

# ENGINEERING SCIENCE AND MECHANICS

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## Learning Outcomes

### Master of Science (M.S.)

1. **KNOW:** Demonstrate a mastery of core principles and methods in mechanics, materials, and engineering science.
2. **APPLY/CREATE:** Apply engineering problem formulation, planning, organization and implementation of appropriate methods of analysis and solutions.
3. **COMMUNICATE:** Effectively communicate technical knowledge, including ideas, designs, data analysis, findings, or decision justification in written, graphical and oral presentation formats.
4. **THINK:** Critically and creatively conceptualize and evaluate engineering problem formulations, analyses and solutions.
5. **TEAMWORK:** Collaborate in a collegial and ethical manner with other professionals within their field and with diverse scientific and technical backgrounds.
6. **PROFESSIONAL PRACTICE:** Demonstrate a knowledge and the ability to practice the professional standards of engineering and professional behavior.

### Doctor of Philosophy (Ph.D.)

1. **KNOW:** Graduates will demonstrate an in-depth knowledge of the core theories and methods within one or more sub-specialties in the fields of engineering science and mechanics. The core demonstration will include the application of physics, advanced mathematics and engineering principles to problems in mechanics, materials, bionanotechnology, nanoscience and neuroscience.
2. **APPLY/CREATE:** Graduates will be able to synthesize theory, literature and experimental results to generate new concepts, designs or hypotheses in engineering science and mechanics.
3. **APPLY/CREATE:** Graduates will be able to carry out independent and original research studies that address current problems in the multi-disciplinary field of engineering science and mechanics.
4. **COMMUNICATE:** Graduates will be able to convey ideas or arguments in clear, concise, well organized papers and proposals as well as in formal, oral presentations.
5. **THINK:** Graduates will be able to critically analyze work by others in their field of specialty.
6. **PROFESSIONAL PRACTICE:** Graduates will demonstrate the ability to collaborate in a collegial and ethical manner with other professionals within their field and/or with diverse scientific backgrounds.