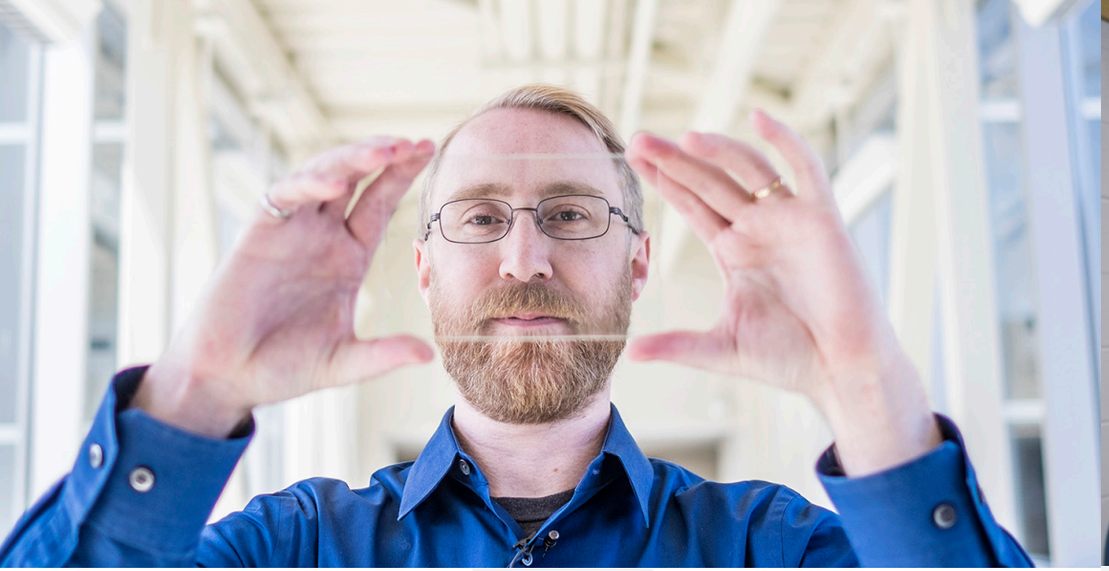
THINK BIG

GRADUATE
ENGINEERING
PROGRAMS

MICHIGAN STATE
UNIVERSITY



BIG IMPACT

Engineering grad students collaborate with faculty and researchers across campus and around the world to **explore our biggest challenges** like sustainability, security, materials, health, and energy. MSU partners with national labs, Fortune 500 companies, government agencies, and global universities. Recent collaborations include NSF, NIH, Microsoft, Boeing, Chrysler, General Electric, Toyota, DuPont, and NASA.

> As a Spartan and a Brazilian researcher abroad, I feel dually proud because I am contributing to MSU's national reputation on the advancement of composite materials as well as representing my country abroad. My research goals aim to develop biobased composite materials that contribute to the advancement of global sustainability.
>
> **MARIANA REALE-BATISTA**, ***PhD Student, Materials Science & Engineering***

> As a part of the research community at MSU I have had the chance to collaborate with faculty from other institutions and industry professionals. There have been several opportunities for me to present my research within the university and at conferences across the country and with guidance from my advisor and academic mentors, I was fortunate enough to be able to write a research proposal that was funded by the NSF Graduate Research Fellowship.
>
> **KARA DEAN**, ***PhD student, Biosystems Engineering; NSF Graduate Research Fellow***

BIG RESULTS

With more than 230 faculty members in the College of Engineering and 5,700 faculty and academic staff on campus, Michigan State offers you a **bigger group of mentors**.

Our graduate students regularly publish their research, participate in conferences, and win major awards, such as NSF Graduate and Postdoctoral Fellowships.

BIG FUTURE

At MSU, you can customize your education with teaching, research, or industry experiences.

Our alumni go on to **big companies, small startups, and prestigious positions** in academia and research. Recent placements include Dow, MIT Lincoln Labs, Google, Purdue, Cornell, Oak Ridge National Lab, ETH Zurich, and Carleton College.

I enjoy my time at MSU because of the endless opportunities. My dissertation focuses on what happens when the bladder overstretches. Myself and other Sloan students have come together to create an inclusive community where everyone can learn and develop professionally together. The Sci-Files is a new show that graduate student, Daniel Puentes, and I founded. We host The Sci-Files on Impact 89 FM (The MSU Radio), it airs on Sundays 9:30 am- 10 am and is podcasted after. My different experiences at MSU have allowed me to meet many different researchers and feel more connected to the community.

Chelsie Boodoo, ***PhD student, Biomedical Engineering, Sloan Fellow***

BIG OPPORTUNITIES

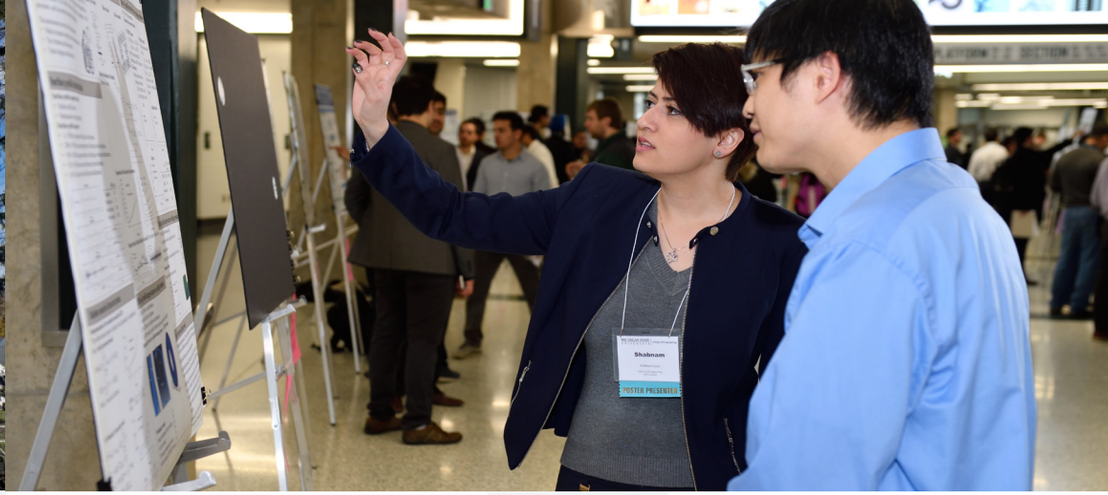
Masters and Doctoral degrees are available in eleven areas:

- Biomedical Engineering
- Biosystems Engineering
- Chemical Engineering
- Civil Engineering
- Computational Mathematics, Science & Engineering
- Computer Science
- Electrical Engineering
- Engineering Mechanics
- Environmental Engineering
- Materials Science & Engineering
- Mechanical Engineering

BIG COMMUNITY

With more than 11,000 graduate and professional students, MSU is **big enough for every interest**. See a Broadway show, learn to scuba dive, or cheer the Spartans as they compete for a national championship!

Kiplinger.com named Lansing as one of the **top 10 cities** for young professionals, with great entertainment, a low cost of living, and high-paying jobs and *The Scientist* has consistently ranked MSU as one of the **best places to work in academia**.



BIG EXPERIENCE

Customize your engineering graduate degree at MSU by pursuing coursework outside your department and by engaging in interdisciplinary research with students and faculty across campus. MSU offers more than **40 interdisciplinary specializations** for graduate students, in areas such as the environment, ecology, food, cognition, behavior, security, health, gender, ethics, humanities, or the social sciences.

If you are interested in teaching at the college level (two- or four-year), you can choose to pursue **Certification in College Teaching**, which includes workshops on teaching and learning in college settings, development of a teaching portfolio, and a mentored teaching experience developed with guidance from faculty in the College of Engineering.

MSU has been a fundamental part of my professional and personal development. I'm thankful to be in an environment that fosters growth and challenges me to think and move outside of the box. MSU also helped me travel to Cusco, Peru where I expanded my knowledge in environmental issues across the border. This opportunity allowed me to approach my research with a global perspective.

Camille McCall, ***PhD candidate, Environmental Engineering; Research Enhancement Fellow***

BIG SUPPORT

Leo Kempel, Dean

John Verboncoeur, Associate Dean for Research & Graduate Studies

Yue Qi, Associate Dean for Inclusion and Diversity

Katy Luchini Colbry, Assistant Dean for Graduate Student Services

Nelson Sepulveda, Director of the Sloan Engineering Program

Department Chairs:

- Hannah Professor Christopher H. Contag, Biomedical Engineering
- Darrel Donahue, Biosystems and Agricultural Engineering
- Donald Morelli, Chemical Engineering and Materials Science
- Neeraj Buch, Civil and Environmental Engineering
- MSU Foundation Professor Andrew Christlieb, Computational Mathematics, Science and Engineering
- Abdol-Hossein Esfahanian, Computer Science and Engineering
- MSU Foundation Professor Ioannis "John" Papapolymerou, Electrical and Computer Engineering
- MSU Foundation Professor James Klausner, Mechanical Engineering

BIG RESEARCH

With outstanding facilities and more than $60 million in annual research expenditures, the MSU College of Engineering fosters **cutting-edge, interdisciplinary research in a collaborative environment**. Key research areas are highlighted below; see **www.egr.msu.edu** for a full list.

> Though I came to MSU without knowing anyone, thanks to the community I have never felt alone. Together, my advisor, the faculty, and my fellow students have created a support network, which has played a pivotal role in my academic, personal, and professional success.
>
> **Xavier Williams**, ***PhD student, Electrical and Computer Engineering; Sloan Fellow***

BIOMEDICAL ENGINEERING

Translational Research
Biology-on-a-Chip
Medical Imaging
Biomaterials, Biomechanics, Biotransport
Molecular Disease Mechanisms & Treatment
Computational Bioengineering
Synthetic Biology
Personalized Medicine
Neural Engineering
Cardiovascular Engineering

BIOSYSTEMS ENGINEERING

Thermal Processing & Microbial Food Safety
Climate Change & Watershed Modeling
Risk Assessment
Food & Health Engineering
Renewable Bioenergy & Life-Cycle Analysis
Bioprocessing for Value-Added Products
Sensing Technology for Biological Products
Technologies for Global Food Security
Computational Ecohydrology & Sustainable Ecosystems
Phytoremediation & Constructed Wetlands

CHEMICAL ENGINEERING & MATERIALS SCIENCE

Biobased Industrial Research
Biomaterials, Biotechnology
Colloid & Interface Science
Energy Harvesting, Conversion & Storage
Environmental Research / Sustainable Economy
Materials (Ceramic / Electronic / Structural)
Metabolic Engineering
Metallic Systems / Nanomaterials / Polymers
Rheology & Multiphase Flow
Separation Science

CIVIL & ENVIRONMENTAL ENGINEERING

Advanced & High-Performance Materials
Asphalt & Concrete Pavement Engineering/ Geotechnical Engineering
Building energy performance and modeling/Smart and sustainable building systems
Contaminant Fate & Transport
Engineering for Extreme Events/Fire-Resistant Materials
Environmental Chemistry/Microbiology/Risk Assessment/Sustainability
Environmental Measurements/Sensors/Systems Modeling
Hydrology & Water Resources Engineering
Structural Engineering, Mechanics & Health Monitoring
Transportation Safety, Sustainability, and Mobility
Water & Wastewater Treatment Technologies

COMPUTATIONAL MATHEMATICS, SCIENCE & ENGINEERING

Electromagnetics
Fluid & Plasma Methods & Applications
Supernovae & Galaxy Formation
Molecular Dynamics
Deep Learning
Harmonic Analysis
High-Dimensional Data Analysis
Statistical Machine Learning
Signal & Image Processing
Optimization Methods

COMPUTER SCIENCE

Network and Systems (OS, Mobile computing, Dist Sys, HPC, IoT)
Intelligent Systems (ML, AI, NLP, HCI, Info Retrieval, Data mining)
Security (cyber, physical, network, biometrics, privacy)
Biometrics (fingerprinting, face recognition, Iris recognition)
Software (SE, formal methods, theory)
HCI (VIsion, Graphics, NLP, Accessible Computing)
Biocomputing (EC, bioinformatics, ALife, Comp bio)
CPS (IoT, Auto Vehicles)
Theoretical Computer Science
Social Network and Graphs
Signal Processing (Medical Imaging)
CS Educational Pedagogy

ELECTRICAL ENGINEERING

Electromagnetics
Evolutionary Computing & Algorithms
Computer Architecture & Embedded Systems
Energy & Power Systems
Computer Networking
Micro-Nano Electronics & VLSI
Robotics & Control
Human Health & Medical Applications
Signal Processing & Communication
Materials & Devices

MECHANICAL ENGINEERING

Automotive: Engines / Drivetrains / Composites
Biomechanics: Musculoskeletal / Biofluidics
Combustion & Fire
Computational & Experimental Fluids & Solids
Heat Transfer & Thermodynamics
Manufacturing: Additive / Advanced / Composite
Materials: Metals / Ceramics / Micro / Nano
Mechatronics / Robotics / Turbomachinery
Solid & Structural Mechanics / Dynamics / Vibrations
Thermochemical Energy Storage / Sustainable Energy

ADMISSIONS

Each department makes its own admissions decisions, and requirements vary between programs. Application deadlines are typically mid-December for admission in the Fall semester (which starts mid-August), and mid-September for admission in the Spring semester (which starts in January).

Detailed information about the application and admission process is available online at **www.egr.msu.edu/graduate**

FINANCIAL SUPPORT

All applicants are automatically considered for fellowships, scholarships, and assistantships (teaching and research).

Most PhD students receive full support for tuition and a living stipend. Funding is more limited for MS students, although many find assistantships or other opportunities within their first year at MSU.

FOR MORE INFORMATION

MSU College of Engineering . . . www.egr.msu.edu

MSU Graduate School. . . . . https://grad.msu.edu

Michigan State University. . . . . .www.msu.edu

FOLLOW MSU ENGINEERING ON FACEBOOK
www.facebook.com/SpartanEngineering

MAKE A BIG DIFFERENCE.

MICHIGAN STATE UNIVERSITY

THINK MSU

MICHIGAN STATE
UNIVERSITY