



MATERIALS SCIENCE & ENGINEERING

MATERIALS SCIENTISTS AND ENGINEERS CONDUCT RESEARCH TO MEET THE NEEDS OF MODERN TECHNOLOGY AND MAKE ALL ENGINEERING APPLICATIONS POSSIBLE.



QUICK FACTS

MSE faculty have reported 98 inventions, have had 36 patents issued, and have launched 7 startup companies.

All students participate in undergraduate research.

All students complete an industry-linked capstone design project.

MSE offers a degree option in Nanoscience and Molecular Engineering (NME) as well as a combined B.S.-M.S. program.

WHAT DO MATERIALS SCIENCE AND ENGINEERS DO?

Materials science and engineering is an interdisciplinary field. We explore the scientific fundamentals of materials, design and their processing for real applications in energy, construction, biotechnology and nanotechnology. We apply the basic principles of chemistry and physics to understand the structure and properties of material and design processes to manipulate materials that meet the needs of modern technology.

WHAT PROBLEMS ARE MATERIALS SCIENTISTS AND ENGINEERS TRYING TO SOLVE?

Materials scientists and engineers explore how materials perform and invent ways to improve their functional properties. Materials scientists and engineers ask questions such as:

- How do we develop advanced materials to make structures such as aircrafts and automobiles stronger, cheaper and more fuel efficient?
- How can we create novel energy storage nanostructures to improve fuel cells, batteries, super-capacitors and power grids?
- Can we develop computational tools to predict and control complex materials synthesis and structures?
- How can we use 3D printing to meet growing manufacturing demands?
- How can we close the carbon cycle with biomass?
- Can we engineer better materials for medical devices and disease detection?

WHERE DO MSE ALUMNI WORK?

Air and space

Materials testing, manufacturing, processes, physics, coatings and finishes | Aerojet Rocketdyne, Boeing, Blue Origin, Crane Aerospace, Honeywell, LMI Aerospace, Janicki Industries, NASA, Space X, U.S. Air Force

Computing, data and digital technologies

Data science, data analytics, materials simulation modeling, software development | Apple, AT&T, HCL Technologies, Infosys, Intel, Micron, Microsoft, Shin-Etsu America, The Spur Group

Environment, sustainability and energy

Clean energy development, waste management | Cupertino Electric, Microsoft, nLIGHT, Pacific Northwest National Laboratory, Sedron Technologies, Washington Clean Energy Testbeds

Health and medicine

Medical devices, tissue engineering, health research and development | Cardiac Dimensions, EKOS Corporation, NanoString Technologies, Neoleukin Therapeutics, nLIGHT, Rocket Science Health, UW School of Medicine

Infrastructure, transportation and society

Airplanes, submarines, sporting goods and fabrics | Crane Currency, PNNL, Prometheus, Samsung Electronics, Uphill Designs, W.L. Gore

Robotics and manufacturing

Product development, materials manufacturing and processes, failure analysis, 3D printing | Boeing, Fluke Corporation, Honeywell, General Dynamics, Intel

RECENT CAPSTONE PROJECTS

- > Mechanical characterization of defects inherent in automated fiber placement technology
- > Modified thermally conductive resin for the Formlabs SLA 3D printer
- > Elastic electronics: optimizing electrical and mechanical properties of conjugated polymers

WHAT MAKES MSE SPECIAL?

MSE is a small, close-knit department with many opportunities for hands-on team-based learning. Students complete both a senior research project and a senior capstone design project solving real world problems with industry mentorship.



HOW CAN I LEARN MORE?

If you think MSE might be for you, we encourage you join one of the MSE affiliated registered student organizations. You can take an MSE class open to non-majors such as MSE 170: Fundamentals of Materials Science or start doing research in a lab even before placing into a major.

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