

### Basic Course Information

Semester:	<b>Spring 2014</b>	Instructor Name:	<b>Darrin Thomason</b>
Course Title & #:	<b>APSB108</b>	Email:	<b>dlthomason@iid.com</b>
CRN #:		Webpage (optional):	
Classroom:	<b>IID</b>	Office #:	<b>760 427-0347</b>
Class Dates:	<b>Aug 18 to Dec 13 2014</b>	Office Hours:	
Class Days:	<b>Tuesday</b>	Office Phone #:	
Class Times:	4:00pm to 8:30pm	Emergency Contact:	<b>760 455-0213</b>
Units:	5		

### Course Description

Advanced theory in the use of specialized equipment, repair and maintenance of circuit breakers and regulators, safety practices, review of local and state construction requirements.

### Student Learning Outcomes

Upon course completion, the successful student will have acquired:

1. Familiarize the safe work practices and approach boundaries while working inside and/or around an energized Electrical Substation through State Standards and Regulations.
2. Through audio/visual and field scenario workshops the student(s) will be able to determine hazards, operations, basic construction and maintenance, functions and control and the layout of a typical Electrical Substation with Transmission and Distribution switchgear.
3. The student(s) will be able to determine through acquired skills the hazards, safe work practices, basic construction and maintenance skills, hazard abatement, basic principles of testing relays, circuit breakers (low and high voltage) protocol, basic Lockout tag-out (LOTO) and Clearance procedures, transformers, control functions, A/C D/C power supply in a Substation Control house, battery (D/C) back-up supply and other construction of an Electrical Substation.

### Course Objectives

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

1. Practice standard safety procedures and safe work practices appropriate to the power utility industry. Understand and familiarize with their surrounding work area(s) that involve Distribution and Transmission services inside and outside a Electrical Substation.
2. Recognize and understand abatement strategies with hazardous materials in the power utility industry.
3. Analyze, inspect, report and understand the basic principles of construction, maintenance and testing a transformer.

4. Analyze, inspect, report and understand the basic principles of construction, maintenance and testing a circuit breaker.
5. Analyze, inspect, report and understand the basic principles of construction, maintenance and testing a relay.
6. Analyze, inspect, report and understand the basic principles of construction, maintenance and testing a D/C battery system.

### Textbooks & Other Resources or Links

Callaban, Michael and Bill Wusinich (2009). *Electrical Systems: Based on the NEC* American Technical Publishers, Inc..

Electrical Lineman Training Committee (2009). *Imperial Irrigation District's Lineman Apprenticeship Training Handbook* Imperial, CA Imperial Irrigation District. ISBN: -

Shoemaker, Thomas M., and James E, Mack (2011). *The Lineman's and Cableman's Handbook* (11th/e). New York McGraw-Hill. ISBN: -

### Course Requirements and Instructional Methods

This class requires the student to do demonstrations to an audience, memorize connection hook ups for testing, and take a midterm and final exam.

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

**[Required Information:** Provide detailed information related to grading practices and grading scale, including values and totals. Consider adding final grade calculation, rubrics, late assignment policy, and other grading practices.]

Class Participation	=	10%
Presentations	=	10%
Attendance	=	10%
Midterm	=	20%
Final	=	<u>50%</u>
		100%

A	=	90 to 100%
B	=	80 to 89%
C	=	70 to 79%
D	=	60 to 69%
F	=	Below 59%

## Attendance

Attendance is 100 percent for this course

- 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

*[Required Information: Describe your policies regarding classroom conduct. The below is suggested language and may be modified for your course.]*

- 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.

## Online Netiquette

*[Required Information for web-enhanced, hybrid and online courses: Describe your policies regarding netiquette. The below is suggested language and may be modified for your course.]*

- 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 (!!!!)].

## Academic Honesty

### *[Required language.]*

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.

## Additional Student Services

### *[Suggested Language.]*

Imperial Valley College offers various services in support of student success. The following are some of the services available for students. Please speak to your instructor about additional services which may be available.

- **Blackboard Support Site.** The Blackboard Support Site provides a variety of support channels available to students 24 hours per day.
- **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.

## Disabled Student Programs and Services (DSPS)

### *[Required language.]*

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. The DSP&S office is located in Building 2100, telephone 760-355-6313. Please contact them if you feel you need to be evaluated for educational accommodations.

## Student Counseling and Health Services

### *[Required language.]*

Students have counseling and health services available, provided by the pre-paid Student Health Fee.

- [Student Health Center](#). A Student Health Nurse is available on campus. In addition, Pioneers Memorial Healthcare District and El Centro Regional Center provide basic health services for students, such as first aid and care for minor illnesses. Contact the IVC [Student Health Center](#) at 760-355-6310 in Room 2109 for more information.
- [Mental Health Counseling Services](#). Short-term individual, couples, family, and group therapy are provided to currently enrolled students. Contact the IVC [Mental Health Counseling Services](#) at 760-355-6196 in Room 2109 for more information.

## Student Rights and Responsibilities

### *[Required language.]*

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](#).

## Information Literacy

### *[Required language.]*

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. The IVC [Library Department](#) provides numerous [Information Literacy Tutorials](#) to assist students in this endeavor.

## Anticipated Class Schedule/Calendar

*[Required Information – Discretionary Language and Formatting: The instructor will provide a tentative, provisional overview of the readings, assignments, tests, and/or other activities for the duration of*

### Substation 108 syllabus

Week 1	8/18/14	Infrared condition monitoring and oil analysis
Week 2	8/25/14	Substation batteries and Chargers
Week 3	9/2/14	Multimeter operation and use
Week 4	9/9/14	Different bus schemes
Week 5	9/16/14	Doble software
Week 6	9/23/14	Doble hookups and testing procedures
Week 7	9/30/14	Omicron software
Week 8	10/7/14	Omicron hookups and test procedures
Week 9	10/14/14	Midterm
Week 10	10/21/14	Relay schemes and one lines
Week 11	10/28/14	Relay shop for relay testing
Week 12	11/3/14	Battery check demonstration to shop
Week 13	11/10/14	Doble test on breaker for shop
Week 14	11/17/14	Omicron test on equipment for shop
Week 15	11/24/14	Review of final exam
Week 16	12/2/14	Final exam