**I. COURSE TITLE:** AC Circuits and Devices

**COURSE NUMBER:** 1115  **CATALOG PREFIX:** EENG

**II. PREREQUISITES:** EENG 1105 or equivalent

**III. CREDIT HOURS:** 3  **LECTURE HOURS:**  2

**LABORATORY HOURS:** 1 (2 contact hrs)**OBSERVATION HOURS:** 0

**IV. COURSE DESCRIPTION:**

An examination of the frequency response of reactive circuits. Topics include ac voltage waveforms & frequency, current and power calculations in series, parallel and series-parallel circuits. Applications of resonance and filtering are discussed.

**V. ADOPTED TEXT(S):**

*Foundations of Electronics Circuits and Devices.*

5th edition, 2007

by: Russell Meade

Thomson Learning.

ISBN: 1-418005378X

**VI. COURSE OBJECTIVES:**

Magnetics & Electromagnetism

Meters & Instrmentation

Sinusoidal wave properties\*

Complex numbers and phasors\*

Behavior of transformers\*

Steady-state behavior of RC circuits under AC conditions\*

Steady-state behavior of RL circuits under AC conditions\*

Steady-state behavior of RLC circuits under AC conditions\*

Analysis of basic filter circuits\*

AC network theorems such as Superposition, Thevenin’s and Norton’s theorems\*

**VII. GRADING:**

Grading will follow the policy in the school catalog.

|  |  |  |  |
| --- | --- | --- | --- |
| **A** | **90** | **–** | **100** |
| **B** | **80** | **–** | **89** |
| **C** | **70** | **–** | **79** |
| **D** | **60** | **–** | **69** |
| **F** | **0** | **–** | **59** |

**VIII. COURSE METHODOLOGY:**

Classes will consist of lectures, class discussions, small group projects, videos, outside assignments and supplemental materials. Interactive class discussion is encouraged and staying current on reading assignments necessary to be able to actively participate in class discussions.

**IX. COURSE OUTLINE:**

## Week Description Lab Comments

### 1 Chapter 9

### Magnetism & Electromagnetism

2 Chapter 10-11 Polar/Rectangular

Instrumentation & Worksheet

Basic AC Quantities Test 1

3 Chapter 10-11(Cont) Meter

Loading

### 4 Chapter 12

### Oscilloscope

### 5 Chapter 13 &14

### Inductance & Reactance Test 2

6 Chapter 13 &14(cont) Inductance

### 7 Chapter 15

### RL Circiuts in AC

### 8 Chapter 16

### Transformers Test 3

### 9 Chapter 17, 18 & 19

Capacitance & Reactance

10 Chapter 17, 18 & 19(cont) XC Lab

11 Chapter 20 Test 4

RLC Circuits

12 Chapter 20(cont) RLC Lab Test 5

13 Chapter 21 Resonance

Series-Parallel Resonance Lab

Filters

14 AC Thevenins, Norton Test 6

15 Superposition & Mesh

16 Final

**X. OTHER REQUIRED BOOKS, SOFTWARE AND MATERIALS:**

Scientific Calculator, $40 Lab Fee

Scientific calculator

**XI. EVALUATION:**

Test= 40%- 10% for unexcused absences

Lab = 40%- 10% for unexcused absences

Final = 20%

**XII. SPECIFIC MANAGEMENT REQUIREMENTS:**

None

**XIII.** **OTHER INFORMATION:**

**FERPA:** Students need to understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes.

Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**DISABILITIES:** Students with disabilities may contact the Disabilities Service Office, Central Campus, at 800-628-7722 or 937-393-3431.