

E T-ENGINEERING TECHNOLOGY (E T)

E T 101. Introduction to Engineering Technology and Geomatics 1 Credit (1)

An introduction to geomatics and the various engineering technology disciplines, the engineering approach to problem solving, and the design process. Projects emphasize the importance of teamwork, written & oral communication skills, as well as ethical responsibilities.

Learning Outcomes

1. Various

E T 104. Soldering Techniques 1 Credit (3P)

Fundamentals of soldering, desoldering, and quality inspection of printed circuit boards.

E T 109. Computer Drafting Fundamentals 3 Credits (3+2P)

Crosslisted with: DRFT 109, C E 109 and SUR 109

E T 110. Introduction to 3-D Modeling (Solid Works) 3 Credits (2+3P)

Introduction to SolidWorks, a 3-D modeling software. The foundation for designing mechanical parts and assemblies.

E T 120. Computation Software 2-3 Credits (2-3)

The use of spreadsheet software in the field of engineering technology.

E T 125. Introduction to Renewable Energy 3 Credits (3)

Renewable energy systems, including topics in thermal-solar photovoltaic, wind, geothermal systems, and other current topics. Theory, practical applications, safety considerations and the economics of alternative renewable energy systems compared to conventional systems.

E T 143. Civil/Survey Drafting I 3 Credits (2+2P)

Introduction to drafting in the field of Civil Engineering. Drawings, projects, and terminologies related to topographic mapping, contour drawings, plan, and profiles as street/highway layout. May be repeated up to 3 credits.

Prerequisite: A grade of C- or better in E T 109 or DRFT 109.

Learning Outcomes

1. Students will develop a basic knowledge of AutoCad Civil 3D software as they relate to the civil drafting process. Students will become familiar with a basic understanding of computers, drafting and trigonometry is required. Use of long-term projects will be utilized to simulate real-world work environments to aid the understanding and applying vocabulary on surveying drafting plans An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology

E T 153. Fundamentals of Networking Communications 3 Credits (3)

Introduction to networking basics, including computer hardware and software, electricity, networking terminology, protocols, LANs, WANs, OSI model, IP addressing, and design and documentation of basic network and structure cabling.

Learning Outcomes

1. Students will identify network types/protocols utilizing the OSI reference model and compute numbering system network problems. Students will explain issues related to managing and documenting network environments. Students will list, compare, and discuss industry standards for addressing computers on a network. Students will list and distinguish between computer networking historical milestones. Students will identify, compare, and evaluate networking data transport techniques. Students will identify and compare network transmission media and build/evaluate network cabling. Students will discuss IT industry certifications and summarize current technology trends.

E T 154. Construction Methods and Communications 3 Credits (3)

Blueprint reading, specifications, and introduction to materials used in construction.

E T 155. Network Operating Systems I 3 Credits (3+1P)

Introduction to a computer network operating system. May not be used as part of an E T degree program on main campus. Restricted to: Community Colleges only.

Prerequisite(s): E T 120 or E T 122.

E T 156. Introduction to Information Security 2 Credits (2)

This course introduces information security terminology, historical evolution of digital security, types of PC and network system vulnerabilities and types of information loss. In addition, methods of information protection and integrity, intrusion detection, and recovery of data are introduced.

Prerequisite(s)/Corequisite(s): E T 120. Restricted to Community Colleges campuses only.

E T 160. Windows Fundamentals for IET 3 Credits (3)

Fundamental review of the Windows operating system including installation and upgrades as well as managing applications, files, folders, devices and maintenance.

E T 182. Digital Logic 2 Credits (1+2P)

The use of truth tables, Boolean equations, and diagrams to define, simplify, and implement logic-valued functions.

Prerequisite: A grade of C- or better in MATH 1220G or higher.

Learning Outcomes

1. Demonstrate ability to convert numerical values to commonly-used digital representations and their use for arithmetic and logical functions. Demonstrate understanding of Boolean logic functions and truth tables. Demonstrate ability to simplify logic expressions. Demonstrate understanding of sequential logic functions, and the ability to integrate with combinational logic to produce a simple state machine. Familiarity with common integrated circuit issues, such as logic voltage levels, propagation delay, and fan-out.

E T 183. Applied DC Circuits**3 Credits (2+2P)**

Application of Ohm's law, Kirchhoff's laws, Thevenin's, and Norton's theorems to the analysis of DC passive circuits. Embedded Lab.

Prerequisite(s)/Corequisite(s): MATH 1220G.

E T 183 L. Applied DC Circuits Lab**1 Credit (2P)**

DC applied circuits lab.

Corequisite(s): E T 183.

E T 184. Applied AC Circuits**2-3 Credits (1-2+2P)**

Application of circuit laws and theorems to analysis of AC passive circuits. Resonant circuit, polyphase circuit and magnetic circuit topics are introduced. Embedded Lab.

Prerequisite: A grade of C- or better in ENGR 120.

Learning Outcomes

1. Analyze and design AC circuits, including ideal op-amps, using concepts of voltage, current, power, Kirchhoff's laws, and network theorems. Design simple systems involving ac circuits Working and learning in teams.

E T 190. Applied Circuits**4 Credits (3+2P)**

Application of Ohm's law, Kirchhoff's laws, and Thevenin's theorems to the analysis of AC and DC passive circuits. Electronic circuit topics are introduced. Embedded lab. May be repeated up to 4 credits.

Prerequisite/Corequisite: A grade of C- or better in MATH 1250G or higher.

Learning Outcomes

1. Analyze and design DC circuits, including ideal op-amps, using concepts of voltage, current, power, Kirchhoff's laws, and network theorems. Design simple systems involving dc circuits. Work and learn in teams.

E T 191. Applied Circuits Laboratory**1 Credit (2P)**

Applied Circuits Lab

E T 200. Special Topics**1-3 Credits**

Directed study or project. May be repeated for a maximum of 6 credits.

Prerequisite: consent of department head.

E T 210. Intermediate 3-D Modeling (Solid Works)**3 Credits (3)**

Intermediate 3-D modeling. Applied modeling of techniques to prepare for SolidWorks certification (CSWA).

Prerequisite(s): E T 110.

E T 217. Manufacturing Processes**3 Credits (3)**

Introduction to manufacturing and processing, including: casting, forming, and machining. Emphasis on creating products with the appropriate techniques. Crosslisted with: I E 217.

Prerequisite: E T 110 and MATH 1220G.

Learning Outcomes

1. Various

E T 217 L. Manufacturing Processes Lab**1 Credit (3P)**

Hands-on laboratory in machine shop to apply topics from E T 217, including: casting, forming, and machining.

Corequisite: E T 217.

Learning Outcomes

1. Various

E T 220. Internship**1-6 Credits**

Internship requiring an approved number of hours of varied and progressive experience in the field of study. The scope and other requirements of the internship are stated in an individualized syllabus and through a memorandum of understanding between the faculty mentor and the industry partner. May be repeated up to 6 credits.

Consent of Instructor required.

Prerequisite(s): E T 283.

E T 240. Applied Statics**3 Credits (3)**

Fundamental topics of applied statics, including force system analysis, equilibrium, free body diagrams, methods of joints and sections, distributed loads, friction, centroids, area moments, and shear and moment diagrams.

Prerequisite(s)/Corequisite(s): MATH 1430G or MATH 1511G.

Prerequisite(s): PHYS 1230G or PHYS 1310G.

E T 241. Applied Dynamics**3 Credits (3)**

The foundation for understanding particles and bodies in motion and the forces involved, including: projectile motion, Newton's Laws of Motion, conservation of energy, and impulse and momentum.

Prerequisite: A grade of C- or better in either E T 240 or ENGR 233.

Prerequisite/Corequisite: (MATH 1440 or MATH 1521G or MATH 1521H).

Learning Outcomes

1. Various

E T 246. Electronic Devices I**4 Credits (3+3P)**

Solid-state devices including diodes, bipolar-transistors, and field effect transistors. Use of these devices in rectifier circuits, small signal and power amplifiers.

Prerequisite: A grade of C- or better in one of the following: E T 190 or E T 184 or ENGR 120.

Learning Outcomes

1. Various

E T 253. Networking Operating Systems II**3 Credits (3+1P)**

Introduction to a computer network operating system. May not be used as part of an E T degree program on main campus. Restricted to Community Colleges campuses only.

Prerequisite: E T 120 and E T 153.

Learning Outcomes

1. Identify Linux utilities and terminology. Use the Linux filesystem. Install, administer, and manage a Linux system. Utilize Linux user/group management. Install software packages. Apply data management skills.

E T 254. Concrete Technology**3 Credits (2+2P)**

Fundamentals of aggregates, Portland cement, and asphalt used in design and construction.

E T 255. Linux System Administration**3 Credits (3)**

Operating systems applications and interfacing with an introduction to systems administration. Topics include Shell Programming, Programming Tools, Database Management, System Backups, Security, Setup and Maintenance of Linux Servers.

Learning Outcomes

1. Describe the key features of the Linux operating system. Plan the Linux Filesystem to match system requirements. Design BASH scripts to optimize common Linux operations. Interpret Linux performance data to solve hardware and software issues. Students will demonstrate the Core Linux System Administration. Students will be able to link the use of shell commands to managing Linux server daemons and software. Students will apply these concepts to build application servers running Linux, Apache, MySQL, and PHP (LAMP); Tomcat, CUPS print servers; and create backup solutions. Students will apply problem analysis, object-oriented structured logic, and development concepts. Students will demonstrate an understanding of theory and hands-on experience administrating a Linux Based server.

E T 256. Networking Operating Systems III**3 Credits (3+1P)**

Introduction to a computer network operating system. May not be used as part of an E T degree program on main campus. Restricted to Community Colleges campuses only.

Prerequisite(s): E T 253.

E T 262. Software Technology I**3 Credits (2+2P)**

An introduction to computer programming concepts as applied to engineering technology. Includes basic logic design, algorithm development, debugging and documentation. History and use of computers and their impact on society.

Prerequisite/Corequisite: (E T 182 or ENGR 130) or (MATH 1250G or MATH 1430G).

Learning Outcomes

1. Set up and use a rich programming environment for programming with C Analyze existing code Employ effective use of basic programming and basic troubleshooting Write, debug and test code given software requirements Apply testing and documentation best practices Transfer programming knowledge and apply coding knowledge

E T 272. Electronic Devices II**4 Credits (3+3P)**

Operational amplifiers, positive and negative feedback, computer aided circuit analysis. In addition circuits include integrator, differentiators and phase shift networks.

Prerequisite: A grade of C- or better in E T 246.

Prerequisite/Corequisite: MATH 1435 or MATH 1511G.

Learning Outcomes

1. Various

E T 273. Advanced Networking Communications**4 Credits (2+4P)**

Explores advanced networking communications to include Wireless Networking, Virtualization and Cloud Computing, Subnets and VLANs, Network Risk Management, Network Security Design, Network Performance, and WANS. The course covers the examination objectives and detailed preparation for students to take the CompTIA Network+ exam.

Prerequisite: E T 153.

Learning Outcomes

1. Identify, describe, and apply wireless transmission characteristics and standards. Explain the benefits of cloud virtualization and cloud computing. Explain the purpose of network segmentation and describe how VLANs work and how they are used. Identify basic concepts of network risk management and configure devices for increased security. Identify network design security features and discuss options in network access control. Use tools to evaluate network performance and discuss best practices for incident response and disaster recovery. Explain characteristics of WAN technology and troubleshoot connection methods.

E T 276. Electronic Communications**3 Credits (2+2P)**

Antennas, transmission devices, A-M and F-M transmission and detection, pulse systems, microwave systems.

Prerequisite(s): E T 246.

E T 280. Web Design and Multimedia**3 Credits (3)**

Introduction to front-end web development including webpage design, structure, layout, positioning, responsiveness, and foundational layers of how the web works. Video, audio, and other digital presentation tools are covered.

Learning Outcomes

1. Create multiple frontend development micro-components. Create single and multi-page websites. Use flexbox, grid, and media queries and different design patterns. Employ effective use of web development and basic troubleshooting. Build small web site projects.

E T 282. Digital Electronics**4 Credits (3+3P)**

Applications of digital integrated circuits, multiplexers, counters, arithmetic circuits, and microprocessors.

Prerequisite(s)/Corequisite(s): (E T 190 or E T 184). Prerequisite(s): E T 182.

E T 283. Hardware PC Maintenance**3 Credits (3+1P)**

Installing, configuring, troubleshooting, and maintaining personal computer hardware components.

Prerequisite(s): E T 120 or E T 122.

E T 284. Software PC Maintenance**3 Credits (3+1P)**

Installing, configuring, troubleshooting, and maintaining personal computer operating systems.

Prerequisite(s): E T 120 or E T 122.

E T 285. Advanced Information Security

3 Credits (3)

The course covers detailed analysis of network security, including security operations and policy adherence; internal and external vulnerabilities; methods of identifying, controlling and managing system access, and the protection of system information.

Prerequisite(s)/Corequisite(s): E T 283. Prerequisite(s): E T 156.

E T 286. Information Security Certification Preparation

4 Credits (4)

The course covers the examination objectives and detailed preparation for a certification in information security.

Prerequisite(s): E T 285.

E T 290. Networking Wireless Communication

3 Credits (3+1P)

This course provides an introduction to wireless networking and communications. Some of the topics covered are protocols, transmission methods, and IEEE 802.11 standards. Wireless LAN (WLAN) fundamentals, devices, and security, cellular telephony, broadband, and satellite communications.

Prerequisite: E T 273.

E T 291. PC Forensics and Investigation

3 Credits (3)

Introduction to computer forensics and investigative fundamentals. Topics include understanding computer forensic and investigation law and requirements, processing crime and incident scenes, and the extraction, preservation, analysis and presentation of computer-related evidence.

Prerequisite(s): E T 120 or E T 122.