ETME - Mechanical Engineering Technology

ETME 100 Introduction to Mechanical Engineering Technology: 1 Credit (1 Lec)
(F) A seminar course surveying the mechanical engineering technology profession. Topics include an overview of career opportunities, problem solving processes, an introduction to the basic engineering design process, professionalism, professional registration, and ethics.

ETME 202 Mechanical Engineering Technology Computer Applications: 3 Credits (2 Lec, 1 Lab)
COREQUISITE: M 166. (F, Sp) Computer methodology, and use of various computer software packages, basics of micro-controller use and programming, introduction to sensor and motor control in mechanical engineering technology applications.

ETME 203 Mechanical Design Graphics: 3 Credits (2 Lec, 1 Lab)
PREREQUISITE: M 166. (F, Sp) Course emphasizes the design process as it pertains to manufacturability and the role of graphics to communicate design intent to production. Using 3-D software, design method, G,D,&T, and data management techniques, students will create drawings that communicate their designs.

ETME 215 Manufacturing Processes: 3 Credits (3 Lec)
PREREQUISITE: CHMY 121IN and CHMY 122IN or CHMY 141 and CHMY 142. (F, Sp) Introduction to basic applications of a wide range of manufacturing processes utilized in industry. Focus on applications and capabilities of the processes, as well as equipment utilized and relative costs associated.

ETME 216 Manufacturing Process Laboratory: 1 Credit (1 Lab)
PREREQUISITE: CHMY 121IN and CHMY 122IN or CHMY 141 and CHMY 142.
COREQUISITE: ETME 215. (F, Sp) Provides students with hands-on experience for performing and analyzing a broad spectrum of manufacturing processes including metal casting, injection molding, powder metallurgy, metal forming, metal removal, joining, inspection and measurement.

ETME 217 Manufacturing Process Laboratory - Mechanical Engineering: 1 Credit (1 Lab)
PREREQUISITE: CHMY 141 and CHMY 142.
COREQUISITE: ETME 215. (F) On demand. Course will supplement lecture materials covered in ETME 215. Provides students with hands-on experience for performing and analyzing a broad spectrum of manufacturing processes including metal casting, injection molding, powder metallurgy, metal forming, metal removal, inspection and measurement and welding.

ETME 290R Undergraduate Research: 1-6 Credits (1-6 Other)
PREREQUISITE: Consent of instructor and approval of department head or director. (F, Sp, Su) Directed undergraduate research/creative activity which may culminate in a written work or other creative project. Course will address responsible conduct of research. May be repeated. Repeatable up to 99 credits.

ETME 291 Special Topics: 3 Credits (2 Lab, 2 Other)
PREREQUISITE: None required but some may be determined necessary by each offering department. On demand. Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number. Repeatable up to 12 credits.

ETME 292 Independent Study: 1-3 Credits (1-3 Other)
PREREQUISITE: Consent of instructor and approval of department head or director. (F, Sp, Su) Directed research and study on an individual basis. Repeatable up to 6 credits.

ETME 303 CAE Tools in Mechanical Design: 3 Credits (2 Lec, 1 Lab)
PREREQUISITE: EGEN 208, EGEN 324, ETME 203. (F, Sp) Emphasizes problem solving with the aid of the applied computer aided engineering techniques of Finite Element Methods and Computational Fluid Dynamics, in analysis and in the design process with a focus on proper use of the methods, as well as, verification, validation, and interpretation of results.

ETME 309 Building Information Modeling in MEP: 2 Credits (2 Lab)
PREREQUISITE: ETME 203 or consent of instructor. (F) Introduction to the use of Building Information Modeling (BIM) in the Mechanical, Electrical, and Plumbing (MEP) disciplines of the Construction Industry. Instruction in BIM basics using contemporary software, with hands-on exercises in typical construction applications.

ETME 310 Machining and Industrial Safety: 3 Credits (1 Lec, 2 Lab)
PREREQUISITE: ETME 203 and ETME 216 or instructor approval. (F, Sp) Introduction to modern machining technology and the key principles of industrial safety, material properties related to machining practices, design, and specifications. Semi-precision and precision lay-out are covered. An introduction to computer numerically controlled (CNC) technology and operations is included. Specific hands-on experiences included in laboratory.

ETME 311 Joining Processes: 3 Credits (1 Lec, 2 Lab)
PREREQUISITE: EMEC 103, CHMY 121IN and CHMY 122IN or CHMY 141 and CHMY 142. (F, Sp) Introduction to the modern science of joining technology, and detailed examination of metallurgy and materials properties as related to joining processes. Introduction to welding specification and symbols, and modern welding code usage. Weld design, set-up, preparation, application, and tests are emphasized. Specific hands-on experiences in OAW, SMAW, GTAW, common separating processes; destructive and non-destructive testing are included in laboratory. This course will also expose students to other fastening joining techniques used in industry. Resistance welding, composites, riveting, and mechanical fastening and their application will be explored.

ETME 321 Applied Heat Transfer: 3 Credits (3 Lec)
PREREQUISITE: EGEN 324./corequise: ETME 331. (F, Sp) Study of the basic mechanisms of heat transfer and its applications. Introduction to equipment that utilize these mechanisms.

ETME 327 Commercial Building Energy Assessment Lab: 1 Credit (1 Lab)
PREREQUISITE: EELE 250 or EELE 354 or consent of instructor. (F) Introduction to Preliminary Energy-Use Analysis (PEA), walk-through survey, energy survey and analysis, and detailed analysis of capital-intensive modifications. Laboratory activities include operation of equipment used to collect energy data and building system performance information.

ETME 340 Mechanisms: 4 Credits (3 Lec, 1 Lab)
COREQUISITE: EGEN 208 and ETME 202. (F, Sp) Introduction to mechanisms and machine elements used in the design and synthesis of mechanical devices.

ETME 341 Machine Design: 4 Credits (3 Lec, 1 Lab)
PREREQUISITE: EGEN 208 and ETME 216. (F, Sp) Application of mechanisms fundamentals, strength of materials, material selection, and tolerances and fits to the design of machines and machine systems. Specific hands-on experiences included in laboratory.
ETME 360 Measurements and Instrumentation Applications: 3 Credits (2 Lec, 1 Lab)
PREREQUISITE: EELE 250, or equivalent
COREQUISITE: EGEN 350, EGEN 324. () On demand. Theory and application of engineering technology measurement concepts including function and operation of transducers; temperature, pressure, displacement and flow sensing; sensor system calibration; statistical and uncertainty analysis; sampling theory fundamentals; signal conditioning; 1st order response; emphasis on applications involving computerized acquisition of data

ETME 362 Applied Electronics and Power for Mechanical Systems: 3 Credits (2 Lec, 1 Lab)
PREREQUISITE: EELE 250. (F, Sp) Fundamentals of electronic controls and electrical power in the context of electro-mechanical systems and industrial applications. The course will consist of a lecture component to explain the theory followed by a lab component allowing the students to apply concepts

ETME 400 Mechanical Engineering Technology Senior Seminar: 1 Credits (1 Other)
PREREQUISITE: Senior standing. () On demand. A seminar course focusing on career path development. Students will meet with current industry professionals to discuss specific careers, as well as meet with freshman students to share undergraduate experiences. Pass/Fail

ETME 401 Fundamentals of Engineering Review: 1 Credits (1 Lec)
() On demand. A review of engineering fundamentals presented throughout the mechanical engineering technology curriculum. It serves primarily to prepare students to take the Fundamentals of Engineering Exam, and subsequently prepare them to progress towards becoming registered professional engineers.

ETME 410 Computerized Numerical Control and Computer-aided Manufacturing Technology: 3 Credits (1 Lec, 2 Lab)
PREREQUISITE: ETME 310 or instructor approval. (F, Sp, Su) Application and optimization of computer numerical control (CNC) and computer-aided manufacturing (CAM) technology fundamentals as related to turning, milling and plasma cutting operations. Development of toolpaths and machine code (G&M) from associated CAD models is emphasized. Specific hands-on experiences included in laboratory

ETME 415 Design for Manufacturing and Tooling: 3 Credits (2 Lec, 1 Lab)
PREREQUISITE: ETME 215; ETME 216 or ETME 217
COREQUISITE: EGEN 350; ETME 310; or instructor approval. (F, Sp) Overview of production systems and lean manufacturing fundamentals and principles. Introduction to design for assembly and manufacturing principles. Fundamentals of tool design, including tooling materials, workholding principles, jig design, fixture design, assembly tool design, design of tools for inspection and gauging, and tool fabrication techniques. Practical lab experiences will enhance the course material

ETME 422 Principles of HVAC I: 3 Credits (3 Lec)
PREREQUISITE: EMEC 320 or EGEN 324, ETME 321 or EMEC 326, or instructor consent. (F, Sp) Heating, ventilating, air-conditioning and refrigeration (HVAC&R) for comfort and industrial applications, psychrometrics, physiological factors in air-conditioning, HVAC load calculations; thermodynamic and HVAC system processes; air equipment and hydronic distribution; and an introduction to controls sequencing
ETME 490R  Undergraduate Research: 1-6 Credits (1-6 Other)
PREREQUISITE: Junior standing, consent of instructor, and approval of certifying officer. (F, Sp, Su) Directed undergraduate research/creative activity which may culminate in a research paper, journal article, or undergraduate thesis. Course will address responsible conduct of research. Repeatable up to 12 credits.

ETME 491  Special Topics: 1-3 Credits (1-3 Lec, 1-4 Lab)
PREREQUISITE: Course prerequisites as determined for each offering. Offered on demand. Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number. Repeatable up to 12 credits.

ETME 492  Independent Study: 1-3 Credits (1-3 Other)
(F, Sp, Su) Junior standing, consent of instructor, and approval of department head or director required. Directed research and study on an individual basis. Repeatable up to 6 credits.

ETME 498  Internship: 1-6 Credits (1-6 Other)
PREREQUISITE: EGEN 324, ETME 310, ETME 341. (F, Sp, Su) Junior standing and consent of internship coordinator. An individualized assignment arranged with an agency, business, or other organization to provide guided experience in the field.

ETME 499R  Capstone: Mechanical Engineering Technology Design II: 3 Credits (1 Lec, 1 Lab, 1 Other)
PREREQUISITE: ETME 489R. (F, Sp) For MET majors only. Senior capstone design experience in Mechanical Engineering Technology. Students implement and test the function of design prototypes under the guidance of a faculty supervisor.