MANUFACTURING ENGINEERING (MFGE)

MFGE 285. INTRODUCTION TO INDUSTRIAL AND MANUFACTURING ENGINEERING. (3 Credits)
Introduction to selected topics in industrial and manufacturing engineering, including history and philosophy, product design and manufacturing cycle, integrated role of engineering and business, and multi-objective nature of organizations. Surveys of selected design problems in resource allocation, operations and quality management, and production engineering. CROSSLISTED as IE 285.
Equivalent to: IE 285

MFGE 336. PRODUCTION ENGINEERING. (4 Credits)
Provides a general understanding of the production engineering function within industry and the means by which to achieve tight tolerances through machining. Geometric dimensioning and tolerancing, fixture and gage design, and fundamentals of metal cutting mechanics are introduced, and their interactions are explored. Lec/lab.
Prerequisites: (ENGR 213 with C or better or ENGR 213H with C or better) and ENGR 248 [C] and (ENGR 321 [C] or ENGR 321H [C] or MATS 321 [C] or MATS 321H [C]) and ME 250 [C]
Equivalent to: IE 336

MFGE 337. MATERIALS AND MANUFACTURING PROCESSES. (4 Credits)
Introduces mechanical manufacturing methods by which materials are economically shaped into valuable products. The overall goal is to develop an understanding of how the functionality, shape, materials, cost and sustainability of a product influence manufacturing process selection and design. Lec/lab.
Prerequisites: (ENGR 321 with C or better or ENGR 321H with C or better or MATS 321 with C or better or MATS 321H with C or better) and ME 250 [C] and MFGE 336 [C]
Equivalent to: IE 337

MFGE 436. LEAN MANUFACTURING SYSTEMS ENGINEERING. (4 Credits)
The planning, evaluation, deployment, and integration of lean manufacturing theory and methods. Examines manufacturing processes/equipment and systems, e.g., planning/control, product design, supply chain resource management. Lec/lab.
Equivalent to: ME 511

MFGE 437. COMPUTER CONTROL OF MANUFACTURING PROCESSES. (4 Credits)
Introduces fundamental knowledge in the automation of manufacturing systems and processes. Automated manufacturing system design and operations–computer numerical control (CNC) technology; NC part programming; sensors and actuators, their modeling and dynamic simulation; feedback motion delivery systems design and tuning; programmable logic controls (PLC) for industrial control systems, and path planning for numerical controlled (NC) machinery. Lec/lab.
Prerequisites: (ME 317 with C or better or ME 317H with C or better or MFGE 336 with C or better) and (ENGR 212 [C] or ENGR 212H [C])

MFGE 438. COMPOSITES MANUFACTURING. (4 Credits)
Introduction to fiber-reinforced composite materials and their applications. Topics include matrices and reinforcement; open and closed molding processes; filament winding, quality, testing, damage assessment; basics of factory operations and sustainability of composites. Students will complete laboratory projects using fiber-reinforced laminates. Lec/lab.
Prerequisites: ENGR 213 with C or better or ENGR 213H with C or better