Our Mission

Our mission in the Department of Engineering Science and Mechanics is to develop a holistic approach for forming national and international leaders of engineering, academia, industry, politics, governments, the professions (including business, law, and medicine), and public service; and to apply a solid foundation in scientific and engineering principles in order to impact the well-being of the global society and its environment.

Student Organizations

Students can join several engineering student organizations that enhance the academic and social experience of both undergraduate and graduate students, and that provide a medium for the exchange of ideas among students, faculty, alumni, professionals in industry, and others active in engineering science.

- ASM International
- Engineering Science and Mechanics Graduate Student Council
- Society for the Advancement of Materials and Process Engineering
- Society of Engineering Science
- Tau Beta Pi

Degrees Awarded in Department [2022-23]

- 11 Master’s
- 11 Ph.D.
- 29 Undergraduate

TOTAL DEGREES 51

Enrollment

- 54 Undergraduate (third- and fourth-year students)
- 8 Master’s
- 117 Ph.D.

Faculty to student ratio: 1:3

ESM faculty supervise about 40 graduate students in interdisciplinary majors like materials science, neuroscience, acoustics, and other scientific and engineering disciplines across Penn State.

Bachelor of Science in Engineering Science

The OFFICIAL undergraduate honors program of the College of Engineering

2022 Research Expenditures

$17 MILLION

*Includes externally and internally funded projects, subcontracts, and capital improvements.
Research Labs and Facilities

- Advanced Microscopy Lab
- Biodetection Lab
- Biomimetics Lab
- Bioprinting Lab
- CNEU Teaching Cleanroom
- Composites Materials Lab
- Corrosion Research Lab
- Fourier Optics Lab
- Mechanical Behavior Lab
- Nanofabrication Lab
- Nonlinear Dynamics Lab
- Optoelectronics Lab
- Penn State Ultrasonics Lab
- Semiconductor Spectroscopy Lab
- Soft Matter Mechanics Lab
- Tribology/Materials Processing Lab

Research Areas

- Advanced Materials and Devices
- Applied Mechanics and Biomechanics
- Brain Science and Neural Engineering
- Dynamic Systems, Acoustics, and Vibrations
- Emerging Manufacturing Processes for Materials, Tissues, and Devices
- Energy Infrastructure, Storage, and Devices
- Multiscale and Multiphysics Modeling, Computational Analysis
- Nanoscience, Bionanoscience, and Engineering
- Optoelectronics, Photonics, and Lasers
- Structural and Human Health Monitoring

Degrees Offered

- Undergraduate Minor in Engineering Mechanics
- Undergraduate Minor in Nanotechnology
- Bachelor of Science in Engineering Science (B.S.)
- Integrated Undergraduate/Graduate Program (B.S./M.S.)
- Master of Engineering in Engineering Mechanics (M.Eng.)
- Master of Science in Engineering Science and Mechanics (M.S.)
- Master of Science in Engineering at the Nano-scale (M.S.)
- Doctor of Philosophy in Engineering Science and Mechanics (Ph.D.)
- Doctor of Medicine/Doctor of Philosophy in Engineering Science and Mechanics (M.D./Ph.D.)