



MECHANICAL ENGINEERING

Graduate Programs

STRATEGIC RESEARCH AREAS

Application Areas: Energy, Manufacturing, Biotechnology

Technical Areas: Materials, Robotics, Systems (Thermal/Fluid, Mechanical, Aero)

DEGREES OFFERED

The Master of Science in Mechanical Engineering (MSME)

program offers both thesis and non-thesis options. The thesis option requires a minimum of 24 hours of approved coursework and submission of a thesis defended in a final examination. The non-thesis option requires a minimum of 33 hours of approved coursework and a three credit-hour project for a master report, which needs to be defended in a final examination.

The Accelerated Master of Science in Mechanical Engineering (ASME)

can be pursued by invitation only. LSU juniors with a minimum GPA of 3.5 who are working towards a BSME are invited early in the spring semester to this program after having completed a prescribed portion of the BSME coursework. The requirements are the same as the thesis-option MSME, and the program is structured so that completion of this degree is possible one year after receiving the BSME.

The PhD in Mechanical Engineering (PME)

requires candidates to conduct research with original outcomes and produce a dissertation with creative scholarship. They must complete 18 hours of dissertation research, in addition to 36 hours of approved coursework directly from a bachelor of science degree or at least 18 hours of approved coursework from a master of science degree. The program also requires passing a qualifying examination, a general examination (dissertation proposal), and a final examination (dissertation defense).

Full-time graduate students register for a one-credit-hour class every semester, the Dr. Robert "Bob" W. Courter Graduate Seminar Series lectures.

GRADUATE DIRECTOR

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FACULTY RESEARCH AREAS

Corina Barbalata

cbarbalata@lsu.edu - marine robotic systems, autonomous mobile manipulation, cooperative robotics, multi-body control and planning theory, underwater perception systems and algorithms

Tryfon T. Charalampopoulos

mechar@lsu.edu – combustion, heat and mass transfer, aerosol dynamics, optical diagnostics, combustion synthesis of materials

Marcio De Queiroz

mdeque1@lsu.edu — dynamic systems and control; non-linear control systems and their stability applications to robotic, biological/biomedical, and aerospace systems

Ram Devireddy

rdevir1@lsu.edu — heat and mass transport in biological systems, stem cell differentiation, next-generation sequencing, tissue engineering and 3D bioprinting

Manas R. Gartia

mgartia@lsu.edu — molecular biophotonics, label-free sensor development

Hunter B. Gilbert

hbgilbert@lsu.edu — robotics and autonomous systems, medical devices, flexible and soft robots

Keith A. Gonthier

kgonth1@lsu.edu — multi-physics, multi-scale computation, energetic materials, reactive solids, multi-phase and high-speed flows

Shengmin Guo

sguo2@lsu.edu — advanced manufacturing, additive manufacturing, plasma spray coatings, fuel cells, gas turbine aerodynamics and heat transfer, materials synthesis and processing

Michael M. Khonsari

khonsari@lsu.edu — tribology (friction, lubrication, and wear), fatigue and fracture, machinery performance analysis, heat transfer

Guoqiang Li

lguoqi1@lsu.edu — fiber-reinforced polymer composite materials and composite structures, composites manufacturing, polymeric matrix nanocomposites, smart and self-healing composites

Fengyuan Lu

luf@lsu.edu — advanced nuclear reactor materials, nuclear waste management, radiation effects, nanostructured nuclear materials, advanced ceramic and composite fabrication, energy storage and conversion materials

Wen Jin Meng

wmeng1@lsu.edu — nanostructured thin films and coatings, plasma-assisted vapor deposition, micro/nanofabrication, advanced materials characterization

Shyam Menon

smenon@lsu.edu — combustion, propulsion, laser diagnostics

Dorel Moldovan

dmoldo1@lsu.edu — atomistic and mesoscale modeling and simulation of materials (interfacial materials, thin films, membranes, biomolecules confined in nanoscale systems)

Dimitris E. Nikitopoulos

medimi@lsu.edu — experimental and numerical fluid dynamics and transport, flow control, multiphase flows, multiscale phenomena, microfluidics, gas turbine cooling, microfabrication

Geneviève Palardy

gpalardy@lsu.edu — composite thermoplastic materials, manufacturing, characterization and joining of composites, repair and recycling mechanisms, additive manufacturing of composites

Sunggook Park

sunggook@lsu.edu — nanofabrication technology and applications, nanoimprint lithography, bioMEMS/NEMS, bioengineering, polymer photonic devices, liquid crystal displays, surface coatings

Ingmar Schoegl

ischoegl@lsu.edu — combustion technologies, advanced combustion diagnostics, materials processing, mechatronics and instrumentation

Glenn Sinclair

sinclair@lsu.edu — fracture mechanics, modeling, simulation and verification, tribology (contact and fretting), stress analysis

Warren N. Waggenspack

mewagg@lsu.edu — computer-aided geometric design, mechanical design, computer graphics, biomedical engineering

Muhammad A. Wahab

mwahab1@lsu.edu — fatigue and fracture mechanics, composite materials, computational weld mechanics, structural stability, stress analysis

WanJun Wang

wang@lsu.edu — microelectromechanical systems (MEMS), UV-LIGA microfabrication technology, microfluidic systems, micro relays, micro-optics

Ying Wang

ywang@lsu.edu — synthesis of novel materials at nano- and sub-nanometer scale, materials for energy, battery technologies, photocatalysis, electrochemistry

Harris Wong

hwong@lsu.edu — solid thin films, micro and nano liquid films and threads, two-phase flow and heat transfer in microchannels, dynamic surface tension

RESEARCH CENTERS AND RESOURCES

Center for Rotating Machinery (CeRoM)

M. M. Khonsari, Director

Turbine Innovation & Energy Research Center (TIER)

S. Guo, Director

NIH Resource Center (P41): Center for Bio-Modular Multiscale Systems (CBMM)

S. Park, Lead LSU PI.

NSF CREST: Next Generation Multifunctional Composites Center

G. Li LSU Lead PI.

Consortium for Innovation in Manufacturing and Materials (CIMM)

W. J. Meng, Lead PI.

Consortium for Innovation in Structural Integrity Assurance (CISIA)

M. M. Khonsari, Technical Director

MIE Advanced Manufacturing and Machining Facility (AMMF)

N. Dinecola, Manager.

MIE Materials Manufacturing Testing and Evaluation (MMTEF)

M. Brennan, Manager.

LSU Shared Instrumentation Facility (SIF)

D. Cao, Director