Why you should become a Materials Scientist/Engineer at Michigan State University

I believe that I was extremely well prepared for my graduate work at the University of Washington.

Sarah Wolf, BS '99
Geo-Centers, Inc., for the Army Research Laboratory, Aberdeen Proving Grounds, Maryland

The change from conventional materials to ceramics is becoming important in the medical devices arena. A number of research groups have asked for my expertise.

Michelle Hignite, BS '96
Johnson and Johnson, Somerville, New Jersey

The senior-level failure analysis class introduced me to the practical side of materials-based experiments.

Jason McDonald, BS '01
Howmet Corporation, Morristown, Tennessee
What can I do with a degree in materials science and engineering?

Materials science is perhaps the most flexible engineering degree you can earn, since it interfaces with all other areas of engineering. MSE majors create the “stuff” that is needed by all other engineers to carry out their designs. They know how to develop materials for new products—how to coerce atoms into the right configurations. They are also detectives, conducting “failure analysis” to find out why a part fractured or broke and solving the problem to prevent future failures.

What are recent MSU grads doing now?

Working at:
- IBM Corp.
- Johnson & Johnson/Ethicon (biomedical products)
- Ford, GM, Chrysler, and their Tier 1 suppliers
- Howmet Corp. (advanced aerospace materials)
- Westinghouse (Nuclear Energy Division)
- Motorola Semiconductor Products
- Wright Medical
- Cal Air
- Exxon
- Allied Signal
- Aeroquip Corp.
- Johnson Controls
- Consumer’s Energy
- MGA Research Group
- Corning Glass Works

Attending graduate school at:
- Penn State, University of Washington, MSU

How about the pay?

MSE majors have enjoyed the second-highest salaries among all engineers for the past 20 years, just behind chemical engineering majors. Annual starting salaries for materials science majors with a B.S. range from $43,400 to $53,300. More information is available at www.crc4mse.org/surveys/Index.html

I got a copy of the new curriculum and I think it looks outstanding. It makes me wish I was an undergraduate again!

Nick Meyer, BS ’01
Graduate student at MSU

Come check us out. Meet the students and faculty of materials and student organizations; find out about school...
What will I learn as a materials science major?

You’ll learn the foundations for designing metallic, ceramic, polymeric, and composite materials.

You’ll take courses like:
- Ceramic and Refractory Materials
- Experimental Mechanics
- X-ray Crystallography
- Energy and Bonding within Solids
- Biomaterials and Biocompatibility
- Failure and Fracture Analysis
- Electronic Structures and Properties of Materials

What if I am interested in some materials or types of engineering more than others?

MSE majors may choose one of the following specializations: biomedical materials, manufacturing, metallurgy, or polymers. This will enhance your ability to interact with engineers in a particular field.

Are there opportunities for practical experience?

You may use some of your elective credits to work with a faculty member on a research project, a student design competition project, or a project sponsored by an industrial partner. You may also gain experience by participating in the co-op program or through summer internships with companies.

Can I experience engineering before I start college?

Yes! You can attend MSU’s pre-college programs. These include the Detroit Area Pre-College Engineering Program, the High School Engineering Institute, the 2+2+2 Program, and the annual Science, Engineering, and Technology Day (SET Day). Visit our Pre-College Web site at www.egr.msu.edu/egr/programs/bachelors/precollegeprograms.php.

What is the difference between chemical engineering and materials science?

Materials science majors, like chemical engineering majors, learn about atomic bonding and its role in the development of better products. Materials science, however, focuses more on solid materials: metals, ceramics, and polymers.

Can I experience science and engineering; learn about our programs, curriculum, scholarships; and much more at www.chems.msu.edu.
Why should I study materials science at MSU?

- Small class sizes promote student/faculty interaction.
- Courses are taught by helpful, approachable professors.
- Undergraduates can work on research projects with professors.
- Students enjoy hands-on experience in business and industry through the Cooperative Engineering Education Program (www.egr.msu.edu/coop).
- Students investigate nanoscale characteristics of materials using state-of-the-art tunneling probes, electron microscopes, and spectroscopy tools.
- Biotechnology and biochemical processing are strong research areas in the department.
- Students can pursue special options: biomedical materials, manufacturing, metallurgy, and polymers.
- ROSES (Residential Option for Science and Engineering Students) provides a living and learning community for freshman engineers.
- Student chapters allow active participation in professional organizations (The Minerals, Metals and Materials Society, American Ceramics Society, National Society of Professional Engineers, National Society for Black Engineers, Society of Women Engineers).
- Historically, a high percentage of women students study materials science and engineering (about 30% of total students).
- The Diversity Programs Office serves as a resource for underrepresented students in the College of Engineering (www.egr.msu.edu/dpo).
- Placement personnel assist students with career decisions and help them prepare for entry into the job market.

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I trained in various laboratories (metallurgy, polymers, chemistry). Now I work in the metallurgical lab, performing such tests as failure analysis and X-ray residual stress. Without the fundamental information I gained from MSU, I would not have the position I am in today.

Heather Pesek, BS ’99
Ford Motor Company, Dearborn, Michigan

I deal with statistical process control on a daily basis. Relying on good data, I initiate changes in a process.

Matt Lonnstrom, BS ’00
Motorola Semiconductor Products, Austin, Texas