CURSE TITLE Meter Technician V
APMT 105
COURSE SYLLABUS-Fall 2012

INSTRUCTOR: Francisco J Fimbres **Phone 760-427-1617**

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Office Hours: 6:00 – 15:30 **Class Hours: 15:30 – 20:00 (4.5 hours)**

COURSE/CATALOG DESCRIPTIONS:

Comprehensive review in AC theory and basic electricity metering systems. (Nontransferable, AA/AS degree only).

TEXTBOOK AND SUPPLEMENT(S):

Handbook for Electricity Metering 10th Edition p.cm. Copyright 2002 by Edison Electric Institute, 701 Pennsylvania Avenue, N.W. Washington D.C. 2004-2696, Include index ISBN 0-931032-52-0.

The ABB Meter and Instrument Transformer Application Guide All in One, Eleventh Edition, ABB Power T&D company Inc. Order Style No. 6003A29G01.
Electric Metering and Control Division 201 S. Rogers Lane Raleigh, NC 27610, Phone 919-212-5067, Fax 919-212-4717, Instrument Transformer Div. P.O. Box 687 Pinetops, NC 27864, Phone 919-827-2121, Fax 919-827-4286.

Distribution Transformer Handbook, Fourth edition, Item 774
177 Riverside Avenue, # 922, Newport Beach CA 92663, Phone 1-800-992-3031 or
(949) 642-0101, Fax (949) 646-4845, E-mail info@alexanderpublications.com, Web side: www.alexanderpublications.com

OTHER RESOURCES:

GOALS AND/OR OBJECTIVES:

Recognize voltage levels, energized electrical installations, and safety conditions.

Compare three phase distribution transformer connections (Wye, Delta, Open Delta open Wye).

Identify connection of bank distribution transformers.

Explain electric power theory (KVA, KW, KVAR and PF).

Design different distribution transformer connections on customer needs.

Use metering mathematics, and basic electricity to describe vector voltage degrees and voltage magnitude.

Practice real problems on transformer connections to obtain KVA, KW, KVAR and PF.

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STUDENT LEARNING OUTCOMES:

Students will identify instructional strategies and familiarize with:

Metering Mathematics, Basic electricity, Distribution transformers connections, Service voltages and Electric power.

Students will describe the function and the effects of:

Distribution transformers connections, service voltages and electric power.

All Students will understand, analyze and obtain equations of:

Electric power, Single phase and Three phase Delta/ Wye services.

Students will be able to Identify, differentiate, construct and troubleshoot with:

Electric power, transformers connections and voltages problems.

GRADING:

CORE CONTENT	APPROX % OF COURSE
A. Safety procedures for meter technician on de-energized metering installations.	5% (1 Quizz, 20 points)
B. Metering Mathematics and Basic Electricity.	20% (1 Quizz, 30 Points each)
C. Distribution transformers connections.	5% (1 Quizz, 40 Points)
D. Single phase and three phase Delta/Wye Voltage services.	20% (1 Quizz, 30 Points each)
E. Electric power theory (KVA, KW and KVAR)	10% (1 Quizz, 40 Points each)
F. Total Quizzes 5	60%
G. Final Exam	40%
Total Grade	100%

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Grading Scale:

90-100%	**A**
80-89%	**B**
70-79%	**C**
60-69%	**D**
Below 60	**F**

Quizzes

Short quizzes will be given through the semester to be completed in groups. Students are not dismissed until I review your answers and determined that you have answered the question satisfactorily.

SPRING 2012 SEMESTER SNAPSHOT
(Subject to Change)

WEEK NUMBER	TOPIC	QUIZZ
WK 1	**Introduction of the topics, Syllabus, review text books, and calendar semester.**	
WK 2	**IID Energy's Standard Work Practice for Low and High Voltage lines or equipment energized, tools and protective equipment, rubber gloves.**	
WK 3	**Safety on electric metering installations, working, testing and upgrading.**	**20 Points**
WK 4	• **Basic training on scientific calculator.** • **Basic Law Equations** • **Trigonometric Functions**	
WK 5	• **The Right triangle** • **Vector quantities** • **Scientific Notation.** • **Complex numbers (polar and rectangular form).**	**30 Points**

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WK 6	• **Type of transformers** • **Transformer Operation** • **Transformer construction** • **Polarity of transformers**	
WK 7	• **Company Standards overhead and underground** • **Single-phase transformer connections** • **Three-phase Transformer connections**	
WK 8	**Practice on transformer connections transformer shop**	**40 Points**
WK 9	**Apply Vector principles on Distribution transformers**	
WK 10	• **Calculate load checks on Delta and Wye Banks.** • **IID standards primary and secondary voltage**	
WK 11	• **Phasing and Paralleling Procedures** • **Energize transformers safely**	
WK 12	**Visit Transmission and Distribution substations**	**30 Points**
WK 13	**Calculation Demand KVA on Distribution Transformer**	
WK 14	**Calculation Demand and consumption (KWH and KW) on distribution transformers**	
WK 15	**Calculation KVAR and Power Factor on Distribution Transformers**	**40 Points**
WK 16	**FINAL EXAM**	

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ASSIGNMENTS, ACTIVITIES, OR PROCESSES:

Students are expected to spend a minimum of 2 hour of per unit per week and on outside assignments.

GRADING PROCEDURES AND GRADING SCALE OR RUBRICS.

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

1. Students are expected to be actively involved in the learning process so failure is not a good choice; apply yourself, study, do not give up on the first try, attend class regularly, ask for help when needed, and always do your best.
2. Students are expected to attend class regularly. It is the student's responsibility to drop before the deadline.
3. ABSENCES: Not showing up to class during a regular class meeting.
4. TARDIER: What constitutes a tardy? Arriving within the first 20 minutes after the beginning of the class or leaving within the last 20 minutes before the end of the class.
5. Class materials such a notebook or binder with lined or quad ruled paper, pen and pencil, **scientific calculator**, and the textbooks will be brought to every class meeting.
6. Students will not allow making up an exam or final exam.
7. DISCIPLINE: Students are expected to attend the class with appropriate behavior all the time, First offense: Warning, Second offence: Referral to JAC
8. HOMEWORK: The purpose of homework is to provide students with additional practice to reinforce concepts and help them to get ready for class.
9. During substation visitation students must to wear PPE equipment.

NEED FOR ASSISTANCE: If you have any condition, such as physical or learning disability, for which you need extra assistance, please provide me with information regarding your special needs as soon as possible so that appropriate accommodations can be made.

I have made every effort to ensure that this course is accessible to all students. If you encounter a problem accessing any portion of this course, please contact me immediately.