

MANUFACTURING SYSTEMS TECHNOLOGY (MFG)

MFG 5105 Manufacturing Operational Systems I (3)

The analysis, design, and implementation of world class manufacturing systems and their integration with functions of the production system for the manufacture of superior quality, low cost products. Topics include lean manufacturing, cellular manufacturing, integrated quality systems, Just-In-Time/Pull production control, and other current manufacturing strategies.

MFG 5107 Manufacturing Operational Systems II (3)

A detailed examination of competencies required of technology managers in contemporary manufacturing, with emphasis on integrating quality into all areas of the organization with the manufacturing system. Topics include quality management, manufacturing teams, safety and health management, total productive maintenance, vendor relationships, and other global manufacturing issues.

MFG 5511 Manufacturing Computer/Information Systems (3)

The theory and practice of using the computer to integrate the functional manufacturing areas into an effective system. Emphasis on computer interfacing, including hardware and software.

MFG 5515 Manufacturing Systems Simulation (3)

An examination of decision-making competencies required of manufacturing managers using current manufacturing system-modeling packages. Emphasis will be on solving manufacturing system problems consisting of labor, material, and equipment to predict future outcomes of various alternatives. Topics include computer simulation of manufacturing systems, computer simulation of materials handling systems, data collection, validation, output analysis, job shop applications, and line balancing.

MFG 5521 Manufacturing Value Analysis (3)

A comprehensive course covering topics necessary for making effective manufacturing economic decisions with emphasis on using a computerized engineering economic decision packages for application of cost controls and budgeting. Topics include evaluation of alternative projects, make versus buy decisions, cost justification methods, cost of product tolerances, and replacement analysis.

MFG 5531 Automated Manufacturing Technology (3)

A summary course of material processing & machining methods with an emphasis on planning and implementation of flexible manufacturing systems (FMS) and computer-integrated manufacturing (CIM). Topics include robotics & computer numerical control (CNC) systems, automated material handling and storage, and automated inspection.

MFG 5550 Safety and Health Administration (3)

The examination and analysis of administrative concepts and principles for organizing and managing the functional areas of safety and health within an organization, to include methods for improving management's safety effectiveness. Specifically, the course focuses on the application of behavioral principles to motivate safe workplace behavior.

MFG 5577 Additive Manufacturing Processes (3)

This course provides students with a fundamental understanding of additive manufacturing (AM) techniques, commonly known as 3D printing. Students will learn process characteristics, economics, and practical applications of various AM processes and how they differ from legacy fabrication processes such as milling. Students will gain practical studio experience with AM using the latest technologies to fabricate products from virtual designs.

MFG 5580 Advanced Topics in Manufacturing Systems Technology (3)

This course will focus on an advanced manufacturing systems technology topic of interest.

MFG 5595 Project Development and Management (3)

Students are directed in methods and techniques used in project development and management as they develop a proposal for completion of a project manufacturing systems technology.

MFG 5750 Research Design and Methods (3)

This course introduces the foundational elements of research design, implementation, and analysis that align with the scientific research process. Graduate students will learn the basic methods of research including quantitative, qualitative, and mixed methodologies as well as the conventions of scholarly writing. In this course, students will create a study design to examine a hypothetical problem within their career field and will produce a corresponding manuscript that includes all elements of a scholarly manuscript.

MFG 5898 Selected Problems in Manufacturing Systems (3)

Independent study of selected problems under the guidance of a member of the graduate faculty.

MFG 5986 Comprehensive Project in Manufacturing Systems Technology (3)

Students complete an independent, comprehensive project integrating the functional areas of manufacturing systems technology. Students will be required to present a seminar outlining the project and submit a detailed technical project report.