MANUFACTURING TECHNOLOGY

The Manufacturing Technology program prepares students for entry-level technician positions in the construction, mining, and manufacturing industries.

The program contains two options sharing a common core curriculum. The Electronic Assembly option stresses computer, drafting, electrical, and mechanical skills, while the Manufacturing Processes option stresses application of those skills to computer-aided drafting (CAD), computer-aided manufacturing (CAM), and computer numerically controlled (CNC) machining systems. Training is conducted in a conventional machining laboratory, a state-of-the-art CAM and robotics laboratory, and modern CAD labs. Experienced manufacturing professionals provide the highest quality instruction in a "hands on" environment.

Graduation Requirements

ENGL 111G Rhetoric and Composition with a C or higher; placement into college-level math and reading courses or completion of developmental courses with a C or higher; cumulative GPA of 2.0 or higher; the last 15 credits taken at NMSU.


E T 101. Introduction to Engineering Technology
1 Credit
The development of engineering technology, with an introduction to engineering technology, education, and practice. Graded S/U.

E T 104. Soldering Techniques
1 Credit
Fundamentals of soldering, desoldering, and quality inspection of printed circuit boards.

E T 106. Drafting Concepts/Computer Drafting Fundamentals I
4 Credits (2+4P)
Basic drafting skills, terminology, and visualization. Introduction to principles and fundamentals of computer-aided drafting. Community Colleges only. Same as DRFT 112. Prerequisite: OECS 125, OECS 207, or consent of instructor.

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
Introduction to SolidWorks, a 3-D modeling software. The foundation for designing mechanical parts and assemblies. May be repeated up to 3 credits.

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
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 153. Introduction to Computer Networks
3 Credits
Introduction to basic computer network fundamentals including International Open Systems Interconnect (OSI), the seven-layer model, and various networking hardware devices. Community Colleges only.

E T 154. Construction Methods and Communications
3 Credits
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 160. Basic Computer Operating Systems
3 Credits
Basics of the most commonly used computer operating systems, command line interface, file systems, file virtualization.

E T 182. Digital Logic
3 Credits
The use of truth tables, Boolean equations, and diagrams to define, simplify, and implement logic-valued functions.

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. May be repeated up to 3 credits. Prerequisite(s)/Corequisite(s): MATH 121G.

E T 183 L. Applied DC Circuits Lab
1 Credit
DC applied circuits lab. May be repeated up to 1 credits. Corequisite(s): E T 183.

E T 184. Applied AC Circuits
3 Credits (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. May be repeated up to 3 credits. Prerequisite(s)/Corequisite(s): MATH 190G. Prerequisite(s): E T 183.

E T 184 L. Applied AC Circuits Lab
1 Credit
AC applied circuits lab. May be repeated up to 1 credits. Corequisite(s): E T 184.

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. Prerequisite(s)/Corequisite(s): MATH 190G.
E T 191. Applied Circuits Laboratory
1 Credit
Applied Circuits Lab May be repeated up to 1 credits.

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 203. Computational Foundations
3 Credits
Fundamental concepts of various proof techniques. These concepts will be applied to the use of computer algorithms, programming languages and other engineering and technology applications. May be repeated up to 3 credits.
Prerequisite(s): MATH 190G and E T 262.

E T 210. Intermediate 3-D Modeling (Solid Works)
3 Credits (2+2P)
Intermediate 3-D modeling. Applied modeling of techniques to prepare for SolidWorks certification (CSWA). May be repeated up to 3 credits.
Prerequisite(s): E T 110.

E T 217. Manufacturing Processes
3 Credits
Introduction to manufacturing and processing, including: casting, forming, and machining. Emphasis on creating products with the appropriate techniques. May be repeated up to 3 credits. Crosslisted with: I E 217.
Prerequisite(s)/Corequisite(s): E T 217L. Prerequisite(s): E T 110 and MATH 121G.

E T 217 L. Manufacturing Processes Lab
1 Credit
Hands-on laboratory in machine shop to apply topics from E T 217, including: casting, forming, and machining. May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): E T 217.

E T 220. Internship
1-6 Credits
Internship requiring an approved number 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 230. Introduction to Servo Systems
1 Credit
Introduction to Servo Systems. Topics include uses of servos in the industry, servo types, op gains and frequency response, software control systems, damping, feedback, encoders, synchros and resolvers. Restricted to Community Colleges campuses only.
Prerequisite(s): E T 246.

E T 240. Applied Statics
3 Credits
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. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 235G or MATH 191G.
Prerequisite(s): PHYS 211G or PHYS 215G.

E T 241. Applied Dynamics
3 Credits
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. May be repeated up to 3 credits.
Prerequisite(s): E T 240, (MATH 235 or MATH 191G).

E T 245. Computer Hardware Fundamentals
3 Credits (2+2P)
Computer hardware fundamentals including architecture, interfacing, peripherals, troubleshooting, system upgrades, and maintenance. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

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. May be repeated up to 4 credits.
Prerequisite(s): E T 190 or E T 184.

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(s): E T 155.

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
Introduction to Linux system administration.
Prerequisite(s)/Corequisite(s): E T 160.

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. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): E T 182 or MATH 190G.

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. May be repeated up to 4 credits.
Prerequisite(s)/Corequisite(s): MATH 235G or MATH 191G.
Prerequisite(s): E T 246.
ET 273. Fundamentals of Networking Communications I  
4 Credits (2+4P)  
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. Community Colleges only. May be repeated up to 4 credits. Restricted to Community Colleges campuses only. 
Prerequisite(s): E T 153.

ET 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.

ET 277. Computer Networking I for IET  
3 Credits (2+2P)  
Computer network design and applications for LAN to WAN, protocols, switches, bridges, routers, NT server, TCP/IP networks, network diagnostics, voice over IP, wireless networks, and the OSI layers from physical to transport. May be repeated up to 3 credits.  
Prerequisite(s): E T 182.

ET 280. Introduction to Multimedia  
3 Credits  
Introduction to video, audio and other digital presentation methods.  
Prerequisite(s): E T 255.

ET 282. Digital Electronics  
4 Credits (3+3P)  
Applications of digital integrated circuits, multiplexers, counters, arithmetic circuits, and microprocessors. May be repeated up to 4 credits.  
Prerequisite(s)/Corequisite(s): (E T 190 or E T 184). Prerequisite(s): E T 182.

ET 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.

ET 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.

ET 285. Principles of Security  
3 Credits  
Examines the field of information security within a real-world context of issues faced by today's IT professionals.  
Prerequisite(s): E T 283 or consent of instructor.

ET 286. Fundamentals of Security  
3 Credits  
An overview of general security concepts for information technology systems.  
Prerequisite(s): E T 283 or consent of instructor.

ET 287. PC Disaster and Data Recovery  
3 Credits  
This course provides an overview of the various causes of personal computer data failure and methods to mitigate the loss of your personal computer data. The focus is on restoring your personal computer to full PC functionality and recovering lost and damaged files after one of these unforeseen problems. In addition, the course provides a means to lessen the impact of these inevitable events with the preparation of a disaster recovery plan.  
Prerequisite(s): E T 120 or E T 122.

ET 289. 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.

ET 290. PC Forensics and Investigation  
3 Credits  
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.