

ESL R054—Reading Skills 3

3 units

Advisory: ESL R052.

2 hours lecture, 3 hours lab weekly

This is a low-intermediate level reading course for students learning English as a second language who need to develop reading and study skills. Topics included in the course are literal and inferential comprehension, critical thinking, vocabulary development, context clues, note taking, and outlining and basic library research skills. Field trips may be required. Not applicable for degree credit. Course is offered Pass/No Pass (P/NP) at student's option.

ESL R064—Grammar and Writing 3

3 units

Prerequisites: ESL R062*.

2 hours lecture, 3 hours lab weekly

This is the level-three course in the ESL grammar and writing sequence. It instructs the low-intermediate ESL student in the forms and usage of all the verb tenses as well as other grammatical issues related to verbs. The course focuses on grammar but applies it to reading and writing. Not applicable for degree credit. Course is offered Pass/No Pass (P/NP) at student's option.

*Course has been temporarily suspended. Students who have already taken this course may still use it in this degree pattern.

ESL R098—Short Courses in ESL

1/2-10 units

Lecture and/or lab hours as required by unit formula

This class offers courses in specialized topics designed to inform or update interested people in various disciplines within the field of English as a second language. Unit credit is determined by length and format of course. Field trips may be required. The course is not applicable for degree credit. Course is offered Pass/No Pass (P/NP) at student's option.

ENVIRONMENTAL STUDIES

For Coastal Environmental Studies Degrees, see page 120-121

ENVIRONMENTAL CONTROL TECHNOLOGY

The field of air conditioning, heating, and refrigeration offers employment in the areas of service and repair, construction and installation, sales, manufacturing, and plant maintenance.

For more information, contact Alan Ainsworth at aainsworth@vcccd.edu or (805) 986-5800, ext. 1982.

CAREER OPPORTUNITIES

Sales	Manufacturing
Service and Repair	Plant Maintenance
Construction and Installation	

FACULTY

Full Time	Part-Time	Part-Time
Alan Ainsworth	Dirk DeKreek Jack Smith	Jack Stewart

◆ ENVIRONMENTAL CONTROL TECHNOLOGY

Associate in Science Degree Certificate of Achievement

REQUIRED COURSES:

		UNITS
ENVT R010	Introduction to Air Conditioning & Refrigeration	3
ENVT R010L	Introduction to Air Conditioning & Refrigeration I Lab	2
ENVT R011L	Air Conditioning and Refrigeration II Lab	2
ENVT R020	Electrical Systems I	3
ENVT R020L	Electrical Systems I Lab	2
ENVT R021L	Electrical Systems II Lab	2
ENVT R030	Airside Systems	3
ENVT R030L	Airside Systems Lab	2
ENVT R040	Heating Control Systems	3
ENVT R040L	Heating Control Systems Lab	2
ENVT R050	Energy Auditing	3
ENVT R050L	Energy Auditing Lab	2
TOTAL REQUIRED UNITS		29

To complete the Certificate of Achievement, students must also meet requirements in scholarship and residency. Refer to Education Pathways - Earn a Certificate of Achievement section in this catalog for specific information.

To complete the Associate Degree, students must also meet requirements in general education, competency, units, scholarship, and residency. Refer to Education Pathways - Earn an Associate Degree and the A.A. or A.S. Degree in Specific Majors sections of this catalog.

PROGRAM STUDENT LEARNING OUTCOMES

Upon successful completion of the Environmental Control Technology program students will be able to:

- Demonstrate the ability to read, draft and comprehend various construction drawings and electrical schematics used in the air conditioning/ refrigeration industry.
- Demonstrate the ability to troubleshoot and perform basic mechanical and electrical service/repairs on air conditioning and refrigeration systems.
- Demonstrate the ability to locate and identify applicable codes, licensing requirements and best practices as they relate to the installation of various types of HVAC/R equipment.

COURSE DESCRIPTIONS

ENVT R010—Introduction to Air Conditioning & Refrigeration

3 units

3 hours lecture weekly

This course develops competency in the theoretical troubleshooting of mechanical problems in air conditioning and refrigeration systems through an understanding of the operating principles for refrigeration. It is recommended as a first semester course for persons who want to develop or improve job skills in the air conditioning, heating and refrigeration industry. Together with the lab course (ENVT R010L), this course targets the service technician who wishes to develop troubleshooting and repair skills. It is also applicable for students wishing to enter the industry in the capacity of installer, sales representative, maintenance technician, or designer. Field trips may be required. Formerly AC R010.

ENVT R010L—Introduction to Air Conditioning & Refrigeration I Lab **2 units**

1 hour lecture, 3 hours lab weekly

This course develops competency in the hands-on troubleshooting of mechanical problems in air conditioning and refrigeration systems through an understanding of the operating principles for refrigeration. It is recommended as a first semester course for persons who want to develop or improve job skills in the air conditioning, heating and refrigeration industry. Together with the lecture course (AC R010), this class targets the service technician who wishes to develop refrigeration troubleshooting and repair skills. It is also applicable for students wishing to enter the industry in the capacity of installer, sales representative, maintenance technician, or designer. Field trips may be required. Formerly AC R010L.

ENVT R011L—Air Conditioning and Refrigeration II Lab **2 units**

Prerequisites: ENVT R010L.

1 hour lecture, 3 hours lab weekly

This course develops additional competency in the hands-on troubleshooting of mechanical problems in air conditioning and refrigeration systems through an understanding of the operating principles for refrigeration. It is recommended as a second semester course for persons who want to develop or improve job skills in the air conditioning, heating and refrigeration industry. Together with the first semester lab course (ENVT R010L), this class targets the service technician who wishes to develop refrigeration troubleshooting and repair skills. It is also applicable for students wishing to enter the industry in the capacity of installer, sales representative, maintenance technician, or designer. Field trips may be required. Formerly AC R011L.

ENVT R020—Electrical Systems I **3 units**

3 hours lecture weekly

This course develops competency in the theoretical troubleshooting of mechanical problems in air conditioning and refrigeration systems through an understanding of the operating principles for electrical wiring systems used in air conditioning and refrigeration installations. It is recommended for persons who want to develop or improve job skills in the air conditioning, heating and refrigeration industry. Together with the lab course (ENVT R020L), this course targets the service technician who wishes to develop skills in reading wiring diagrams, identifying electrical components, and electrical troubleshooting and repair skills. It is also applicable for students wishing to enter the industry in the capacity of installer, sales representative, maintenance technician, or designer. Field trips may be required. Formerly AC R020.

ENVT R020L—Electrical Systems I Lab **2 units**

1 hour lecture, 3 hours lab weekly

This course develops competency in the hands-on troubleshooting of mechanical problems in air conditioning and refrigeration systems through an understanding of the operating principles for electrical wiring systems used in air conditioning and refrigeration installations. It is recommended for persons who want to develop or improve job skills in the air conditioning, heating and refrigeration industry through practice on live equipment. Together with the lecture course (ENVT R020), this course targets the service technician who wishes to develop skills in reading wiring diagrams, identifying electrical components, and electrical troubleshooting and repair skills. It is also applicable for students wishing to enter the industry in the capacity of installer, sales representative, maintenance technician, or designer. Field trips may be required. Formerly AC R020L.

ENVT R021L—Electrical Systems II Lab **2 units**

Prerequisites: ENVT R020L.

1 hour lecture, 3 hours lab weekly

This course develops additional competency in the hands-on troubleshooting of mechanical problems in air conditioning and refrigeration systems through an understanding of the operating principles for electrical wiring systems used in air conditioning and refrigeration installations. It is recommended for persons who want to continue their development of electrical troubleshooting job skills in the air conditioning, heating and refrigeration industry through practice on live equipment. Together with the introductory electrical lab course (ENVT R020L), this course targets the service technician who wishes to develop a higher skill level in reading wiring diagrams, identifying electrical components, and electrical troubleshooting and repair skills. It is also applicable for students wishing to enter the industry in the capacity of installer, sales representative, maintenance technician, or designer. Field trips may be required. Formerly AC R021L.

ENVT R030—Airside Systems **3 units**

3 hours lecture weekly

This course develops competency in the theoretical troubleshooting of air side problems in air conditioning/heating systems through an understanding of the principles of air flow, the properties of air, theory of controls, reading of construction drawings, and calculation of building loads. It is recommended for persons who want to develop or improve job skills in the air conditioning, heating and refrigeration industry. Together with the lab course (ENVT R030L), this course targets the service technician who wishes to develop skills in designing and troubleshooting building air conditioning systems and controls. It is also applicable for students wishing to enter the industry in the capacity of installer, sales representative, maintenance technician, or designer. Field trips may be required. Formerly AC R030.

ENVT R030L—Airside Systems Lab **2 units**

1 hour lecture, 3 hours lab weekly

This course develops competency in the hands-on troubleshooting of air side problems in air conditioning/heating systems through an understanding of the principles of air flow, the properties of air, theory of controls, reading of construction drawings, and calculation of building loads. It is recommended for persons who want to develop or improve job skills in the air side segment of the air conditioning, heating and refrigeration industry through practice with live equipment and tools. Together with the lecture course (ENVT R030), this course targets the service technician who wishes to develop skills in designing and troubleshooting building air conditioning systems and controls. It is also applicable for students wishing to enter the industry in the capacity of installer, sales representative, maintenance technician, or designer. Field trips may be required. Formerly AC R030L.

ENVT R040—Heating and Control Systems **3 units**

3 hours lecture weekly

This course develops competency in the theoretical troubleshooting of mechanical and electrical problems in heating systems through an understanding of the operating principles for heating and furnace electrical control circuits. It is recommended for persons who want to develop or improve job skills in the heating segment of the air conditioning, heating and refrigeration industry. Together with the lab course (ENVT R040L), this course targets the service technician who wishes to develop skills in designing and troubleshooting heating systems and controls. It is also applicable for students wishing to enter the industry in the capacity of installer, sales representative, maintenance technician, or designer. Field trips may be required. Formerly AC R040.

ENVT R040L—Heating and Control Systems Lab **2 units***1 hour lecture, 3 hours lab weekly*

This course develops competency in the hands-on troubleshooting of mechanical and electrical problems in heating systems through an understanding of the operating principles of heating and furnace electrical control circuits. It is recommended for persons who want to develop or improve job skills in the heating segment of the air conditioning, heating and refrigeration industry. Together with the lecture course (ENVT R040), this course targets the service technician who wishes to develop skills in designing and troubleshooting heating systems and controls. It is also applicable for students wishing to enter the industry in the capacity of installer, sales representative, maintenance technician, or designer. Field trips may be required. Formerly AC R040L.

ENVT R050—Energy Auditing **3 units***Prerequisites: ENVT R010 and ENVT R010L**Corequisites: ENVT R050L.**3 hour lecture weekly*

Energy auditing is part of the growing industry of green and sustainable technologies; an energy auditor helps to optimize the energy efficiency of a home or building while reducing the client's energy costs. An energy audit can also have a positive impact on the environment by reducing unnecessary energy consumption. This course is designed for the student who has a solid foundation in HVAC/R to learn how to perform detailed home and building inspections and make cost effective recommendations about improving energy efficiency. There is now an expectation in the industry that a technician's knowledge expand beyond just working on a system into understanding how the HVAC system fits into the whole house/building design. Many of the procedures and tests that are performed in an energy audit revolve around the heating and cooling systems and therefore a student interested in taking this course should have foundation level HVAC/R knowledge. Field trips may be required. Formerly AC R050.

ENVT R050L—Energy Auditing Lab **2 units***Prerequisites: ENVT R010 and ENVT R010L**Corequisites: ENVT R050.**6 hour lecture weekly*

Energy auditing is part of the growing industry of green and sustainable technologies; an energy auditor helps to optimize the energy efficiency of a home or building while reducing the client's energy costs. An energy audit can also have a positive impact on the environment by reducing unnecessary energy consumption. This lab course accompanies the energy auditing lecture course and provides hands-on instruction on the proper safety practices and energy auditing tools necessary to perform an energy audit. Students will also learn how to use energy auditing software to gather and analyze energy auditing data. Many of the procedures and tests that are performed in an energy audit revolve around the heating and cooling systems and therefore a student interested in taking this course should have foundation level HVAC/R knowledge. Field trips may be required. Formerly AC R050L.

**FIRE TECHNOLOGY**

The Fire Technology programs is to provide educational courses and programs that prepare students to enter the field of fire technology as a firefighter, as a specialist in fire prevention and hazardous materials, as an Emergency Medical Technician or other professions related to fire technology. The department maintains a Fire Academy Program allowing students to earn a California State Fire Marshal Firefighter I Certificate, a condition of employment for many fire agencies.

The program supports working partnerships with county and city fire departments forming a Regional Training Center, with shared use of facilities and equipment, giving students the opportunity to address the ever-changing needs of today's emergency services field through hands-on exercises and demonstrations by career personnel.

The department will provide students with foundational course requirements for certificate programs, two-year degrees and transfers to four-year schools.

For more information, contact:

*Gail Warner, gwarner@vcccd.edu
805-384-8102*

CAREER OPPORTUNITIES

Emergency Telecommunications	Fire Detection
Emergency Medical Service	Fire Inspector
Firefighter	Suppression Systems

FACULTY

Full-Time	Part-Time	Part-Time
Tamara Crudo	Massoud Araghi	David Kromka
James Petersen	Karen Beatty	Luis Manzano
	Brad Ditto	Randy Osborne
	Chris Donabedien	Nick Strouse
	Stephanie Huhn	Dana Sullivan
	Mike Ketaily	

◆ EXTENDED FIRE TECHNOLOGY EDUCATION**Proficiency Award**

This proficiency award is to meet the need expressed by the Regional Ventura County Fire Chiefs Association to provide for continuing education training in fire prevention and in fire instruction.

REQUIRED COURSES:	UNITS	
FT R084A	Fire Instructor 1A	2½
FT R084B	Fire Instructor 1B	2½
FT R084C	Fire Instructor 1C	2½
TOTAL REQUIRED UNITS		7½