

**Basic Course Information**

Semester	<b>Fall</b>	Instructor	<b>Mario Sapin</b>
Course Title & #	<b>Meter Technician VII</b>	Email	<b>mdsapin@IID.com</b>
CRN #	<b>APMT 107</b>	Website	
Room	<b>Foreman's Training Room</b>	Office	<b>81 600 Avenue 58, La Quinta</b>
Class Dates	<b>August 20, 2013</b>	Office Hours	<b>6:00 AM – 3:30 PM</b>
Class Days	<b>Tuesdays</b>	Phone #	<b>(760)396-5611</b>
Class Times	<b>4:00 – 8:30 PM</b>	Contact for absence or emergency	<b>(626)506-8419</b>

**Course Description**

Theory and practicum in the procedures for completing commercial and residential connections, extensive overview of watt hour installations, and the advanced review of electrical test equipment. (Nontransferable, AA/AS degree only)

**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. identify forms and types of electric meters and principles of wiring electric meters. (ILO2, ILO3)
2. understand the function and effects of electric meters units consumption, and demand (KWH, KW and KVARH) delivered and received energy. (ILO2, ILO3)
3. understand the use of electric meters registration, accuracy classes for meters, demand KW, and power factor leading and lagging. (ILO2, ILO3)
4. identify, differentiate, construct and troubleshoot meter registration problems, testing different type of meters in the Laboratory/Field delivered and received energy. (ILO2, ILO3)

**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. Identify and resolve power outages and/or loss (troubleshoot).
4. Explain the installation of a watt hour meter.
5. Identify and complete commercial and residential connections.
6. Identify and connect branch circuits and feeders.
7. Analyze, troubleshoot, and identify illegal connections.
8. Identify and implement industry-related safety protocols (i.e. Dig Alert, Grounding, etc.)

**Textbooks & Other Resources or Links**

- Callahan, Michael and Bill Wusinich (2011). *Electrical Systems: Based on the 2011 NEC* American Technical Publishers, Inc.. ISBN: 9780826916440
- Shoemaker, Thomas M. and James E. Mack (2012). *The Lineman's and Cableman's Handbook* (12th/e). New York McGraw-Hill. ISBN: 978007174580



- 6. Presentation (2) 50 each
- 7. Participation (possible extra credit points) ??

Teaching Methods: During this class you will have opportunity to participate in a variety of presentation and teaching methods. Lectures, including material not covered in your readings, class and group discussions requiring your active participation, student oral presentations, and films or field trips will supplement your required readings.

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. Out of class assignments for this course includes reading assignments, study time for exams/quizzes, and completion of required course assignments. Students should actively read the assignment prior to class, bring any questions to class, and take careful notes during class.

### 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.
- 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.

### Academic Dishonesty

- 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 clearly 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 will receive a zero (0) on the exam or assignment, the incident will be reported to the division dean and the dean of Student Affairs, and a document may be placed 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:
  - plagiarism
  - copying or attempting to copy from others during an examination or on an assignment;
  - communicating test information with another person during an examination;
  - allowing others to do an assignment or portion of an assignment
  - use of a commercial term paper service

### Classroom Etiquette

- Electronic Devices: Cell phones and electronic devices must be turned off and put away during class. Cell phones ringing during class and all electronic devices not put away will be held by the instructor until the

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end of class as these disruptions are considered disrespectful behavior to others in the class and 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.
- **Disruptive Students:** Most of you are here to learn, but some students are not as serious. To preserve a productive learning environment, 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.

### Additional Help

- **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. The DSP&S office is located in Building 2100, telephone 760-355-6312 if you feel you need to be evaluated for educational accommodations.

### Student Counseling and Health Services

Students have counseling and health services available, provided by the pre-paid Student Health Fee. You can find out more about services available for students at <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; students who disrupt that environment can be asked to leave the class. Faculty and students also have the right of due process. For further information regarding student rights and responsibilities please refer to the IVC General Catalog available online at [www.imperial.edu](http://www.imperial.edu)

### Class Schedule

Below is a list of weekly activities and assignments that will assist you in meeting the course objectives and the Student Learning Outcomes. Please review carefully and often as the list may reading assignments, exams, field trips, projects, presentations, etc.

Date	Core Content	Homework/Reading	Assignment Due
Aug 20	<b>RULES AND REGULATIONS</b> Week 1: “Flashouts/Electrical Burns,” (Safety Dept./Nurse) <b>CD: Safety in Meter Work</b>		

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Aug 27	<b>SERVICE CONNECTIONS AND ELECTRICAL SYSTEMS (NEC)</b>  Week 2: “Service Installations,” <b>(OLM# 13 – Video WKBK)</b> <b>CD: Service Installation 1</b>	Read Electric Service & Metering Equipment Guide pp 6-11	
Sept 3	Week 3: “Service Installations,” <b>(OLM# 13 – Video WKBK)</b> <b>CD: Service Installation 2</b>	Read Electric Service & Metering Equipment Guide pp 12-26	
Sept 10	Week 4: <b>Customer Service Workshop (Training Section) Identifying Illegal Connections (staff)</b>		
Sept 17	Week 5: <i>Electrical Systems</i> <b>(NEC -Chapter 1)</b>	Assignment # 1 Pp 2-32	Sept 24
Sept 24	Week 6: <i>Branch Circuits &amp; Feeders</i> <b>(NEC – Chapter 2)</b>	Assignment # 2 Pp 38-69	Oct 1
Oct 1	Week 7: <i>Load Calculations</i> <b>(NEC-Chapter 3 &amp; 4)</b>	Assignment # 3 & 4 pp 76-105 pp 112-143	Oct 8
Oct 8	Week 8: <i>Conductors and Over Current Protection</i> <b>(NEC-Chapter 5)</b>	Assignment # 5 Pp152-189	Oct 15
Oct 15	Week 9: <i>Grounding</i> <b>(NEC - Chapter 6):</b> include proper grounding of meter sockets as per NEC regulations	Assignment # 6 Pp 198-240	Oct 22
Oct 22	Week10: Review and Mid-term exam		
Oct 29	<b>Meter Systems</b>  Week 11: Introduction to Demand Meter and Time of Use (TOU) a. Solar installations b. Generators etc		

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<b>Nov 5</b>	<b>Week 12:</b> <i><b>PC's in Metering</b></i> <i>Principles of Poly-Phase Metering</i>			
<b>Nov 12</b>	Week 13: Three Phase Wiring Methods & Connections (e.g. delta, wye & delta-wye)			
<b>Nov 19</b>	Week 14:    Solid State Lab Exercise a. Full and Light Load Testing b. Adjustments			
<b>Nov 26</b>	Week 15:    Power Factor ○ Digital Sampling ○ Pulse Metering ○ Understanding Power Flow ○ Calculating Pulse vs. Output Equations			
<b>Dec 3</b>	Week 16: <b>Final Exam</b>			