

ADVANCED MANUFACTURING

The Master of Science in Advanced Manufacturing (<https://www.mccormick.northwestern.edu/masters-advanced-manufacturing/>) builds on the McCormick School of Engineering's long-standing expertise in manufacturing research, innovation, and education, and is supported by Northwestern's network of nationally funded centers, award-winning faculty, and collaborations across Chicago, the Midwest, and beyond.

Students in Northwestern's Advanced Manufacturing program work closely with faculty and researchers in state-of-the-art laboratories and industry collaborations. Our curriculum trains students to analyze and optimize flexible manufacturing systems, design new processes, and apply advanced technologies to solve real-world industrial and research challenges. Participants gain a strong foundation in core principles while exploring emerging areas that define the future of manufacturing.

Students complete either a research-focused thesis or an industry-focused project, gaining hands-on experience with real-world problem solving.

Additional resources:

- Program website (<https://www.mccormick.northwestern.edu/masters-advanced-manufacturing/>)
- Program handbook(s)

Degree(s) Offered

- Advanced Manufacturing MS (<https://catalogs.northwestern.edu/tgs/advanced-manufacturing/advanced-manufacturing-ms/>)

Learning Objectives

- a. Equip students with analytical thinking skills by providing a core education in manufacturing fundamentals and the tools used to understand and predict material evolution in processing, such as physics-based analytical and computational tools.
- b. Provide students with the breadth of manufacturing processes by covering additive, subtractive, deformation-based, and hybrid processes.
- c. Broaden students' perspectives in circular economy by presenting the principles of materials-process-property-performance and by teaching the principles of data collection, artificial intelligence and statistics in quality and process control of manufacturing processes and supply chain.
- d. Prepare students well in smart manufacturing by introducing robotics, the Internet of Things, and automation tools in modern manufacturing and assembly.