Advanced Manufacturing and Materials Evaluation Certificate

For information, contact:

Department of Mechanical and Manufacturing Engineering

56 Garland Hall
650 E. High St.
Oxford, OH 45056
513-529-0710

MMEdept@MiamiOH.edu

This certificate program equips participants to remain at the forefront of advances in manufacturing technologies and material science. The program develops and enhances skills in analyzing, adopting and effectively utilizing advanced manufacturing methods and the interplay between manufacturing processes and material properties. Courses can be selected to suit areas of interest and/or job requirements. Coursework includes additive manufacturing, mechanical property characterization, wear analysis, nano-materials, statistical process control, etc. Selection of equipment and creation of a testing program to capture specific service conditions is undertaken. Manufacturing and material property interaction in metals and polymers is examined. Practicum courses can be taken for hands-on experiences in topics such as materials testing, process instrumentation, and automation.

A total of twelve (12) credit hours from the two concentration areas are required to complete for the graduate certificate.

Advanced Materials Concentration

Code	Title	Credit Hours
MME 588A	Material Characterization Techniques	1.0
MME 588B	ASTM Codes	0.5
MME 588C	Sample Preparation Methods, Data Collection and Analysis	1.0
MME 588D	Practicum Material Testing and Sample Preparation	1.5
MME 588E	Dynamic Testing of Materials (DMA)	1.0
MME 588F	Dynamic Scanning Calorimetry (DSC)	0.5
MME 588G	Microscopy (AFM, SEM, TEM) Applied to Material Property and Failure Evaluation	1.0
MME 588J	Biomaterials	1.0
MME 588I	Practicum Advanced Material Testing	1.5
MME 588K	Composite Materials	1.0
MME 588N	Fundamentals of Tribology	1.0
MME 588O	Equipment and Testing Protocols for Wear of Materials	1.0
Total Credit Hours		**12**

Advanced Manufacturing Processes Concentration: Emerging Tools and Technologies

Code	Title	Credit Hours
MME 589A	Overview of Traditional Manufacturing Processes	2.0
MME 589B	Practicum Traditional Manufacturing Process	2.0
MME 589C	Design, Modeling and Simulation for Additive Manufacturing	1.0
MME 589D	Process Overview and Advances in 3D Printing of Polymers and Metals	1.0
MME 589E	Practicum: Additive Manufacturing	2.0
MME 589F	Overview of Advanced Manufacturing Processes	1.0
MME 589N	Fundamentals of Micro-manufacturing	0.5
MME 589O	Fundamentals of Nano-manufacturing	0.5
MME 589P	Quality, Metrology	1.0
MME 589Q	Practicum: Advanced Manufacturing Processes	1.0
Total Credit Hours		**12**