

# DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING

One of the largest, leading materials programs in the country, the Department of Materials Science and Engineering at The Ohio State University aims to transform how materials are synthesized, developed, processed, characterized and joined. We translate this innovation into educational experiences that expose students to state-of-the-art experimental and computational techniques, delivering the required preparation and skills to be leaders in the materials industry and academia.

The department's facilities span three campus buildings with advanced equipment to synthesize materials for biological, corrosive, electronic, energy and structural applications; to characterize their structure, properties and performance; and to join them using welding, frictional and other innovative methods. The Department of Materials Science and Engineering resides in Mars G. Fontana Laboratories, which opened in August 2020 after a \$59.1 million renovation. Learn about phase two of the renovation: [go.osu.edu/phase2](https://go.osu.edu/phase2)

## RANKINGS

Our undergraduate and graduate programs, including an online master's program in welding engineering, are consistently ranked in the top 20 nationally by *U.S. News and World Report*. Undergraduate students enjoy a student-to-faculty ratio of 7:1, dedicated full-time academic advisors, and opportunities to participate in research, summer internships, co-ops, global education opportunities, and professional societies and meetings. The graduate student experience includes state-of-the-art experimental and computational research facilities, interdisciplinary research, national and international collaborations, and teaching and mentorship options. The majority of our graduate students are supported by graduate research associate positions that provide for tuition, stipend and research costs.

## ACADEMICS

The department offers BS, MS and PhD degrees in materials science and engineering (MSE) and welding engineering (WE). Ohio State is the only academic institution in the U.S. offering BS, MS and PhD degrees in WE.

A MS in welding engineering is also available in a distance learning format. The BS/MS program provides an accelerated path to complete the combined requirements for BS and MS degrees, and an Integrated Business & Engineering Honors Program bundles a BS in MSE or WE with a minor in business.



All undergraduate students participate in a senior capstone experience in which student teams tackle open-ended engineering problems that involve materials synthesis, characterization, joining and performance/property evaluation.

## AUTUMN 2022 ENROLLMENT

Undergraduate students (155 MSE, 86 WE) ..... 241  
Graduate students (97 MSE, 78 WE) ..... 175

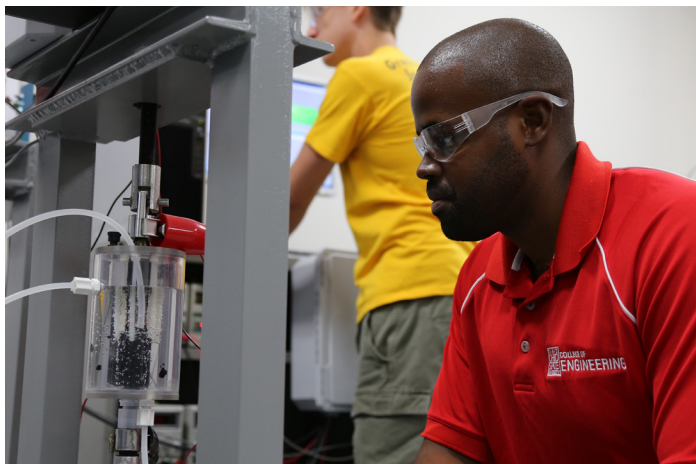
## DEGREES CONFERRED (2021-2022)

Bachelor of Science (58 MSE, 43 WE) ..... 101  
Master of Science (12 MSE, 29 WE) ..... 41  
Doctor of Philosophy (24 MSE, 6 WE) ..... 30

## RESEARCH

The department supports more than \$18.6 million in research expenditures each year. Focus areas with dedicated faculty include biomaterials (4); ceramic science (5); characterization and microscopy (10); computational MSE (11); corrosion (3); electronic, photonic and magnetic materials (10); energy materials (7); mechanical properties (13); metallic materials (13); polymers (4); processing and manufacturing (12); sensor materials and technology (5); and welding engineering (14). We continue to realize new opportunities for faculty hiring and research growth. These areas include materials for biomedical applications; structural applications, including extreme environments; manufacturing, including novel additive and joining techniques; mobility, including lightweighting and propulsion; and energy applications, including harvesting, conversion and storage.





## RESEARCH FACILITIES

- Advanced Casting Research Center
- Center for Accelerated Maturation of Materials (Camm)
- Center for Electron Microscopy and Analysis (CEMAS)
- Center for Performance and Design of Nuclear Waste Forms and Containers (WastePD)
- Center for Superconducting and Magnetic Materials (CSMM)
- Center for Weldability Evaluation
- Fontana Corrosion Center (FCC)
- Manufacturing and Materials Joining Innovation Center (Ma2JIC)

The department is active in many multidisciplinary centers, see [go.osu.edu/multidiscipline](http://go.osu.edu/multidiscipline).

## FACULTY

The department is one of the largest in the nation, with 36 tenure-track faculty, five clinical-track faculty and five research-track faculty, plus 14 joint faculty with primary appointments in biomedical, chemical, electrical, integrated systems and mechanical engineering, and architecture. Together, we offer expertise in teaching and research that spans the materials spectrum—ceramics, metals, polymers, biomaterials, semiconductors and composites. Materials applications span from sustainable energy production, conversion and storage to biological, corrosive, electronic, magnetic and structural needs.

## ALUMNI

Known, living MSE and WE alumni worldwide.....5,404

## EMPLOYMENT AND INTERNSHIPS

The average starting salary for students with a BS in MSE or WE is about \$67,320 per year. Approximately 87% of students participate in an internship, co-op, research or part-time related work experience before graduation. The average internship or co-op wage is \$21.47 per hour. Students with a MS or PhD earn proportionately higher salaries.

## DIVERSITY

The department is committed to building and maintaining a diverse community. Students from 17 countries study here and we continue to increase the number of underrepresented minorities\* and embrace opportunities to do so. The percentage of women has increased to 32.9% in MSE and 13.4% in WE since 2014. Underrepresented minorities have increased since 2014 to 15.5% in MSE and 11.6% in WE.

*\* underrepresented minority = African American, Hispanic, American Indian/Alaskan Native and those who identify as two or more races*

## HISTORY AND TRADITION

The department has a long tradition that originated in the formation of the Department of Geology, Mining and Metallurgy in 1873 and the Department of Ceramics in 1894. The latter was the first in the U.S. to confer a technical degree in ceramics. These departments evolved over time into the Department of Metallurgical Engineering and Department of Ceramic Engineering, respectively. They merged in 1988 to form the Department of Materials Science and Engineering. The Welding Engineering Program was established in 1948. In 2010, it was transferred to the Department of Materials Science and Engineering to leverage the synergy between the disciplines. Today, the BS degree in WE is the only ABET-accredited degree in welding engineering in the U.S.

## GLOBAL OPTIONS

The department seeks to provide students and professionals with options to apply their engineering skills in a global context. At the undergraduate level, the Global Option in Engineering provides the opportunity to co-op or intern outside the U.S. At the professional level, the Master of Global Engineering Leadership program partners with the Fisher College of Business and the John Glenn College of Public Affairs to offer concentrations in MSE and WE, including an option in additive manufacturing.

## CONTACTS

### Main Office

2136 Fontana Laboratories  
140 W. 19th Avenue, Columbus, OH 43210  
614-688-3050

Michael J. Mills, Department Chair • [mills.108@osu.edu](mailto:mills.108@osu.edu)

### Undergraduate Programs in MSE and WE

Kami Westhoff, UG Senior Academic Advisor  
[westhoff.11@osu.edu](mailto:westhoff.11@osu.edu)  
[mse.osu.edu/undergraduate](http://mse.osu.edu/undergraduate)

### Graduate Programs in MSE and WE

Mark Cooper, Graduate Studies Coordinator • [cooper.73@osu.edu](mailto:cooper.73@osu.edu)  
[mse.osu.edu/graduate](http://mse.osu.edu/graduate)

### Master of Global Engineering Leadership

Amy Cherry, Program Coordinator • [eng-profed-mgel@osu.edu](mailto:eng-profed-mgel@osu.edu)  
[mgel.osu.edu](http://mgel.osu.edu)