

**Basic Course Information**

Semester:	Fall 2023	Instructor Name:	Matt Turner
Course Title & #:	ACR 103- Air Cond Elec Cir & Controls	Email:	matthew.turner@imperial.edu
CRN #:	11045	Webpage (optional):	
Classroom:	3115	Office #:	
Class Dates:	August 14th-December 9th	Office Hours:	Tuesdays/Thursdays 5:30-6:00pm
Class Days:	Tuesday/Thursday	Office Phone #:	760-355-6372
Class Times:	6:00-8:40pm	Emergency Contact:	Department office Secretary 760-355-6361
Units:	3	Class Format:	FACE-TO-FACE (LECTURE & LABORATORY)

Course Description

Recommended preparation: ACR 101. This is a course of study in electrical circuits and controls used in the heating, ventilation, air conditioning, and refrigeration industry. This course is comprised of the study of Ohms Law, electrical meters and test equipment, wiring materials, diagrams and schematics, electrical components, installation of controls, layout of electrical circuits, and safety practices.

Course Prerequisite(s) and/or Corequisite(s)

There are NO prerequisites or corequisites for this course.

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes asdemonstrated by being able to:

1. Make current, voltage, and resistance readings. You will also determine the current, voltage, and resistance of a circuit using Ohm's Law.
2. Follow the circuit in a typical electric air-conditioning system and check the amperage in a low-voltage circuit.
3. Make voltage and amperage readings on actual operating equipment using a VOM. You will be able to do this under the supervision of your instructor.

Course Objectives

Upon successful completion of this course, the student will:

1. Demonstrate competency and mastery of the body-of-knowledge in Employee Responsibilities within the HVAC/R industry.
2. Demonstrate knowledge of electrical meters and electrical test equipment.
3. Demonstrate knowledge of wiring materials.
4. Demonstrate knowledge of wiring diagrams and schematics both pictorial and ladder.
5. Demonstrate knowledge of electrical components used in the HVAC/R industry.
6. Demonstrate knowledge of the technique required to install and wire electrical.
7. Demonstrate the ability to troubleshoot and repair electrical circuits and components.
8. Demonstrate knowledge of safety practices required during the installation of HVAC/R electrical equipment.

Textbooks & Other Resources or Links

1. Textbook
Modern Refrigeration and Air Conditioning, 21st Edition, eBook
Author: Andrew D. Althouse, Carl H. Turnquist, A.F. Bracciano, D.C. Bracciano, and G.M. Bracciano
ISBN: 978-1-63563-877-6
2. Personal Protective Equipment
 - 2.1 Safety Glasses
 - 2.2 Leather Gloves
 - 2.3 Ear plugs
 - 2.4 Work footwear
 - 2.5 Proper shirt and pants

Course Requirements and Instructional Methods

COURSE ACTIVITIES INCLUDE, LABORATORY ASSIGNMENTS, QUIZZES, CHAPTER REVIEWS, AND READING ASSIGNMENTS.

Course Grading Based on Course Objectives

A= 90%-100% Excellent

B= 80%-89% Good

C= 70%-79% Satisfactory

D= 60%- 69% Pass, less than satisfactory

F= 59%&Below Failing

The course grade will be determined by various factors such, as class participation, classroom assignments, chapter reviews & drawing project, midterm & final exams.

The grading range is as follows:

Class Participation & Attendance

25%

Laboratory 25%

Midterm 25%

Final Exam 25%

Course Policies

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See [General Catalog](#) for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.
- Electronic Devices: Cell phones and electronic devices must be turned off and put away during class, unless otherwise directed by the instructor.
- Food and Drink are prohibited in all classrooms. Water bottles with lids/caps are the only exception. Additional restrictions will apply in labs. Please comply as directed by the instructor.
- Disruptive Students: Students who disrupt or interfere with a class may be sent out of the room and told to meet with the Campus Disciplinary Officer before returning to continue with coursework. Disciplinary procedures will be followed as outlined in the [General Catalog](#).

- **Children in the classroom:** Due to college rules and state laws, no one who is not enrolled in the class may attend, including children.

Academic honesty in the advancement of knowledge requires that all students and instructors respect the integrity of one another's work and recognize the important of acknowledging and safeguarding intellectual property.

There are many different forms of academic dishonesty. The following kinds of honesty violations and their definitions are not meant to be exhaustive. Rather, they are intended to serve as examples of unacceptable academic conduct.

- **Plagiarism** is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to "cite a source" correctly, you must ask for help.
- **Cheating** is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

Anyone caught cheating or plagiarizing will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the [General Catalog](#) for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

IVC Student Resources

- **CANVAS LMS.** Canvas is Imperial Valley College's main Learning Management System. To log into Canvas, use this link: [Canvas Student Login](#). The [Canvas Student Guides Site](#) provides a variety of support available to students 24hours per day. Additionally, a 24/7 Canvas Support Hotline is available for students to use: 877-893-9853.
- **Learning Services.** There are several learning labs on campus to assist students through the use of computers and tutors. Please consult your [Campus Map](#) for the [Math Lab](#); [Reading, Writing & Language Labs](#); and the [Study Skills Center](#).
- **Library Services.** There is more to our library than just books. You have access to tutors in the [Study Skills Center](#), study rooms for small groups, and online access to a wealth of resources.



DATE	Activity, Assignment, and/or Topic	Assignment Due
WEEK 1	Syllabus and Introductions	
WEEK 2	Chapter 12: Basic Electricity	
WEEK 3	Chapter 13: Electrical Power	Chp.12 Quiz due in canvas
WEEK 4	Chapter 14: Basic Electronics	Chp.13 Quiz due in canvas
WEEK 5	Chapter 15: Electric Motors	Chp.14 Quiz due in canvas
WEEK 6	Chapter 16: Electrical Control Systems	Chp.15 Quiz due in canvas
WEEK 7	Chapter 17: Electrical Troubleshooting Fundamentals	Chp.16 Quiz due in canvas
WEEK 8	Chapter 18: Servicing Electrical Motors & Controllers	Chp.17 Quiz due in canvas
WEEK 9	Mid-Term	Chp.18 Quiz due in canvas
WEEK 10	Labs	In class hands on lab activity
WEEK 11	Labs	In class hands on lab activity
WEEK 12	Labs	In class hands on lab activity
WEEK 13	Labs	In class hands on lab activity
WEEK 14	Labs	In class hands on lab activity
WEEK 15	**NO CLASS THANKSGIVING BREAK**	
WEEK 16	Review for Final Exam	
WEEK 17	Final Exam	

*****Tentative, subject to change without prior notice*****