ENGINEERING TECHNOLOGY (ET)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ET 401 - Introduction to 3D Printing
Credits: 4
This project-based course introduces current methods in the design and fabrication of 3D models. Students will apply and integrate techniques from mathematics, engineering, and computing design to models and then manufacture them by the use of 3D printers. Credit cannot be earned by students who have completed UMST 599 SpcTop/Intro to 3D Printing. Special fee.
Attributes: Enviro, TechSociety(Disc)

ET #601 - Data Structures and Data Bases
Credits: 4
A brief review of fundamental container classes; stacks, queues and link lists followed by more advanced data structures and concepts using search algorithms, iterators, and efficiency indicators. The second part of the course will include the development and use of relational databases using a commercial database engine. Java console applications and minimal Graphic User Interface applications will be used throughout the course to develop and test concepts.

ET 625 - Technical Communications
Credits: 4
Designed to improve students’ capabilities to prepare and present technical information in written and oral form and through electronic means. ET majors should take this course early in their program of study so that proficiencies developed can be utilized in later courses. (Also listed as ENGL 502.) Writing intensive.
Attributes: Writing Intensive Course

ET 630 - Analytical Methods in Engineering Technology
Credits: 4
Review of college-level mathematics including differential and integral calculus with applications and advanced topics, e.g., Fourier analysis, Laplace transform technique, and probability and statistics. Prereq: engineering technology majors only.

ET 635 - Fluid Technology and Heat Transfer
Credits: 4
Fundamental principles of fluid technology and basic principles of heat transfer, with applications in solving practical problems, and how these concepts are used in the HVAC area. Prereq: Thermodynamics; Mechanical Engineering Tech majors.

ET #639 - Heating, Ventilation and Air Conditioning I
Credits: 4
First in a two course sequence designed to familiarize the student with the design and operation of fluid thermal systems with specific applications in the heating, ventilating, and air conditioning of occupied spaces and some reference to industrial process control. Prereq: thermodynamics, calculus, or permission. Lab. Special fee.

ET 640 - Heating, Ventilation and Air Conditioning II
Credits: 4
Second in a two course series designed to acquaint the student with the fundamentals of fluid thermal system design with specific topics in solar loads on buildings, air conditioning system requirements, pump and fan selection, piping and duct system design, and an introduction to controls. Prereq: ET #639 or permission. Lab. Special fee.

ET 641 - Production Systems
Credits: 4
Market forecasting; waiting line theory; manufacturing inventories and their control; production scheduling; quality control. Prereq: differential and integral calculus.

ET 644 - Mechanical Engineering Technology Concepts in Analysis and Design
Credits: 4
Kinematics, kinetics, work and energy, fluids, heat transfer; application of these concepts to problems in mechanical design. Prereq: strength of materials and dynamics and ET 637.

ET #647 - Advanced Perspectives on Programming
Credits: 4
Several programming languages will be selected for study and analysis. Students will gain knowledge regarding the languages studied and conduct analysis related to comparisons and divergence in capabilities. Prereq: intermediate programming skills in three or more programming languages. Major suggested languages of interest are: Java, C++, Visual Basic, Visual C++ Windows, Visual Basic.Net and C# or permission.

ET #655 - Engineering Tech Seminar Series
Credits: 1
Five talks will be given that introduce the ET student to the softer issues of technology. Talks will be given in the areas of Ethics, Diversity, Lifelong Learning, Functioning in technical teams, and the importance of timeliness, scheduling and product improvement. For the most part talks are given by outside industrial personnel dealing in these specific areas. Students are required to write a short paper on three of the five topic areas. Class discussion of each talk takes place during regular class time. No prerequisites.

ET 671 - Digital Systems
Credits: 4
Digital systems design and application using TTL and CMOS devices, design of systems, and interfacing. Digital design project required. Prereq: introductory digital design. Special fee. Lab.

ET 674 - Control Systems and Components
Credits: 4
Topics include linear systems analysis, the Laplace transform and its properties, controllers, root locus technique, transient response analysis, first- and second-order systems, error analysis, and control system design. Prereq: differential and integral calculus. Lab.

ET 675 - Electrical Technology
Credits: 4
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<th>Course Code</th>
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<tr>
<td>ET 677</td>
<td>Analog Systems</td>
<td>4</td>
<td>Intro. analog design. Frequency response. Grounding and shielding. Signal and power interfacing techniques.</td>
<td>Special fee. Lab.</td>
<td>Students are introduced to the topics needed to develop a good understanding of the basic principles of Automation Engineering. This introductory course covers a wide variety of topics such as performance of sensors, actuators, motors and drives, PLC's and HMI, environmental controls, robots, machine vision systems, and controls and system integration. Prereq: ET 674 Control Systems and Components. Open to Electrical Engineering Technology, and Mechanical Engineering Technology majors only.</td>
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<td>ET 680</td>
<td>Communications and Fields</td>
<td>4</td>
<td>Prereq: intro. analog design.</td>
<td>Special fee.</td>
<td>Students are required to find solutions to actual technological problems in design, fabrication, and testing as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. Prereq: senior standing in E.T. A year-long course: 4 credits per semester; an IA grade (continuous course) given at the end of first semester. Withdrawal from course results in loss of credit.</td>
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<td>ET 695</td>
<td>Independent Study</td>
<td>1-4</td>
<td>Prereq: approval of the adviser. May be repeated to a maximum of 4 credits.</td>
<td>Writing Intensive</td>
<td>This course requires the development of a real world project that responds to an engineering focused organizational need. The project is undertaken by a team of students. An iterative approach is used to incrementally address the project requirements while constructing a prototype of the software engineering solution to the original problem. Electrical Engineering Tech and EET: Computer Technology majors only.</td>
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<td>ET 696</td>
<td>Topics in Mechanical Engineering</td>
<td>4</td>
<td>Prereq: differential and integral calculus. Lab.</td>
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<td>Students are required to find solutions to actual technological problems in design, fabrication, and testing as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. Prereq: senior standing in E.T. A year-long course: 4 credits per semester; an IA grade (continuous course) given at the end of first semester. Withdrawal from course results in loss of credit.</td>
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<td>ET 697</td>
<td>Topics in Electrical Engineering Technology</td>
<td>4</td>
<td>Prereq: permission. May be repeated to a maximum of 4 credits.</td>
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<td>Students are required to find solutions to actual technological problems in design, fabrication, and testing as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. Prereq: senior standing in E.T. A year-long course: 4 credits per semester; an IA grade (continuous course) given at the end of first semester. Withdrawal from course results in loss of credit.</td>
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<td>ET 706</td>
<td>Internship</td>
<td>1-4</td>
<td>Prereq: written report required. Internships may be part or full time, with course credits assigned accordingly.</td>
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<td>Students are required to find solutions to actual technological problems in design, fabrication, and testing as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. Prereq: senior standing in E.T. A year-long course: 4 credits per semester; an IA grade (continuous course) given at the end of first semester. Withdrawal from course results in loss of credit.</td>
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<td>ET 707</td>
<td>Object Oriented Design and Documentation</td>
<td>4</td>
<td>Prereq: intermediate programming skills in one or more of the following OOP language: Java, C++, Visual C++ Windows, Visual Basic.Net and C# or by permission.</td>
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<td>Students are required to find solutions to actual technological problems in design, fabrication, and testing as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. Prereq: senior standing in E.T. A year-long course: 4 credits per semester; an IA grade (continuous course) given at the end of first semester. Withdrawal from course results in loss of credit.</td>
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<td>ET 717</td>
<td>Network Security</td>
<td>4</td>
<td>Prereq: Java programming. The technical, operational, and managerial issues of computer systems and network security in an operational environment. Addresses the threats to computer security including schemes for breaking security, and techniques for detecting and preventing security violations.</td>
<td></td>
<td>Students are required to find solutions to actual technological problems in design, fabrication, and testing as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. Prereq: senior standing in E.T. A year-long course: 4 credits per semester; an IA grade (continuous course) given at the end of first semester. Withdrawal from course results in loss of credit.</td>
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ET #790 - Microcomputer Technology
Credits: 4
Microcomputer systems design, including assembly language, interfacing, processor timing and loading, and inter-processor communications via local area networks. Hardware, software, and architecture of both Intel 80X86 and Motorola 68XX0 microprocessors. Microcomputer applications with emphasis on lab work using Motorola HCII microcontroller. Prereq: ET 671. Special fee. Lab.

ET 791 - Electrical Engineering Technology Project
Credits: 4 or 8
Students are required to find solutions to actual technological problems in design, fabrication, and testing, as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. Prereq: senior standing in E.T. Special fee. A year-long course: an IA grade (continuous course) given at end of first semester. Withdrawal from course results in loss of credit.