

ELECTRONIC TECHNOLOGY

SCHOOL OF PHYSICAL SCIENCES AND TECHNOLOGIES

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CURRICULUM

The faculty continually reviews the curriculum in electronic technology to ensure that it equips students with the skills necessary for coping with a rapidly expanding and changing technological field. A core curriculum seeks to identify and emphasize those principles which are basic to the understanding of current and emerging technologies. In advanced courses, students learn to apply available technology to the solution of specific problems, with an emphasis on creative design and troubleshooting. The curriculum emphasizes an intuitive rather than an abstract mathematical understanding of electronics, focusing heavily on laboratory study, while still maintaining a level of mathematical rigor appropriate to four-year programs in engineering technology.

MAJOR

A student majoring in electronic technology may choose from a number of career paths.

The Electronics Aide Certificate of Competency program equips the student for entry into the electronics industry in areas such as testing, quality assurance, customer support, production support, equipment maintenance and technical sales.

The Electronic Technology and Digital Electronics certificate programs provide a solid foundation for immediate employment or further study in the field. After obtaining a certificate in Electronic Technology, a student may seek employment as an electronic technician, testing or servicing products such as radios, televisions, computers, telephones, and medical equipment.

A student wishing to specialize in computer technology may elect the Digital Electronics emphasis, which includes additional courses in computer systems and programming. The Electro-optics Technology emphasis allows for introductory specialization in electro-optics. Completion of the Associate in Science degree provides even broader opportunity for personal, academic, and career growth. A student may also transfer into the California State University system and complete a bachelor's degree in engineering technology.

DEGREE OPTIONS

• Associate in Science Degree in Electronic Technology

Digital Electronics Emphasis

Electro-Optics Technology Emphasis

Students must complete a minimum of 60 units of credit, including the courses in the major ("Major Requirements") and general education requirements (pages 56-61), with an overall GPA of 2.0 or better. A minimum of 12 units must be completed at Irvine Valley College. See pages 52-54 for further information.

CERTIFICATE OPTIONS

• Certificate of Achievement in Electronic Technology

Digital Electronics Emphasis

Electro-Optics Technology Emphasis

• Certificate of Competency: Electronics Aide

Students must complete all courses in the certificate program ("Major Requirements") with a grade of "C" or better. A minimum of 12 units in the certificate program must be completed at Irvine Valley College. See page 55 for further information.

TRANSFER PREPARATION

Courses that fulfill major requirements for an associate degree at Irvine Valley College may not be the same as those required for completing the major at a transfer institution offering a baccalaureate degree. Students who plan to transfer to a four-year college or university should (1) refer to the University Studies major (page 182) and "Transfer Planning" (page 63); (2) consult the catalog of their prospective transfer institution (see the IVC Transfer Center for assistance); and (3) schedule an appointment with an IVC counselor to develop a plan of study before beginning their program. It may be helpful to meet with the department faculty at IVC.

MAJOR REQUIREMENTS: ELECTRONIC TECHNOLOGY

ASSOCIATE IN SCIENCE DEGREE OR CERTIFICATE OF ACHIEVEMENT

First Year		Units
CIS 30	BASIC Programming	4
ET 102	Basic Electric Circuits I	4
ET 104	Basic Electric Circuits II	4
ET 105	Electronic Devices and Circuits I	4
Second Year		
ET 107	Electronic Devices and Circuits II	4
ET 109	Digital Electronic Circuits	4
ET 116	Industrial Electronics	4
ET 120	Introduction to Microprocessors	4
TOTAL UNITS:		32

Recommended electives: ET 101, PHYS 20.

DIGITAL ELECTRONICS EMPHASIS

Complete the following courses:		Units
CIS 1	Introduction to Computer Information Systems	4
CIS 30	BASIC Programming	4
ET 102	Basic Electric Circuits I	4
ET 104	Basic Electric Circuits II	4
ET 105	Electronic Devices and Circuits I	4
ET 107	Electronic Devices and Circuits II	4
ET 109	Digital Electronic Circuits	4
ET 120	Introduction to Microprocessors	4
TOTAL UNITS:		32

MAJOR REQUIREMENTS: ELECTRONIC TECHNOLOGY

ASSOCIATE IN SCIENCE DEGREE OR CERTIFICATE OF ACHIEVEMENT

ELECTRO-OPTICS TECHNOLOGY EMPHASIS

Complete the following courses:		Units
CIS 30	BASIC Programming	4
ET 102	Basic Electric Circuits I	4
ET 104	Basic Electric Circuits II	4
ET 105	Electronic Devices and Circuits I	4
ET 107	Electronic Devices and Circuits II	4
ET 109	Digital Electronic Circuits	4
LET 200/200L	Introduction to Lasers/ Laboratory	4
LET 210/210L	Fundamentals of Optics/ Laboratory	4
TOTAL UNITS:		32

Recommended electives: ET 101, PHYS 20.

CERTIFICATE OF COMPETENCY: ELECTRONICS AIDE

Complete the following courses:		Units
ET 102	Basic Electric Circuits I	4
ET 104	Basic Electric Circuits II	4
ET 105	Electronic Devices and Circuits I	4
ET 109	Digital Electronic Circuits	4
TOTAL UNITS:		16

Recommended electives: ET 101.

COURSES

ET 101: Survey of Electronics

3 Units

3 hours lecture

This course is planned as an introduction to the field of electronics. The course will offer a broad and general introduction to those who would like to know the basics of electronics without too much technology involved. NR

ET 102: Basic Electric Circuits I

4 Units

3 hours lecture, 3 hours lab

Prerequisite: Prior completion of or concurrent enrollment in Math 251

This introductory course, the first in the Electronic Technology sequence, covers the basic concepts of electricity, basic two-terminal devices, D.C. and transient circuits, plus standard laboratory test equipment and procedures. Students learn to analyze, test, design and troubleshoot specific devices and circuits studied, including batteries, resistors, capacitors, and inductors, connected in series, parallel, and series parallel circuits. NR

ET 104: Basic Electric Circuits II

4 Units

3 hours lecture, 3 hours lab

Prerequisite: ET 102

This sequential course continues the study of basic electricity. Students learn to analyze, test, design, and troubleshoot AC circuits and devices. NR

ET 105: Electronic Devices and Circuits I

4 Units

3 hours lecture, 3 hours lab

Prerequisite: ET 102

The third in the Electronic Technology sequence, Electronic Technology 105 covers basic solid state devices and their application circuits. Students learn to test the devices studied, including diodes, thyristors, and transistors, and to measure experimentally their characteristic curves. The course covers troubleshooting, analysis, and design of solid state application circuits, including rectifiers, switching circuits, and amplifiers. NR

ET 107: Electronic Devices and Circuits II

4 Units

3 hours lecture, 3 hours lab

Prerequisite: ET 105

This course continues the study of solid state devices and circuits begun in Electronic Technology 105. Students measure the characteristics of such devices as field-effect transistors, linear integrated circuits, and fiber optics, and learn how to test, troubleshoot, analyze, and design common application circuits, including amplifiers, power supplies, voltage regulators, and oscillators. NR

ET 109: Digital Electronic Circuits

4 Units

3 hours lecture, 3 hours lab

Prerequisite: ET 105

This course introduces students to the fundamental concepts of digital electronics, including binary numbers, truth tables, and Boolean algebra. Students learn how to test, troubleshoot, analyze, and design digital circuits including gate networks, flip-flops, counters, astables, monostables, memories, phase-locked loops, and tri-state logic. NR

ET 116: Industrial Electronics

4 Units

3 hours lecture, 3 hours lab

Prerequisite: CIS 30 and ET 109

An advanced-level elective course, Electronic Technology 116 deals with the application of electronics to industrial monitoring and control. Students learn about the basic functional building blocks, such as sensors, actuators, controllers, and signal processors. They further learn how to analyze, test, troubleshoot, and design commonly used industrial systems made up of these functional blocks. NR

ET 120: Introduction to Microprocessors

4 Units

3 hours lecture, 3 hours lab

Prerequisite: ET 109

An advanced-level elective course, Electronic Technology 120 introduces the microprocessor, or computer-on-a-chip, and its applications. Students learn how to program, analyze, troubleshoot, and design electronic systems based on microprocessors, including industrial, consumer, and microcomputer systems. NR