



Basic Course Information

Semester:	Spring 2023	Instructor Name:	Roberto R Sanchez Jr
Course Title & #:	ELTT 102 Electrical Trades II	Email:	Robert.Sanchez@imperial.edu
CRN #:	20813	Webpage (optional):	Imperial.edu
Classroom:	IID-ECTR	Office #:	N/A
Class Dates:	Feb 13, 2023 to Jun 09, 2023	Office Hours:	N/A
Class Days:	Tuesdays	Office Phone #:	N/A
Class Times:	04:30 PM - 08:45 PM	Emergency Contact:	N/A
Units:	4	Class Format:	In classroom instruction

Course Description

Designed to give the apprentice an overview of transmission and distribution systems (T&D), and the various components used in the utility industry. Additional topics will include high voltage AC power, study of electrical diagrams, safety in the workplace, and a section on rope, rigging, and hand signals. (Nontransferable, AA/AS degree only)

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

Successful completion of ELTT 101 with a "C" or better.

Student Learning Outcomes

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

1. *Compare single and three phase transformers; identify parts, connections and functions*

Course Objectives

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

1. *Practice standard safety procedures appropriate to the power utility industry.*
2. *Recognize and deal appropriately with hazardous materials in the power utility industry.*
3. *Describe the functions and characteristics of transmission and distribution systems and their components.*
4. *Apply the fundamentals of substation and switchyard equipment systems.*
5. *Analyze and apply basic skills in three phase power systems, and recognize delta and wye configurations, and their components.*
6. *Describe and interpret the various electrical diagrams used in the maintenance of electrical systems.*
7. *Recognize and implement the various safety rules, regulations, and procedures that apply to electrical system maintenance personnel (CAL-OSHA/IID).*
8. *Analyze and describe the various fundamentals of overhead rigging, rope handling, and standard hand signals.*

Textbooks & Other Resources or Links

1. *Electrical Lineman Training Committee. 1990. Imperial Irrigation District's Lineman Apprenticeship Training Handbook. Imperial Irrigation District. ISBN: -.*
2. *Singer, Bertand B., Harry Forster, and Michael E. Schultz. 2000. Basic Mathematics for Electricity and Electronics. 8th Macmillan/McGraw-Hill. ISBN: 9780028050225.*
3. *Shoemaker, Thomas M. and James E. Mack. 2007. The Lineman's and Cableman's Handbook. 11th McGraw-Hill. ISBN: -.*
4. *Alexander Publications. 2007. Transformation for Lineworkers. 2nd Edition Alexander. ISBN: .*
5. *Alexander Publications. . Fundamentals of Electricity Volume 1. 3rd Alexander Publications. ISBN: .*
6. *Alexander Publications. . Fundamentals of Electricity Volume 2. 3rd Alexander Publications. ISBN: .*
7. *Micheal I. Callanan and Bill Wusinich. . Electrical Systems: Based on the 2017 NEC. 1st American Technical Publishers. ISBN: 9780826920324.*

Course Requirements and Instructional Methods

Assignments are designed to elicit your demonstration of critical thinking, understanding and application of the course concepts, and your proficiency in the subject matter.

<u>Required Assignments</u>	<u>Weighted Percentages</u>
1. Homework:	15%
2. Quizzes:	15%
3. Mid-Term Exam:	30%
4. Final Exam:	40%
Total:	100%

Instructional 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.

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 the total weighted percentage during the semester with a maximum of 100%. Very limited extra credit 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.

Final Grades are calculated as follows:

<u>Overall</u>	<u>Grade</u>
90-100%	A
80-89%	B
70-79%	C
60-69%	D
Below 59%	F

Assignments will be accepted at the start of class on the assigned due date. No late assignments will be accepted.

Academic Honesty

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 IID policy and procedures 4530 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.

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.
- 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, only students enrolled in the class may attend; children are not allowed.

Online Etiquette

- What is netiquette? Netiquette is internet manners, online etiquette, and digital etiquette all rolled into one word. Basically, netiquette is a set of rules for behaving properly online.
- Students are to comply with the following rules of netiquette: (1) identify yourself, (2) include a subject line, (3) avoid sarcasm, (4) respect others' opinions and privacy, (5) acknowledge and return messages promptly, (6) copy with caution, (7) do not spam or junk mail, (8) be concise, (9) use appropriate language, (10) use appropriate emoticons (emotional icons) to help convey meaning, and (11) use appropriate intensifiers to help convey meaning [do not use ALL CAPS or multiple exclamation marks (!!!!)].
-

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and to due process of law. For more information regarding student rights and responsibilities, please refer to the IVC [General Catalog](#).

IVC Student Resources

IVC wants you to be successful in all aspects of your education. For help, resources, services, and an explanation of policies, visitor click the heart icon in Canvas.

Anticipated Class Schedule/Calendar

Below is a tentative, provisional overview list (the dates and Activities, Assignments and/or Topics are subject to change) of weekly activities and assignments that will assist you in meeting the course objectives and the Student Learning Outcomes.

Date or Week	Activity, Assignment, and/or Topic
Week 1 & 2	Syllabus & Introduction Introduction to Transmission and Distribution Systems 1. Overview of transmission and distribution systems 2. Transmission systems and their components 3. Substation and switchyard equipment 4. Distribution systems and their components 5. System protection and monitoring 6. IID's transmission and distribution system
Week 3 & 4	Electrical Systems Diagrams 1. Introduction to electrical system diagrams. 2. Construction diagrams 3. Specification manuals 4. Schematic diagrams 5. One-line diagrams 6. Plan-profile diagrams 7. Staking sheets 8. Framing diagrams 9. Map reading
Week 5 & 6	AC Power Theory and Switchyard Equipment 1. Power and Power factor 2. Three phase power 3. Delta and wye configurations 4. Voltage regulator applications 5. Capacitor applications
Week 7	Midterm Exam Review
Week 8	Midterm Exam
Week 9, 10, & 11	AC Power Theory and Switchyard Equipment 1. Power loss 2. Inductance and inductive reactance 3. Capacitance and capacitance reactance 4. Resistance 5. Impedance



Date or Week	Activity, Assignment, and/or Topic
Week 12 & 13	<p>Safety Procedures</p> <p>Safety in the Work Place</p> <ol style="list-style-type: none">1. Review of industrial safety programs2. Safety rules and regulations<ol style="list-style-type: none">a. National Electrical Codeb. Occupational Safety and Health Act (OSHA)c. Electrical Safety Code (CAL/OSHA)3. Safety in transmission and distribution systems<ol style="list-style-type: none">a. Safety in transmission and distribution maintenanceb. Electrical safety4. Fire fighting-Using portable fire extinguishers5. Review of CPR/First aid (Safety Coordinator)6. Defensive driving (Safety Coordinator) <p>Working with Hazardous Materials</p>
Week 14	<p>Rope, Rigging, and Hand Signals</p> <ol style="list-style-type: none">1. Introduction to rigging2. Rope3. Knot tying4. Handlines5. Block and tackle6. Standard hand signals7. Rigging to lift a conductor8. Rigging to lift the strain from a conductor9. Rigging to lift and move equipment10. Using a gin pole
Week 15	Final Exam Review
Week 16	Final Exam

*****Subject to change without prior notice*****