

Basic Course Information

Semester	Spring 2022	Instructor's Name	Delbert Widmann
Course Title & #	Electrical Equipment & Special Conditions EWIR 135		delbert.widmann@imperial.edu
CRN #	20437	Webpage (optional)	
Room	3113	Office (PT Faculty:809)	3121
Class Dates	2/14 - 6/10/2022	Office Hours (n/a for PT Faculty)	TBA- It will be posted at my office's window
Class Days	Monday-Wednesday	Office Phone # (PT may use dept. number)	(760) 355-5719
Class Times	6:00 –7:05 pm 7:15 -10:25pm	Who students should contact if emergency or other absence	Dept Secretary, Tisha Nelson is an option (760) 355-6361
Units	4		

Course Description

This course include the electrical worker with instruction in basic lighting and NEC requirements for lighting fixtures for indoor and outdoor use; an introduction to motor basic, calculations, transformers, instruments for testing, wiring, protection, maintenance, and troubleshooting for various types of motors and motor controls; introduction to heating, ventilation, and air-conditioning (HVAC) systems, system maintenance equipment, and safety requirements for varied locations; varied locations, and the use of safety equipment. (CSU)

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skill, knowledge and or attitudes as demonstrated by being able to

1. Design and describe the installation of an electrical power distribution system for a farm, including the loads and circuits required for various farm buildings and operations. (ILO1, ILO2, ILO4)
2. Demonstrate familiarity with NEC requirements for mobile home park electric service and wiring, mobile home circuit loads, and code requirements for motor homes. (ILO1, ILO2, ILO3, ILO4)
3. List the rules for bonding metal fixtures and parts around swimming pools, explain grounding requirement for swimming pool wiring, and demonstrate wiring techniques required for the installation and wiring of underwater lighting fixtures. (ILO1, ILO2, ILO3, ILO4)
4. Demonstrate wiring techniques for installing telephone and computer cabling in new and existing dwellings, discuss the installation and operation of standby power systems, transfer switches, and uninterruptible power supplies. (ILO1, ILO2, ILO3, ILO4, ILO5)

Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. Demonstrate and practice OSHA safety & Lab procedures.
2. Explain how & when to support conductors in vertical conduit runs.
3. Identify direct current (DC), alternating current (AC) motors & describe their operating characteristics.
4. Explain the necessity of overcurrent protection devices in electrical circuits.
5. Define the term associated with fuses and circuit breakers.
6. Select contactors and relays for use in specific electrical systems.
7. Describe the operating principles of contactors and relays.
8. Identify the types of prints that an electrician may read in motors and control logics.

9. Recognize & use standards electrical symbols, specification & authorities for an installation.
10. Describe the various types of motors enclosures.
11. Discuss NEC regulation for single phase, three phase AC & DC motors.
12. Describe, install general motor protection requirements as delineated in the NEC.

Textbooks & Other Resources or Links

NCCER Custom book- Trainee Guide 2017 NEC Revision (Electrical Level 2/3) Pearson
Dewalt-Electrical Professional Reference 2017 Code
Motor Control e-Book-Download Handouts through Canvas
Electrical materials &/or handouts through Canvas

Course Requirements and Instructional Methods

Below is the Instructional Scale:

Breakdown	(1200 points)
Exams:	550
Assignments:	250
Lab activities:	250
*Participation:	150
	1200

Teaching Methods: Discussion of assignments and instructional methods will be a combination of all methods of instruction, which can be classified as telling, lecturing, or discussing; showing or demonstrating.

***Participation-** This course will meet two days per week of classroom and lab. Therefore, class participation and lab will be part of your grade for this semester.

Out of Class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

Course Grading Based on Course Objectives

The course grade is based on total points accumulated during the semester. There is a maximum of 1200 points. Very limited extra credit points may be available, either through some class participation activity, group work or perfect attendance. Failing to turn in regular assignments will stop you from being able to earn extra credit points and late assignments will have points subtracted.

Final Grades are calculated as follows:

Grade	Points
<u>A</u>	1200-1080
<u>B</u>	1079-960
<u>C</u>	959-840
<u>D</u>	839-720
<u>F</u>	Below 719

Grading Rubrics: In addition to the percentages and points listed above the following grading rubric (standards expected) will be used when grading student assignments. The description that best fits your work will be the assigned grade.

Grade	Rubric or Standard Expected
<u>A</u>	Focused and clearly organized. Contains advanced critical thinking and analysis. Convincing evidence is provided to support conclusions. Clearly meets or exceeds assignment requirements.
<u>B</u>	Generally focused with some development of ideas, but may be simplistic or repetitive. Evidence is provided to support conclusions. Occasional grammatical errors. Meets

assignment requirements but does not exceed.

- C Unfocused, underdeveloped, or rambling, but has some coherence. Minimal evidence is provided to support conclusions. Several grammatical errors. Meets
- D Unfocused, underdeveloped, and/or rambling. Limited evidence is used to support conclusions. Serious grammatical errors that impede overall understanding. Does not address the assignment requirements
- F Unfocused, underdeveloped, and/or rambling. Incomplete or too brief. No evidence is used to support conclusions. Serious grammatical errors that block overall understanding. Does not meet assignment requirements. Minimal to no student effort.

Attendance

- 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.

Classroom Etiquette

- Electronic Devices: Cell phones and electronic devices must be turned off and put away during class unless otherwise directed by the Instructor. **Consider**: specifics for your class/program
- 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.
- 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

- Plagiarism is to take and present 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 correctly 'cite a source', 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, or assisting others in using materials, which are prohibited or inappropriate in the context of the academic assignment in question.

Anyone caught cheating or 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 School 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) use of a commercial term paper service

Additional Help – Discretionary Section and Language

- Canvas support center: <https://www.imperial.edu/students/canvas>
- Learning Labs: There are several ‘labs’ on campus to assist you through the use of computers, tutors, or a combination. Please consult your college map for the Math Lab, Reading & Writing Lab, and Learning Services (library). Please speak to the instructor about labs unique to your specific program
- Library Services: There is more to our library than just books. You have access to tutors in the learning center, study rooms for small groups, and online access to a wealth of resources.

Disabled Student Programs and Services (DSPS)

Any student with a documented disability who may need educational accommodations should notify the instructor or the Disabled Student Programs and Services (DSP&S) office as soon as possible. If you feel you need to be evaluated for educational accommodations, the DSP&S office is located in Building 2100, telephone 760-355-6313.

Student Counseling and Health Services

Students have counseling and health services available, provided by the pre-paid Student Health Fee. We now also have a fulltime mental health counselor. For information see <http://www.imperial.edu/students/student-health-center/>. The IVC Student Health Center is located in the Health Science building in Room 2109, telephone 760-355-6310.

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and due process. For further information regarding student rights and responsibilities please refer to the IVC General Catalog available online at http://www.imperial.edu/index.php?option=com_docman&task=doc_download&gid=4516&Itemid=762

Information Literacy

Imperial Valley College is dedicated to help students skillfully discover, evaluate, and use information from all sources. Students can access tutorials at <http://www.imperial.edu/courses-and-programs/divisions/arts-and-letters/library-department/info-lit-tutorials/>

Anticipated Class Schedule / Calendar

The instructor will provide a tentative, provisional overview of the reading, assignments, tests, or other activity for the duration of the course. The faculty may find a table format useful for this purpose.

Date or Week	Activity, Assignment, Topic / Lab Activity	Dates: Due/Tests
Week 1	Syllabus & Introduction, NCCER card# & forms, Canvas download. New Virtual Video based assignment	
Week 2	<u>NCCER:26206-17 Conductor Installation</u> & Handout: Review Question/ Discuss LAB & Motor Control lab textbook	
Week 3	Continue w/Conductor Installation. Review test#1; New Virtual Video Assignment	LAB-Handout-TBA

Week 4	Test#1- Conductor Installation /New Module <u>NCCER:26210-17-Circuit Breaker & Fuses</u> ; LAB-Basic Motors & Intermediate	Assignment Due
Week 5	Continue w/ Circuit Breaker & Fuses. Review test#2;Lab: Cont.w/ Basic Motors & Intermediate	
Week 6	Test#2-Circuit Breaker & Fuses /New Module <u>NCCER:26307-17: Transformer</u> ; Lab: Cont.w/ Basic Motors & Intermediate	Assignment Due
Week 7		Assignment Due
Week 8	Test#3-Transformer / <u>NCCER: 26208-17 Conductor Terminations and Splices</u> ; LAB-TBA	
Week 9	****SPRING BREAK **** CLASS CLOSED	
Week 10	Continue Alternating Current-, Review test#4; Cont. LAB- Mechanical Bending	
Week 11	Test#5-Alternating Current / <u>NCCER: 26204-17 Conduit Bending</u> ; LAB- Mechanical Bending	Assignment Due
Week 12	Cont. 26204-17 Conduit Bending; LAB- Mechanical Bending; Review test#6	
Week 13	Test#6- Conduit Bending/ <u>NCCER: 26202-17 Motors: Theory and Application</u> ; Finish LAB- Mechanical Bending/ New LAB- Basic Motor Control	Assignment Due
Week 14	Continue Motors: Theory and Application; Continue LAB- Basic Motor Control; Review test #7	
Week 15	<u>No School</u> ;	
Week 16	Test#7-Motors: Theory and Application ; Finish LAB: Basic Motor Control; Review Final Test	Assignment Due
Week 17	Review Final & Final Test	

NOTE: Schedule subject change without notice