School of Physical Sciences and Technologies

Electronic Technology

Faculty

Ray Chandos
Will Garcia

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 new **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.

Certificate in Electronic Technology:

Students must complete all courses in the certificate program 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 26 for further information.

"Certificates of Competency" are granted for the completion of a specified program, or specified courses, whose total unit requirement is less than 18. These locally approved certificates are designed to acknowledge basic workplace competencies and job readiness for students who are entering the workforce or upgrading their job skills.

Associate in Science Degree in Electronic Technology:

Students must complete a minimum of 60 units of credit, including the courses in the major and general education requirements (page 22), with an overall GPA of 2.0 or better. A minimum of 12 units must be completed at Irvine Valley College. See pages 20-21 for further information, including other options for fulfilling the major requirement.

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 transfer section of this catalog, (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.

Associate in Science Degree Major or Certificate in Electronic Technology

First Year		**Units**
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
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:	**31**

Recommended electives: ET 101, PHYS 20.

Digital Electronics Emphasis

Complete the following courses:		**Units**
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	4
	TOTAL UNITS:	**30**

Associate in Science Degree Major or Certificate in Electronic Technology (cont'd.)

Electro-Optics Technology Emphasis

Complete the following courses:		Units
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	4
	TOTAL UNITS:	**31**

Recommended electives: ET 101, PHYS 20.

NEW—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.

Electronic Technology 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 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

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 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

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

ET 189: Special Topics in Electronic Technology **0.5–5 units**
0.5–5 hours lecture, 0.5–5 hours lab
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 within the course differs from other offerings in the same course. R-E

ET 199: Seminar in Electronic Technology **0.5–5 units**
0.5–5 hours lecture, 0.5–5 hours lab
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

ET 289: Special Topics in Electronic Technology **0.5–5 units**
0.5–5 hours lecture, 0.5–5 hours lab
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 within the course differs from other offerings in the same course. R-E