

Electronic Technology

The 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.

The Associate Degree/Occupational Certificate Major

A student majoring in electronic technology may choose from a number of career paths. After obtaining an Occupational Certificate, he or she 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.

If you intend to transfer:

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. If you plan to transfer to a four-year college or university, you should (1) refer to the transfer section of this catalog, (2) consult the catalog of your 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 you begin your program. In addition, it may be helpful to meet with the appropriate department faculty at IVC.

If you plan to complete an associate degree or occupational certificate:

You must complete one of the following sets of courses to fulfill the requirements for the Occupational Certificate or the Associate in Science (A.S.) degree major. For the A.S. degree, you must also meet the general education requirements listed on page 21. Refer to page 16 for additional options for fulfilling the major requirement for the A.S. degree.

ELECTRONIC TECHNOLOGY MAJOR

(A.S. Degree or Occupational Certificate)

<i>First Year</i>		<i>Units</i>
CIS 30A	BASIC Programming	3
ET 102	Basic Electric Circuits I	4
ET 104	Basic Electric Circuits II	4
ET 105	Electronic Devices and Circuits I	4
<i>Second Year</i>		
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:		31

Recommended electives: *ET 101; PHYS 20.*

(majors continue on next page)

**Digital Electronics Emphasis
(A.S. Degree or Occupational Certificate))**

		<i>Units</i>
CIS 1	Introduction to Computer Information Systems	3
CIS 30A	BASIC Programming	3
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	<u>4</u>
Total units:		30

**Electro-optics Technology Emphasis
(A.S. Degree or Occupational Certificate)**

		<i>Units</i>
CIS 30A	BASIC Programming	3
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	<u>4</u>
Total Units:		31

Recommended electives: *ET 101; PHYS 20.*

Electronic Technology Courses

ET 101 3 units

SURVEY OF ELECTRONICS

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 being involved. NR

Lecture hours: 3

ET 102 4 units

BASIC ELECTRIC CIRCUITS I

Prereq: Prior completion of or concurrent enrollment in Math 200 or 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

Lecture hours: 3 Lab hours: 3

ET 104 4 units

BASIC ELECTRIC CIRCUITS II

Prereq: ET 102. This sequential course continues the study of basic electricity. Students learn to analyze, test, design, and troubleshoot AC circuits and devices. NR

Lecture hours: 3 Lab hours: 3

ET 105 4 units

ELECTRONIC DEVICES AND CIRCUITS I

Prereq: 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

Lecture hours: 3 Lab hours: 3

ET 107 4 units

ELECTRONIC DEVICES AND CIRCUITS II

Prereq: 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

Lecture hours: 3 Lab hours: 3

ET 109 4 units

DIGITAL ELECTRONIC CIRCUITS

Prereq: 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

Lecture hours: 3 Lab hours: 3

ET 116 4 units

INDUSTRIAL ELECTRONICS

Prereq: CIS 30A 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

Lecture hours: 3 Lab hours: 3

ET 120 4 units

INTRODUCTION TO MICROPROCESSORS

Prereq: 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

Lecture hours: 3 Lab hours: 3

ET 189

0.5-5 units

SPECIAL TOPICS IN ELECTRONIC TECHNOLOGY

The Special Topics course is a grouping of short seminars designed to provide students with the latest concepts in the field of electronic technology. The course content is thematic in nature, and each seminar topic within the course differs from other offerings in the same course.

R-E

Lecture hours: 0.5-5 Lab hours: 0.5-5

ET 199

0.5-5 units

SEMINAR IN ELECTRONIC TECHNOLOGY

Electronic Technology 199 is a lower-division seminar given over to the study of a specific topic, issue, or problem within electronic technology which is not part of the regular college curriculum. R-E

Lecture hours: 0.5-5 Lab hours: 0.5-5

ET 289

0.5-5 units

SPECIAL TOPICS IN ELECTRONIC TECHNOLOGY

The Special Topics course is a grouping of short seminars designed to provide students with the latest concepts in the field of electronic technology. The course content is thematic in nature, and each seminar topic within the course differs from other offerings in the same course.

R-E

Lecture hours: 0.5-5 Lab hours: 0.5-5