

## POWER LINEMAN VIII - CLASS SYLLABUS

APLN108 - FALL 2012

**Instructor:** Jim Maland

**Office location:** La Quinta training room

**Office hours:** 05:00-14:30

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**Class hours:** 14:30-19:00

**COURSE DESCRIPTION:** Advanced theory in the use of “hot sticks,” specialized equipment, repair and maintenance of poles and lines (energized and de-energized), safety practices, local and state requirements, and lineman mathematics.

**TEXT:** Electrical Systems Based on the 2011 NEC®” by Michael I. Callanan and Bill Wusinich (Nov 19, 2010)

Lineman's and Cableman's Handbook, 12th Ed (Lineman's & Cableman's Handbook) by Thomas Shoemaker and James Mack (Aug 8, 2011)

**PREREQUISITE:** APLN107

**MEASUREABLE COURSE OBJECTIVES:** Upon satisfactory completion of the course, students will be able to:

1. Practice advanced competence in standard safety procedures, the use of testing equipment, safety equipment applications, construction and maintenance methods, analyze circuit mapping and calculations, familiarity with power distribution computation and Personal Protective Equipment (PPE) appropriate to the power utility industry.
2. Perform advanced safe practices in construction and maintenance while analyzing, understanding, mitigating abatement strategies, documentation (MSDS) and disposal protocol with hazardous materials in the power utility industry.
3. Perform advanced safe practices in construction and maintenance while analyzing, inspecting/troubleshooting, reporting and understanding advanced principles of testing a transformer.
4. Perform advanced safe practices in construction and maintenance while analyzing, inspecting/troubleshooting, reporting and understanding the principles of testing a circuit breaker (household and commercial application) at Journeyman Lineman competence level of competence.
5. Perform advanced safe regulation practices in Utility Line work construction and maintenance while analyzing, inspecting/troubleshooting, reporting and understanding the principles of removing/installing, testing single phase and three phase electrical meters, watt hours, horse power count, and electrical panels under as a Journeyman Lineman level of competence.

6. Perform advanced competent safe work practices in construction and maintenance while; analyzing, inspecting/troubleshooting overhead and underground electrical utility construction methods, troubleshooting power losses and outages. Transfer load by use of circuit mapping and calculations. Power distribution through circuit connection(s) by combining or switching circuits using circuit maps and schematics utilizing internal electrical procedures (Low and High Voltages). Demonstrate advanced care and determination of use of “hot stick” tools and High Voltage work methods. Advanced work skill methods and ability to administer work methods of testing and grounding circuits (Low and High Voltages) while working as a Journeyman Lineman level of competence.

**STUDENT LEARNING OUTCOMES (SLOs):** Upon course completion, the successful student will have acquired:

1. Advanced recognition, understanding and familiarization of safe work practices and approach boundaries while working inside and/or around energized primary and secondary voltages in an Electrical Utility and Electrical Substation through State Standards, Public Utility Commission (PUC), and regulations.
2. Through audio/visual and field scenario workshops the student(s) will be able to identify and analyze hazards associated with and while working near and/or around Distribution/Transmission installations/service connections (residential/commercial), structures, and equipment and determine advanced competent troubleshooting techniques of power losses and outages.
3. The student will be able to analyze through advanced competent skills; the hazards, safe work practices, construction/maintenance skills and troubleshooting skills for underground and overhead line construction, hazardous materials recognition, understanding Material Safety Data Sheets (MSDS) and abatement strategies, principles of testing secondary and primary voltages, principles of testing (low and high voltage) electrical panels (Home and commercial application), work at a Journeyman Lineman level of comprehension with low and high voltage protocol, Lockout tag-out (LOTO), Clearance and Switching procedures in a Electric Utility and Electric Substation.

**ATTENDANCE:** Students are expected to attend every class session. Any student who misses the first class will be dropped. Students may be dropped at instructor discretion if they miss more than a week of class hours continuously. Please make arrangements with the instructor of a fellow student to keep up with all assignments in case you cannot attend a class session for any reason. (See also IVC catalog)

**DISRUPTIVE STUDENTS:** Most of you are here to learn, but some students are not 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 Sergio Lopez, Campus Disciplinary officer, before returning to continue with coursework. Instructor will follow disciplinary procedures as outlined in the General Catalog.

**DROP POLICY:** See attendance section above.

## GRADING POLICY:

Homework, Assignments:	10%
Mid-Term Exam:	45%
Final Exam:	45%

## GRADING SCALE

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

**ACCOMODATIONS FOR DISABILITIES:** 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.

**POLICY ON PLAGIARISM AND CHEATING:** If cheating or plagiarism is discovered, the student will be given zero credit for that assignment/quiz/exam.

## CLASS CALENDAR:

- Week 1: *“Developing & Conduction Tailgate Sessions,” (Safety Dept.)*
- Week 2: *“IID’s Procedures for Hazardous waste,” (Hazmat)*
- Week 3: *“Circuit Maps,” (Lecture). // “Line Conductors,” (Section 14 – Lineman’s Handbook)*
- Week 4: *“Troubleshooting Overhead Lines # 1,” (OLM# 23 – Video & WKBK)  
CD: Troubleshooting Overhead Lines 1 & 2*
- Week 5: *“Troubleshooting Overhead Lines # 2,” (Lecture & Field Exercise)  
CD: Troubleshooting Overhead Lines 3 & 4*
- Week 6: *“Residential & Commercial Wiring Systems,” (Staff)  
“Electrical Shock,” (Safety Dept.)*
- Week 7: *“IID Construction Standards,” (Staff)  
“Construction Standards,” (Section 6, Lineman’s Handbook)*
- Week 8: *“Temporary Grounding,” (G# 5 – Video)  
“Safety in Overhead Line Maintenance,” (OLM# 12 – Video & WKBK)  
CD: Safety in Overhead Line Maintenance 1  
Mid-Term Exam*
- Week 9: *“Safety in Overhead Line Maintenance,”  
CD: Safety in Overhead Line Maintenance 2*

- Week 10: "Using Line Test Equipment," (MB# 18 – Video & WKBK)  
CD: [Using Line Test Equipment 1 & 2](#)
- Week 11: "Rigging for High Voltage" – *Review*  
CD: [Rigging 1, 2 & 3](#)
- Week 12: "Temporary Structures"  
CD: [Replacing Poles](#)
- Week 13: "Resistance and Wire Size," (Chapters 12 & 13 – BMEE)
- Week 14: "GO 128," (Lecture and Updates)  
"Title VIII – Underground," (Lecture and Updates)
- Week 15: "GO 95," (Lecture and Updates)
- Week 16: "Title VIII – Overhead," (Lecture and Updates)  
*Final Exam*