

BARSTOW COMMUNITY COLLEGE COURSE OUTLINE –**IMMT 80A**

Dept. & Nbr: IMMT 80A
Full Title: Alternating Current
Old Number:

Abbrev Title: Alternating Current

Title 5 Category: Associate Degree Applicable.
Certificate Applicable:

Units	Course Hrs. per Week	Nbr of Weeks	Course Hrs. Total
Max: 2.0	Lecture 1.5	18	Lecture 27.0
Min: 2.0	Lab .50		Lab 27.0
	Contact DHR 0.0		Contact DHR 0.0
	Contact Total 1.5		Contact Total 54.0
	Non-contact DHR 0.0		Non-contact DHR 0.0

Delivery method: Lecture and Online/Hybrid

Selected Topic: No

Grading: Option (A-F) (P/NP)

Concurrent Course: None.

Repeat Code: May be taken two times with a grade of less than "C".

Basic Skills: This is not a basic skills class.

CATALOG DESCRIPTION:

Designed to give the student the fundamental skills necessary to understand alternative current. Covered in this course are calculations used for AC waveforms, resistive and inductive AC circuits, and various types of AC circuits.

PREREQUISITES: E & I Level 1

COREQUISITES: None.

RECOMMENDED PREPARATION: None.

CONTENT:

A: AC Waveforms

B: Resistive and Inductive Circuits

C: Frequency

D: Relationship between voltage and current in various types of AC circuits

COURSE OBJECTIVES:

Upon successful completion of this course the student will be able to:

1. Describe the voltage and current phase relationship in a resistive AC circuit
2. Describe the voltage and current transients that occur in an inductive circuit
3. Define inductive reactance and state how it is affected by frequency.
4. Describe the voltage and current transients that occur in a capacitive circuit
5. Define capacitive reactance and state how it is affected by frequency.
6. Explain the relationship between voltage and current in the following types of AC circuits:
 - RL circuit
 - RC circuit
 - LC circuit

- RLC circuit
7. Explain the following terms as they relate to AC circuits:
 - True power
 - Apparent power
 - Reactive power
 - Power factor
 8. Explain basic transformer action.

COURSE-LEVEL STUDENT LEARNING OUTCOMES:

1. **Given the parameters of an inductive circuit with a low power factor, calculate the true and apparent power and identify methods that could be used to improve the efficiency of the circuit.**

Assessment Method(s): Performance Evaluation.

- Communication.
- Critical Thinking.
- Global Awareness.
- Personal/Professional Development.

2. **Solve for two values of an instructor provided power triangle.**

Assessment Method(s): Performance Evaluation.

- Communication.
- Critical Thinking.
- Personal/Professional Development.

B. Critical Thinking Tasks/Assignments:

Critical thinking assignments include (but are not limited to) the following:

1. Identify options for basic circuits used in Industrial Maintenance Electrical & Instrumentation.
2. Solve problems related to various alternating circuits

C. Measurement for Basis of Grades:

1. Substantial writing assignments, including:

- Written homework

If course is degree applicable, substantial writing assignments in course are inappropriate because:

- The course primarily involves skill demonstrations or problem solving.

2. Computational or non-computational problem-solving demonstration, including:

- Exam(s)
- Quizzes
- Homework problems

3. Skill demonstration, including:

- Class performance(s)

4. Objective examinations, including:

- Multiple choice
- Completion

5. Other

- Attendance/Participation
- Observation

REQUIRED READING, WRITING AND OTHER OUTSIDE-OF-CLASS ASSIGNMENTS:

Over an 18-week presentation of the course three hours of study are required for each unit of credit. Two hours of independent work done out of class are required for each hour of lecture. Outside of the regular class time the students in this class will be doing the following:

- Study
- Answer questions
- Skill Practice
- Required reading
- Problem solving activity or exercise
- Written work

BASIS FOR GRADES:

Writing Assignments	0 - 20%
Problem-Solving	0 - 20%
Skill Demonstrations	0 - 20%
Objective Examinations	0 - 20%
Attendance & Participation	0 - 20%
Other.....	%

TOTAL	100%
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TEXTS/MATERIALS

Texts used in degree applicable courses contain college level materials.

Representative examples: (Format text book listing as follows: Author, Title, Publisher, and Date)

Contren. Industrial Maintenance Electrical and Instrumentation Level II, Prentice-Hall 2008

For all courses a list of required and recommended materials is maintained in the college bookstore.

=====Instructional Office Use Only - Signatures and Codes=====

Instructional Vice President Approval: Steven Eaton, AAVP

Curriculum Committee Approval Date: May 2, 2014