

# ECE 331 Syllabus

**Course:** ECE 331  
**Credit Hours:** 3  
**Course Title:** Principals of Electrical Engineering  
**Course Description:**

Concepts, units and methods of analysis in electrical engineering. Analysis of d-c and a-c circuits, characteristics of linear and non-linear electrical devices; principles of Operational Amplifiers; transformers; motors; and filters.

**Prerequisite(s):** MA 241, PY 208

**Textbook(s) and/or other required material:**

Electrical Engineering Principles and Applications, Allan R. Hambley, Prentice Hall, 4th Edition, 2008.

**Course objectives. By the end of this course, the student should be able to (use demonstrative verbs):**

1. Analyze AC and DC circuits using Kirchhoff's Laws.
2. Solve basic circuit problems using nodal and mesh analysis.
3. Perform the analysis of first order R-C and R-L transient circuits.
4. Use transfer functions and Bode plots to analyze Filter circuits in the frequency domain.
5. Explain AC steady-state power and basic principles of power delivery.
6. Analyze currents and voltages in non-linear diode circuits.
7. Perform analysis of motors.

**Topics covered:**

1. Kirchhoff's Laws and basic R, L, C, Transformer concepts. (6)
2. Resistor Networks. (2)
3. Node Voltage Analysis (1)
4. First Order R-C and R-L Transient Circuits. (2)
5. AC Sinusoidal Circuit Analysis. (8)
6. Filters. (5)
7. Operational Amplifiers. (2)
8. Diodes. (3)
9. Motors. (3)
10. Transistors. (1)

**Class/laboratory schedule (sessions per week and duration of each session):**

Three 50-minute lectures per week.

**Contribution of course to meeting the requirements of Criterion 5 - other:**

**Contribution of course to meeting the requirements of Criterion 5 - math and basic**

# ECE 331 Syllabus

sciences:

**Contribution of course to meeting the requirements of Criterion 5 - engineering topics:**

3 hours.

**Contribution of course to meeting the requirements of Criterion 5 - general education:**

## **Relationship of this course to program learning outcomes:**

<b>Learning Outcome</b>	<b>Level of Instruction</b>	<b>Related Course Content</b>
Outcome A	Major	Students analyze d-c and a-c circuits. They characterize linear and non-linear electrical devices, study transfer functions and analyze circuits in the frequency domain.
Outcome B	N/A	
Outcome C	N/A	
Outcome D	N/A	
Outcome E	Major	Students solve Electrical Engineering problems using the analysis tools they are given in the course.
Outcome F	N/A	Students from other engineering departments learn basic electrical engineering analysis techniques to satisfy their program criteria.
Outcome G	N/A	
Outcome H	N/A	
Outcome I	N/A	
Outcome J	N/A	
Outcome K	Intermediate	

**Person who last prepared this description and date of preparation:**

**Relationship of this course to program learning outcomes:**

<b>Learning Outcome</b>	<b>Level of Instruction</b>	<b>Related Course Content</b>
<ul style="list-style-type: none"><li>• Ozturk, Hatice Orun (hoo) - Aug 17th, 2009 (04:53pm)</li></ul>		