296/5296	Spray and combustions; Internal combustion engines; After treatments; Powertrain systems; Hybrid vehicles
A. Narain Room no.804, 487-2555 narain@mtu.edu	MEEM 5210, MEEM 5230, MEEM 5280	Integration of innovative condensers and boilers in advanced thermal and power systems; Computational simulations; Fluid mechanics; Heat transfer; Condensing and boiling change flows; High performance heat exchangers; Sensors and flow charts
A. Narendranath Room no.917, 487-3019 dnaneet@mtu.edu	MEEM 4210, MEEM 5215	Mathematical models of thermal transport; Evaporative phase change phenomenon; Applied partial differential equations
F. L. Ponta Room no.936, 487-3563 flponta@mtu.edu	MEEM 4210, MEEM 5215	Theoretical and computational fluid mechanics; Vortex dynamics; Fluid structure interactions; Wind turbine aerodynamics; Renewable energy sources; Energy systems
Y. Ra Room no.907, 487-2385 yra@mtu.edu	MEEM 4240, MEEM 5270	Combustion chemical kinetics; Internal combustion engine; CFD spray modeling; Alternative fuels
K. Tajiri Room no.932, 487-2675 ktajiri@mtu.edu	MEEM 4230, MEEM 4260	Transpiration phenomenon in multiscale/multiphase systems; Electrochemical energy conversion device (Fuel Cell); Two phase flow microchannel
J.J. Worm Room no.709, 487-2686 jjworm@mtu.edu	MEEM 4296, MEEM 5296, MEEM 5255	IC Engines; Alternative fuels; Combustion; Engine development; Hybrid vehicles
S-L. Yang Room no.903, 487-2624 slyang@mtu.edu	MEEM 5240	Computational fluid dynamics; Heat transfer; Thermodynamics; Research and development

MEEM DEPARTMENT FACULTY EXPERTISE

Department of Mechanical Engineering and Engineering Mechanics

MANUFACTURING INDUSTRIAL (MI) **January - 2022**

Students seeking detailed advice on technical electives, graduate school, or career opportunities in specific disciplines are encouraged to talk to the appropriate faculty member(s) listed below.

Faculty	Technical Electives Taught	Expertise
W. J. Endres Room no.826, 487-2567 wjendres@mtu.edu	MEEM 4610, MEEM 5610, MEEM 5990	Engineering professionalism; Value realization; Commercialization engineering; Stakeholder discovery; Product realization; Entrepreneurial mindset; Leadership practice; Mechanical design; Machining mechanics & dynamics; Mechanistic modeling techniques
R. Tewari Room no.818, 487-1743 rtewari@mtu.edu	MEEM 4403, MEEM 4650, MEEM 5670, MEEM 4430, MEEM 4655, MEEM 5650, MEEM 4990, MEEM 5990	Micromachining; Metrology; Nanotechnology
Z. Wang Room no.925, 487-2786 zequnw@mtu.edu	MEEM 5401	Design under uncertainty; Prognostic and health management; Modeling calibration and validation; Reliability

Michigan Technological University

MEEM DEPARTMENT FACULTY EXPERTISE

Department of Mechanical Engineering and Engineering Mechanics

SOLID MECHANICS (SM) **January - 2022**

Students seeking detailed advice on technical electives, graduate school, or career opportunities in specific disciplines are encouraged to talk to the appropriate faculty member(s) listed below.

Faculty	Technical Electives Taught	Expertise
P. Abadi Room no.1022,487-1735 pabadi@mtu.edu	MEEM 4150, MEEM 4180	Mechanical behavior of materials; Nanomaterials; Biomaterials; Mechanics in tissue engineering
N. Barr Room no. 1009, 487-4519 nbbarr@mtu.edu	MEEM 5010 (accelerated master's students)	Engineering written, oral and visual communications; Ethics; Small group communication
S. Ghosh Room no.829, 487-2689 susantag@mtu.edu	MEEM 4150, MEEM 4180, MEEM 5170, MEEM 5990	Non-linear mechanics; Computational mechanics; Mechanics of materials; Machine learning
C. Hadden Room no.831, 487-2913 cmhadden@mtu.edu	MEEM 4180, MEEM 4405, MEEM 5180	Finite element analysis; Mechanics of composites; Molecular dynamics; High performance carbon composites
I. Miskioglu Room no.821, 487-2752 imiski@mtu.edu	MEEM 4150, MEEM 5160, MEEM 4170, MEEM 5150, MEEM 5180	Experimental mechanics; Photo mechanics; Composite materials; Nanomechanics
S. Morse Room no.201E Dillman, 487-3241 smmorse@mtu.edu		Numerical methods; Finite elements; Mechanics of materials; Glass strength and fracture; Large scale data processing and data mining
G.M. Odegard Room no.805, 487-2329 gmodegar@mtu.edu	MEEM 4150, MEEM 4710, MEEM 4405, MEEM 4810, MEEM 5110, MEEM 5150, MEEM 5160, MEEM 5170, MEEM 5180	Computational and experimental mechanics; Material sciences; Nanomechanics
W.W. Predebon Room no.808, 487-2551 wwpredeb@mtu.edu	MEEM 5110, MEEM 5710	Ceramics; Stress wave propagation with microstructural effects; Impact phenomena
T. Sain Room no.921, 487-2977 tsain@mtu.edu	MEEM 4170, MEEM 5110, MEEM 6130, MEEM 4405	Computational mechanics; Finite element analysis; Mechanics of polymers and polymer composite materials; Fracture, fatigue and damage in engineering materials
P. Van Susante Room no.915A, 487-3253 pjvansus@mtu.edu	MEEM 4403, MEEM 4405, MEEM 4810	Finite element analysis; Structures; Design; Mechanics of materials

Michigan Technological University

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DESIGN/DYNAMICS SYSTEM (DDS)		**January - 2022**
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Faculty	**Technical Electives Taught**	**Expertise**
A. Barnard Room no.GLRC 307, 487-2412 arbarnar@mtu.edu	MEEM 4704, MEEM 5900, MEEM 4701, MEEM 5702, MEEM 5703	Signal processing; Modal analysis; Acoustics; Noise control; Vibrations
J. Y. Bae Room no.802, 487-1416 bae@mtu.edu		Robotics; Heterogenous robotic teams; Autonomous navigation; Operational research for autonomous vehicles
J.R. Blough Room no. 807, 487-1020 jrblough@mtu.edu	MEEM 4701, MEEM 5700, MEEM 5703	Digital signal processing; Rotating machinery; Vibrations; Noise control
B. Chen Room no.905, 487-3537 bochen@mtu.edu	MEEM 4990/5990, MEEM 4700, MEEM/EE 4750, MEEM/EE 5750	Mechatronics and embedded systems; Control systems; Hybrid electric vehicle; Smart grid
J. DeClerck Room no.906, 487-2246 jdeclerck@mtu.edu	MEEM 5702, MEEM 5703	Analytical and experimental modal analysis; Signal Processing; Design process; Modal validation
S. Ma Room No.929, 487-3393 stevenma@mtu.edu	MEEM 4450/5450	Machine Design; Mechanism; Vehicle Dynamics; CAD & CAM; Hydraulics; Welding; Bolted joint design; FEA
S. Malladi Room No.933, 487-3503 smalladi@mtu.edu	MEEM 4701	Vibrations; Signal processing; Smart structures; Modal analysis; Smart buildings; Data driven modeling
G.G. Parker Room no.803, 370-1341 ggparker@mtu.edu	MEEM 4705, MEEM 5701, MEEM 5715, MEEM 6702	Control System; Dynamics; Robotics
D. Robinette Room no.1020A, 487-2764 dlrobine@mtu.edu		Powertrain system; Dynamics and controls; Signal processing; Rotating machinery; Torsional vibrations
W. Weaver Room no.820, 487-1416 wwweaver@mtu.edu	MEEM 4775, MEEM 5715	Control Systems; Dynamics; Electric motor modeling and analysis; Smart grids
Y. Yang Room no.926, 487-3405 yyang14@mtu.edu	MEEM 4701, MEEM 4702	Structural dynamics; System identification; Structural health monitoring; Nondestructive evaluation; High-resolution sensing/imaging; Machine learning; Computer vision