

# Snapshot

ENGINEERING  
SCIENCE AND  
MECHANICS



**NSF CAREER  
Award  
Recipients**

**\$17  
MILLION**

**2022 Research  
Expenditures**

\*Includes externally and internally funded projects, subcontracts, and capital improvements.

**Enrollment**

**54**

Undergraduate  
(third- and fourth-year students)

**8**

Master's

**117**

Ph.D.

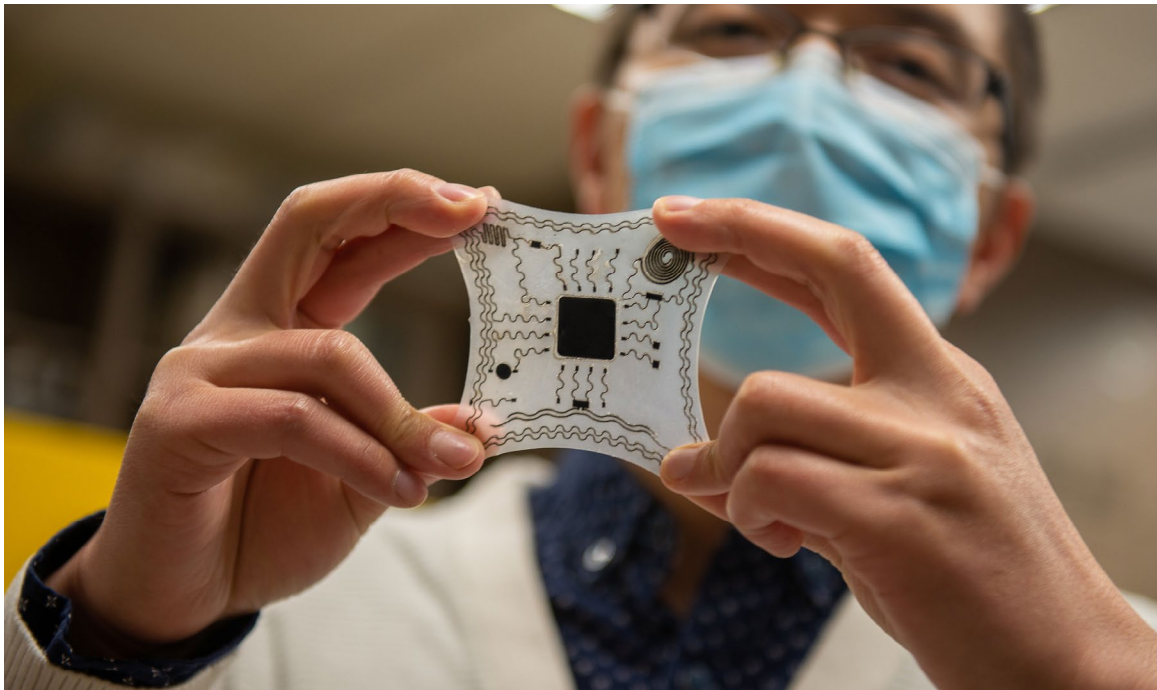
**41 Faculty**

**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



## Our Mission

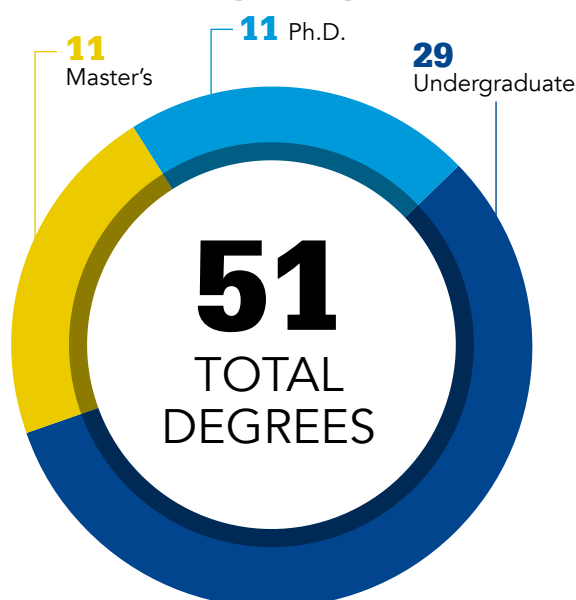
Our mission in the Department of Engineering Science and Mechanics is to develop a holistic approach for forming national and international leaders of engineering, academia, industry, politics, governments, the professions (including business, law, and medicine), and public service; and to apply a solid 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 ]



**41 Faculty**

**Faculty to  
student ratio: 1:3**

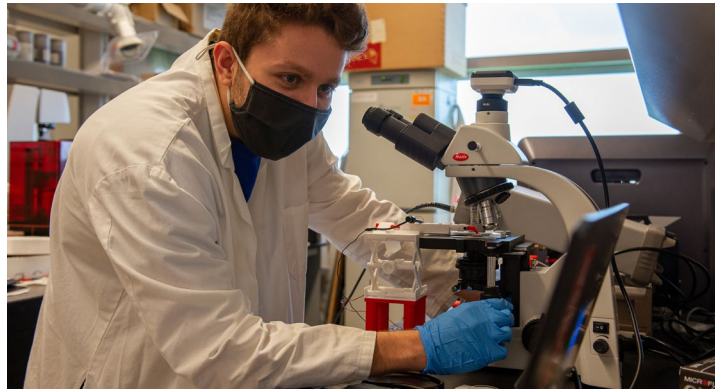
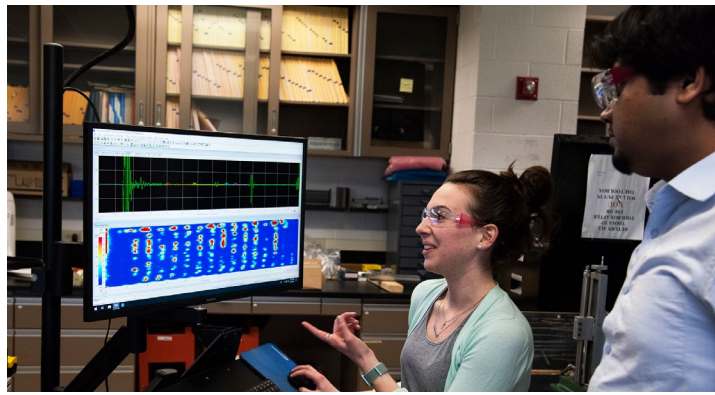
ESM faculty supervise about 40 graduate students in interdisciplinary majors like materials science, neuroscience, acoustics, and other scientific and engineering disciplines across Penn State.

**Bachelor of Science  
in Engineering  
Science**

The **OFFICIAL** undergraduate honors program of the College of Engineering

## 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



## 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.)



## 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



## Young Investigator Awards

50

Fellows in

24

Professional Societies



## Centers and Institutes

Applied Research Lab

Center for Innovative Sintered Products

Center for Nanotechnology Education and Utilization

Center for Neural Engineering

Center for Research on Advanced Fiber Technologies

Center for Innovative Materials Processing by Direct Digital Deposition

Huck Institutes of the Life Sciences

Institute for Computational and Data Sciences

Institute of Energy and the Environment

Materials Characterization Lab

Materials Research Institute

Penn State Neuroscience Institute