

# ENGINEERING MECHANICS, PHD

The doctor of philosophy degree in engineering mechanics is offered within a graduate program covering contemporary areas in both theoretical and applied mechanics. With the guidance of a major professor, a program can be designed to meet an individual student's needs and interests.

This program is broadly structured into several main areas of instruction and research interests in fluid and solid mechanics: continuum mechanics, computational mechanics, dynamics and vibration, nanomechanics, and biomechanics. Related fields include civil and environmental engineering, chemical and biological engineering, electrical and computer engineering, materials science, mechanical engineering, nuclear engineering and engineering physics, physics, geological engineering and geology, mathematics, statistics, and computer science.

Current faculty research interests include contact mechanics, elastic instabilities, micromechanics, wave propagation, adhesion and friction, multi-scale and high-performance computational modeling, multi-physics mechanics and transport, biophysics, nanotechnology and nanomaterials, mechanics of soft materials, bio-inspired materials, polymer thin-films, renewable energy, and acoustic/elastic metamaterials.

Laboratories are well equipped for experimental testing and research; these include, atomic force microscopy, vibration testing, and other optical methods for experimental mechanics research. The department has access to collegewide facilities. The Wisconsin Laboratory for Structures and Materials Testing has facilities for testing large structures, fatigue and vibration labs, and complements the department's laboratories. The Nanoscale Imaging and Analysis Center provides state-of-the-art instrumentation, support facilities, and expert technical assistance for research and education in materials. Its facilities include scanning and transmission electron microscopes, image processing and analysis systems, surface and thin film characterization facilities, and x-ray diffraction facilities.