

# MANUFACTURING ENGINEERING TECHNOLOGY

## MFGE 120 Basic Electricity 3 Hours

Basic concepts of AC and DC current, various types of circuits, electron theory and electrical laws.

**Prerequisite(s):** (MATH 116 with a minimum grade of C or MA 116C with a minimum grade of C) or (MATH 117 or MA 117C) or MATH 118 or MATH 119 or MATH 127 or MATH 121 or MATH 136 or MATH 137 or MATH 142 or MATH 206 or MATH 237 or MATH 240 or MATH 275 or MATH 304 or MATH 305 or MATH 306

**Course Fee:** \$35

*Recent Term(s) Offered:* fall 2021; fall 2022

## MFGE 205 CADD for Manufacturing 3 Hours

A solids modeling course designed to develop skills on the use of a PC based mechanical design software to build feature-based, parametric solid models of parts and assemblies. Manufacturing drawings - orthographics - of those parts and assemblies are produced.

**Prerequisite(s):** (MATH 117 or MA 117C) or (MATH 116 with a minimum grade of C or MA 116C with a minimum grade of C) or MATH 118 or MATH 119 or MATH 127 or MATH 121 or MATH 136 or MATH 137 or MATH 142 or MATH 206 or MATH 237 or MATH 240 or MATH 275 or MATH 304 or MATH 305 or MATH 306

**Course Fee:** \$30

*Recent Term(s) Offered:* None

## MFGE 217 Industrial Materials 3 Hours

Survey of materials concepts and their applications to the production of manufactured items. Included will be basic procedures for testing manufacturing materials and discussions of materials processing concepts and cautions.

**Prerequisite(s):** (MATH 117 or MA 117C) or MATH 118 or MATH 119 or MATH 127 or MATH 121 or MATH 136 or MATH 137 or MATH 142 or MATH 206 or MATH 237 or MATH 240 or MATH 304 or MATH 305 or MATH 306 or (MATH 116 with a minimum grade of C or MA 116C with a minimum grade of C) and (CHEM 105 and CHEM 106) or CHEM 109 or CHEM 116 or (CHEM 120 and CHEM 121)

**Course Fee:** \$50

*Recent Term(s) Offered:* fall 2021; spring 2022; fall 2022

## MFGE 227 Introduction to Manufacturing Methods 3 Hours

A descriptive study of manufacturing processes using production equipment with laboratory experiences in forming and separating processes.

**Prerequisite(s):** (MATH 115 with a minimum grade of C or MA 115C with a minimum grade of C or MATH 116 with a minimum grade of C or MA 116C with a minimum grade of C) or MATH 117 or MA 117C or MATH 118 or MATH 119 or MATH 127 or MATH 121 or MATH 136 or MATH 137 or MATH 142 or MATH 206 or MATH 237 or MATH 240 or MATH 275 or MATH 304 or MATH 305 or MATH 306)

**Course Fee:** \$50

*Recent Term(s) Offered:* spring 2022; fall 2022

## MFGE 301 Introduction to Food Science and Technology 3 Hours

A comprehensive introduction to the basic concepts and principles of food science and the role of science in food processing and manufacturing.

*Recent Term(s) Offered:* None

## MFGE 303 Food Laws and Regulations 3 Hours

History, development, and enforcement of major federal food statutes and regulations, with emphasis on the Federal Food, Drug, and Cosmetic Act (FDCA), the Food and Drug Administration (FDA) and the US Department of Agriculture (USDA) regulations. **Colonnade/Statewide General Education Code K-SY**

**Prerequisite(s):** 21 hours of Foundations and Explorations Courses, or junior status

*Recent Term(s) Offered:* fall 2021; spring 2022; summer 2022; fall 2022

## MFGE 328 Robotics and Machine Vision 3 Hours

Introduction to capabilities and limitations of robotic and machine vision systems, as well as fundamentals of programming. Laboratory activities are focused toward manufacturing applications.

**Prerequisite(s):** (MATH 116 with a minimum grade of C or MA 116C with a minimum grade of C) or (MATH 117 or MA 117C) or MATH 118 or MATH 119 or MATH 127 or MATH 121 or MATH 136 or MATH 137 or MATH 142 or MATH 206 or MATH 237 or MATH 240 or MATH 275 or MATH 304 or MATH 305 or MATH 306

**Course Fee:** \$25

*Recent Term(s) Offered:* fall 2021; spring 2022; fall 2022

## MFGE 342 Manufacturing Operations 3 Hours

Survey of methods for designing products for improved quality and manufacturability in industry, and designing manufacturing processes for improved reliability.

**Prerequisite(s):** (MATH 116 with a minimum grade of C or MA 116C with a minimum grade of C) or (MATH 117 or MA 117C) or MATH 118 or MATH 119 or MATH 121 or MATH 127 or MATH 136 or MATH 137 or MATH 142 or MATH 206 or MATH 237 or MATH 240 or MATH 275 or MATH 304 or MATH 305 or MATH 306

**Course Fee:** \$20

*Recent Term(s) Offered:* fall 2021; spring 2022

## MFGE 343 Automated Systems 3 Hours

Techniques of automated systems dealing with material handling, PLC, and off-the-shelf computer control systems. Programming the microprocessor for control applications may be included. Lecture and laboratory. Note: Permission of instructor may be required.

**Prerequisite(s):** MFGE 120 or EE 180 or EE 210

**Course Fee:** \$40

*Recent Term(s) Offered:* fall 2021; spring 2022

## MFGE 352 Food Processing: Unit Operations 3 Hours

An overview of unit operations and processing techniques used in food processing industry. Topics include thermal processing, low temperature preservation, dehydration, irradiation, enzyme technology, separation and concentration, evaporation and distillation, and high-pressure and minimal processing methods.

**Prerequisite(s):** (MATH 116 with a minimum grade of C or MA 116C with a minimum grade of C) or (MATH 117 or MA 117C) or MATH 118 or MATH 119 or MATH 127 or MATH 121 or MATH 136 or MATH 137 or MATH 142 or MATH 206 or MATH 237 or MATH 240 or MATH 275 or MATH 304 or MATH 305 or MATH 306

*Recent Term(s) Offered:* fall 2021; spring 2022; summer 2022; fall 2022

**MFGE 356 Systems Design and Operation 3 Hours**

A study of manufacturing organizations and their administration, facilities layout, work systems, forecasting and decision making. Applications of resource planning determining product demand, controlling inventory, goods and services.

**Prerequisite(s):** ECON 206 or MATH 183 or STAT 301 or SEAS 271

**Course Fee:** \$10

*Recent Term(s) Offered:* fall 2021; spring 2022; fall 2022

**MFGE 370 Computer Numerical Control 3 Hours**

Computer-aided manufacturing techniques including manual and computer-assisted numerical control. Students program and operate CNC machining centers. Lecture and Laboratory. Note: Consent of instructor may be required.

**Prerequisite(s):** MFGE 227

**Course Fee:** \$50

*Recent Term(s) Offered:* spring 2022

**MFGE 381 Food Quality Assurance 3 Hours**

Theory and application of quality assurance programs for the food processing industry, with emphasis on good manufacturing practices, sanitation programs and audits.

**Prerequisite(s):** (MFGE 301 or BIOL 207)

*Recent Term(s) Offered:* None

**MFGE 395 Food Safety 3 Hours**

Development and implementation of the Hazard Analysis and Critical Control Point (HACCP) system and its application in the food processing industry.

*Recent Term(s) Offered:* fall 2021; spring 2022; summer 2022; fall 2022

**MFGE 396 Introduction to Supply Chain Management 3 Hours**

Introduction to supply chain management and risk pooling, logistics network configuration, the value of information, customer value and decision support systems.

**Prerequisite(s):** (MATH 116 with a minimum grade of C or MA 116C with a minimum grade of C) or (MATH 117 or MA 117C) or MATH 118 or MATH 119 or MATH 127 or MATH 121 or MATH 136 or MATH 137 or MATH 142 or MATH 206 or MATH 237 or MATH 240 or MATH 275 or MATH 304 or MATH 305 or MATH 306

**Course Fee:** \$10

*Recent Term(s) Offered:* fall 2021; spring 2022; summer 2022; fall 2022

**MFGE 462 Commodity Food Processing 3 Hours**

Principles of food processing, stages and operations, and product formulations for processing and manufacturing different categories of food products such as beverages, cereals, dairy, meats and poultry, and fruits and vegetables.

**Prerequisite(s):** MFGE 352

*Recent Term(s) Offered:* None

**MFGE 490A Senior Research for Manufacturing Engineering Technology 3 Hours**

Students work on capstone research projects utilizing skills and knowledge from prior courses in the Manufacturing Engineering Technology program. This is a lecture lab course that will incorporate all aspects of manufacturing in a simulated facility.

**Prerequisite(s):** (SEAS 356 (may be taken concurrently) with a minimum grade of C or MGT 314 (may be taken concurrently) with a minimum grade of C) and SEAS 390 with a minimum grade of C and SEAS 394 (may be taken concurrently)

**Course Fee:** \$50

*Recent Term(s) Offered:* spring 2022

**MFGE 490B Senior Research for Engineering Technology Management 3 Hours**

Students work on capstone research projects utilizing skills and knowledge from prior courses in the Engineering Technology Management program. Projects performed when possible will be for a specific client or industry. This course will require an approved course proposal prior to being able to register.

**Prerequisite(s):** (MFGE 356 with a minimum grade of C or MGT 314 with a minimum grade of C) and SEAS 390 with a minimum grade of C and SEAS 394 (may be taken concurrently)

*Recent Term(s) Offered:* fall 2021; spring 2022