

ELECTRONICS TECHNOLOGY

Department of Applied Computing & Electronics
Associate of Applied Science (A.A.S.) Degree Program

Program Description:

Electronic devices are an integral component of our society. Industrial control and automation systems; communication networks; entertainment systems; wireless communication devices; medical technology devices; home appliances systems; satellite communications; public emergency safety systems; and private security systems all utilize electronics technology.

The Electronics Technology Program offers students a broad-based foundation in electricity, electronics, semiconductors, digital logic, control systems, robotics, instrumentation, data communications, and wireless technologies. The program utilizes a focused hands-on instructional approach with an emphasis on real-world applications. The curriculum includes numerous lab-based courses. The Electronics Technology Program offers a comprehensive technical foundation for individuals seeking an education involving the entry-level skills required of a successful technician in the broad field of electronics.

Student Outcomes:

Upon completion of the program, a student will:

- Demonstrate a solid understanding of electricity and electrical circuit theory.
- Employ logic, critical thinking, and problem solving skills in the troubleshooting of electronic components.
- Utilize instrumentation to measure, calibrate, test, and repair electronic components.
- Develop safe workplace practices.
- Solve technical problems involving mathematics at the level of college algebra, trigonometry, and applied calculus.
- Demonstrate the ability to clearly articulate technical concepts using written language.
- Effectively utilize information technology as a research and productivity tool.

Related Job Titles:

- Electronics Technician
- Electrical Engineering Technician
- Instrumentation Technician
- Computer Control Operator/Programmer
- Telecommunications/ Radio Technician
- Laboratory Technician
- Security System Technician
- Residential Appliance Technician
- Home Entertainment System Technician

Related Occupations (U.S. Department of Labor Occupations Handbook):

- Electrical and Electronics Installers and Repairers <http://www.bls.gov/oco/ocos184.htm>
- Engineering Technology <http://www.bls.gov/oco/ocos112.htm>
- Computer Control Programmers and Operators <http://www.bls.gov/oco/ocos286.htm>
- Precision Instrument and Equipment Repairers <http://www.bls.gov/oco/ocos199.htm>

Program Requirement and Suggested Sequence of Courses*:

Course	First Year	Autumn	Spring
CRT 111	Fluency in Information Technology	3	-
CRT 112	Operating Systems Fundamentals	-	3
EET 111	Basic Electronics	4	-
EET 112	Electronics Lab I	3	-
EET 113	Circuits Lab	1	-
EET 121	Semiconductors	-	4
EET 122	Electronics Lab II	-	3
EET 123	Amplifier Lab	-	1
M 151	Precalculus	4	-
M 162	Applied Calculus	-	4
PSYX 161	Fundamentals of Organizational Psychology	-	3
WRIT 121	Intro to Technical Writing	3	-
Total		18	18
Course	Second Year	Autumn	Spring
EET 227	Digital Electronics	4	-
EET 234T	Automatic Controls	4	-
EET 240T	Robotics	-	3
EET 241T	Instrumentation	-	3
EET 242T	Electronics Lab III	-	3
EET 260	Data Communications	-	3
EET 270T	Wireless Communications	4	-
EET 280T	Electronics Capstone	-	2
SCN 120T	Technical Physics I	4	-
SCN 121T	Technical Physics II	-	4
Total		16	18

*Curriculum is subject to change depending upon course availability.

Course Descriptions:

CRT 111 Fluency in Information Technology 3 cr. Offered autumn and spring. Prereq., CRT 100 or demonstrated computing experience. Introduces the skills and concepts of information technology, both from practical and a more theoretical point of view. During lectures and interactive computer labs, students will explore a wide range of digital and information technologies, including common PC applications, networking, databases, privacy, and security. Credit not allowed for both CRT 111 and CS 111.

CRT 112 Operating System Fundamentals 3 cr. Offered spring. Prereq. CAPP 120 (CRT 100) or demonstrated computing experience. Introduction to operating system concepts through the use of contemporary software. Emphasizes file system management, networking, installation, maintenance, management, and disaster recovery practices using both the command interpreter and graphical user interface.

EET 111 Basic Electronics 4 cr. Offered autumn. Study of current flow, direct current circuits, alternating current circuits, and concepts of power. The introduction of time-varying currents and impedances using circuit analysis and problem solving techniques.

EET 112 Electronics Lab I 3 cr. Offered autumn. Coreq., EET 111. The use of basic electronic test instruments and troubleshooting. Building circuits using resistive, capacitive and inductive components.

EET 113 Circuits Lab 1 cr. Offered autumn. Coreq., EET 111. Covers proper techniques of soldering and tool usage. Electronic technical language, hands on troubleshooting skills and basic electronic measurements are involved.

EET 121 Semiconductors 4cr. Offered spring. Prereq., EET 111, 112. Coverage of diode, bipolar transistors and field effect transistor circuits used in electronic applications. The study and analysis of the components and circuits used in semiconductor electronics and an introduction to operational amplifiers.

EET 122 Electronics Lab II 3 cr. Offered spring. Coreq., EET 121. Bread-boarding, troubleshooting and measuring the electronic characteristics of diodes, bi-polar transistors, JFETS and operational amplifiers. The impact of impedance matching, filtering and power effects on stages of electronic circuits will be covered.

EET 123 Amplifier and Power Supply Lab 1 cr. Offered spring. Coreq., EET 121. An audio amplifier and dual regulated power supply will be built throughout the semester.

EET 227 Digital Electronics 4 cr. Offered autumn. Prereq., EET 103. Explores digital electronic circuits and devices that make up a computer system. Topics include binary and hexadecimal number systems, Boolean algebra and digital logic theory, simple logic circuits, combinational logic, and sequential logic. Also covered is the analog-to-digital and digital-to-analog interfaces between a digital system and the real (analog) world. Includes hands-on labs.

EET 234T Automatic Controls 4 cr. Offered autumn. Prereq., EET 227. Explores the theory, terminology and components used in automatic control of industrial machines and processes. Uses the servomechanism as a representative control system to analyze open-loop, closed-loop, proportional, integral, and differential control strategies. The use of transducers and computers in automatic control systems in the industrial control setting is emphasized.

EET 240T Robotics 3 cr. Offered spring. Prereq. or coreq., EET 232, EET 234T or consent of instr. Explores physical and operating characteristics of a robot. Topics include robot configurations, power supplies, control systems, end effectors, sensors, stepper motors and stepper controls. Robot programming also is covered and a typical robot is programmed to perform repetitive actions. Includes hands-on labs.

EET 241T Instrumentation 3 cr. Offered spring. Prereq., EET 227T. The study and analysis of industrial measuring and process control instrumentation in both analog and digital form. Proper selection, use and interpretation of measurement equipment and data.

EET 242T Electronics Lab III 3 cr. Offered spring. Coreq., EET 241T Bread-boarding, building, repairing and troubleshooting electronic circuits using the equipment normally found in an electronic shop. Correlating measurement information in solving electronic problems.

EET 260 Data Communications 3 cr. Offered autumn. Prereq., EET 103T. Explores the principles, applications, and theory of data communication systems. Topics include communication concepts and terminology, analog and digital channel characteristics, signaling techniques for analog and digital data, communication codes, transmission media, and standards and protocols for various data communication systems including computer networks, and the public switched telephone network. Includes hands-on labs.

EET 270T Wireless Communications 4 cr. Offered autumn. Prereq., EET 103T. Explores audio and radio frequency (RF) circuits. Topics include AM and FM signal modulation and demodulation, RF transmitters, RF receivers, RF amplifiers, audio amplifiers, oscillators, mixers, and antennas. Includes hands-on labs.

EET 280T Electronics Capstone 2 cr. Offered spring. Prereq., EET 227T. Completion of project prototypes. Includes comprehensive final project from conception to market.

M 151 (MAT 120) Precalculus 4 cr. Offered autumn and spring. Prereq., M 095 (MAT 100D) or appropriate score on the ASSET placement test. Algebraic, trigonometric, exponential/ logarithmic functions of one real variable and their graphs. Inverse functions, complex numbers and polar coordinates. Conic sections.

M 162 (MAT 145) Applied Calculus 4 cr. Offered spring. Prereq., M 151 (MAT 120) or appropriate score on placement exam. Introduction to differentiation and integration of elementary function. Introduction to ordinary differential equations. Emphasis is on applications in technical fields including electronics technology. Graphing calculators used.

PSYX 161S (PSY 110S) Fundamentals of Organizational Psychology 3 cr. Offered autumn and spring. Foundation in the psychological processes that influence behavior of people in work settings. SCN 120T

SCN 120T Technical Physics I 4 cr. Offered autumn. Prereq., M 095 (MAT 100 or MATH 100). Introduction to models, measurements, vectors, motion in a straight line, motion in a plane, Newton's laws of motion, application of Newton's laws, and circular motion and gravitation.

SCN 121T Technical Physics II 4 cr. Offered spring. Prereq., SCN 120T. Introduction to work and energy, impulse and momentum, rotational motion, equilibrium of a rigid body, elasticity, heat, and thermodynamics.

WRIT 121 Introduction to Technical Writing 3 cr. Offered every term. Course assumes a basic computer literacy. Passing score on placement test or consent of instructor. Introduction to technical writing situations with appropriate formats. Emphasizing on writing with document design and graphic placement introduced. Students are expected to write without major faults in grammar or usage.