

MATERIALS SCIENCE & ENGINEERING





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The **DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING**, the first of its kind, consistently ranks among the nation's premier programs. Outstanding classroom and laboratory instruction combined with opportunities to participate in leading-edge research are hallmarks of the department.

Our broad-based programs encompass a wide range of materials, enabling students to **understand the scientific principles that govern the interrelationships among processing, structure, properties, and materials performance**. Guided by faculty members renowned for their excellence and pioneering work, students learn to integrate these principles in the systematic design of new materials.

UNDERGRADUATE STUDY

PROGRAMS OF STUDY

- \\ **Bachelor of science in materials science and engineering** \\
For students interested in becoming practicing engineers or continuing their graduate study

Areas of concentration:
Biomaterials \\ Design and manufacturing \\
Electronic materials \\ Metals and ceramics \\
Nanomaterials \\ Polymeric materials \\
Surface science \\ Energy materials \\
- \\ **Bachelor of arts in materials science** \\
For students with a broad interest in the sciences.
- \\ **Combined BS/MS program** \\
For students who wish to pursue both degrees simultaneously.

EXAMPLE COURSES

MAT SCI 301 *Materials Science Principles*
MAT SCI 314 *Thermodynamics of Materials*
MAT SCI 315 *Phase Equilibria and Diffusion in Materials*
MAT SCI 332 *Mechanical Behavior of Solids*
MAT SCI 361 *Crystallography and Diffraction*

OUTSIDE THE CLASSROOM

INTERDISCIPLINARY RESEARCH CENTERS \\
Materials-related research at Northwestern involves a great deal of collaboration between faculty and students at specialized research centers.

DESIGN COMPETITION \\ Teams of undergraduates from different departments come together each year to build robots and compete for prizes.

MATSCI CLUB \\ This student-led group serves the interests of materials science and engineering majors and others interested in the subject matter by organizing educational and social events, activity fairs, and outreach activities.

MATERIAL ADVANTAGE \\ For a single, low-cost fee, students can gain access to valuable resources from four of the profession's preeminent membership societies.

STUDENT GROUPS \\ Materials science students are involved in a wide range of student groups, including Engineers for a Sustainable World, the Northwestern Solar Car team, the Formula and Baja SAE teams, and the Northwestern University Space Technology and Rocketry Society.

GRADUATE STUDY

PROGRAMS OF STUDY

- \\ **Master of science in materials science and engineering**
- \\ **PhD in materials science and engineering**



"AS A MATERIALS SCIENTIST, I KNEW I COULD WORK ON EVERYTHING
FROM ROCKET SHIPS TO HUMAN TEETH AND MAKE AN IMPACT."

KATIE JAYCOX \ MATERIALS SCIENCE AND ENGINEERING

RESEARCH AREAS

Art conservation science \ Biomaterials \ Ceramics \
Composites \ Energy \ Magnetic materials \
Materials for electronics and photonics \ Materials synthesis
and processing \ Materials theory, computation, and design \
Metals \ Nanomaterials \ Polymers \ Self-assembly \
Surfaces and interfaces

CAREERS IN MATERIALS SCIENCE AND ENGINEERING

WHAT'S NEXT?

Students graduate well prepared to practice as materials scientists and engineers, excel in graduate study, work to advance the field, or apply their knowledge in such disparate areas as law, medicine, or business. Career options in materials science include:

Information technology \ Transportation \
Consumer products \ Biomaterials \
Developing advanced materials for the global marketplace

RECENT GRADUATE PLACEMENTS

Composite fabrication engineer at **Boeing** \ Production engineer
at **SpaceX** \ Engineer at **Capgemini** \ Logistics and operations
specialist at **Tricon Energy** \ Researcher at **Dow Corning** \
Business operation analyst at **ZS Associates** \
Edison engineering development program at **GE Aviation** \
Data analyst at **Intuit** \ Software developer at **McMaster-Carr**

HOW YOU SPEND YOUR TIME IN THIS PROGRAM

BASED ON A SURVEY OF CURRENT STUDENTS.

8.1%
Giving/preparing for presentations

21.1%
Studying for/taking written exams

14.8%
Group projects

31.9%
Working on problem sets

1.1%
Building things

17.8%
Working in a Lab

5.2%
Computer programming

ENVISION WHAT'S POSSIBLE

NORTHWESTERN ENGINEERING STUDENTS
CONSTANTLY EXPLORE NEW PATHWAYS
IN MATERIALS SCIENCE AND ENGINEERING.
IMAGINE YOURSELF:

- \ Helping develop new materials for solar cells
- \ Creating a computational design to improve blast-resistant steel
- \ Combining elements of metallurgy, polymer science, surface science, solid-state physics, and chemistry to understand the relationships between the structures and properties of materials
- \ Contributing to improving the quality of life for all through technological innovation

FIND YOUR DIRECTION HERE

Northwestern | McCORMICK SCHOOL OF
ENGINEERING

www.matsci.northwestern.edu