



**KENTUCKY STATE
UNIVERSITY**

MANUFACTURING ENGINEERING TECHNOLOGY

MFG 208: Computer Aided Design

The course outlines modern solid modeling design, analysis, simulation, and manufacturing of mechanical systems. The theoretical focus is fundamental Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) concepts. Numerous practical examples sustain these to provide the student with intensive hands-on experience with CAD/CAM. Implementations use the Creo design package (PTC Inc.). This course aims to prepare the students to utilize robust digital design, simulation, and manufacturing tools in classes, projects, and future work. The materials learned will help engineers develop a product from the research and development stage into prototype development and final commercial product development.

Prerequisite: COS 107 | or instructor's consent

Credit Hours: 3

Contact Hours: 3

MFG 209: Fund of Manf. Processes

The course covers the fundamentals of various manufacturing processes, classified as constant mass operations, material removal operations, and material addition operations. The processes discussed are casting, metal forming, processing of plastics, powder metallurgy processing, heat treatment, metal cutting, grinding, finishing, unconventional machining and welding, and allied processes. The course involves theory and laboratory experiences dealing with basic machining and chip forming processes, inspection, cutting, computer-assisted numerical control, and newly developed processes.

Credit Hours: 3

Contact Hours: 3

MFG 210: Manuf. Process & Materials

The course develops the skills to understand how to give materials usable form and improve function through manufacturing processes. The objective is to help the students identify, discuss, and analyze the manufacturing processes for engineering materials and the associated equipment. It includes manufacturing processes such as casting, bulk deformation, sheet metal forming, traditional and nontraditional material removal, joining and fastening, and manufacturing of polymers, metal powders, composites, and ceramics.

Credit Hours: 3

Contact Hours: 4

MFG 308: Industrial Supervision

The course develops the skills to understand how to give materials usable form and improve function through manufacturing processes. The objective is to help the students identify, discuss, and analyze the manufacturing processes for engineering materials and the associated equipment. It includes manufacturing processes such as casting, bulk deformation, sheet metal forming, traditional and nontraditional material removal, joining and fastening, and manufacturing of polymers, metal powders, composites, and ceramics

Credit Hours: 3

Contact Hours: 3

MFG 309: Computer Integrated Manufact.

The course introduces the theories and tools of computer-integrated manufacturing (CIM). CIM is the integration of manufacturing hardware and software systems. This course describes the production strategies and the importance of CIM. Students will learn the basics of automated equipment and software solutions. This course will cover the results of CIM operation on all major elements of product design, manufacturing production, and operational control systems. This course teaches students the implementing techniques of CIMs that may make the enterprises more competitive in the global market.

Credit Hours: 3

Contact Hours: 3

MFG 310: Lean Manufacturing

The course introduces students to Lean Manufacturing, which is about creating value. The Lean process starts with creating value for the ultimate customer, which requires providing the right product at the right time for the specified price. While all manufacturing attempts to do this, what makes Lean Manufacturing distinct is the relentless pursuit and elimination of waste. Students will learn the concepts and tools of Lean, which include types of waste, visual management, 5S, value stream mapping, A3, & flow, and how it applies to materials systems.

Credit Hours: 3

Contact Hours: 3

MFG 311: : Quality Management Systems

The course introduces students to the philosophies, concepts, tools, and techniques of continuous quality improvement programs. It covers understanding the laws, principles, and phenomena in the field of quality management and the adoption of theoretical and practical knowledge and skills.

Credit Hours: 3

Contact Hours: 3

MFG 312: Programmable logic Control

The course introduces students to programmable logic controllers (PLCs), process control algorithms, interfacing of sensors and other I/O devices, simulation, and networking. Topics include processor units, numbering systems, memory organization, relay-type devices, timers, counters, data manipulators, and programming.

Prerequisite: COS 107

Credit Hours: 3

Contact Hours: 3

MFG 313: Manuf. Res. Plan & Control

The course aims to deepen students' understanding of coordinating supply, production, and distribution functions. Additionally, it will teach students how to balance conflicting objectives to minimize the total costs involved and maximize customer service. The Manufacturing Planning and Control (MPC) system must stay current with technology, product, and market conditions in today's constantly evolving global marketplace. This course offers a thorough understanding of key elements of manufacturing planning and control. Regardless of the industry or business, understanding the various systems involved in Manufacturing Planning and Control helps to increase the organization's bottom line. Every operation requires plans and control to satisfy customer demand. Planning and control are the operation within the constraints imposed by its design, although the degree of formality and detail may vary.

Credit Hours: 3

Contact Hours: 3

MFG 408: Res. and Dev. in Technology

The student will research and develop a solution to a technological problem in this course.

Credit Hours: 3

Contact Hours: 4

MFG 409: Production Planning & Control

The course provides students with knowledge in applying industrial engineering theory and practice in operations management and production planning/control. It includes an analysis and understanding various topics such as forecasting, aggregate planning, operations strategy, capacity planning, supply-chain management, just-in-time systems, lean manufacturing, agile manufacturing, materials requirement planning, inventory management, short-term scheduling and sequencing, line balancing, and other relevant areas.

Credit Hours: 3

Contact Hours: 3

MFG 410: Logistic & Supply Chain Mang.

The course aims to give an overview of the history and fundamental concepts of logistics and the competitive supply chain strategy. It will cover various topics, including delivering customer value, market strategies, logistics cost and performance, supply and demand, creating a responsive supply chain, strategic lead-time management, and sourcing and supply management.

Credit Hours: 3

Contact Hours: 3