

**ELEC 71A Course Outline as of Spring 2010****CATALOG INFORMATION**

Dept and Nbr: ELEC 71A Title: ELECTRONIC DEVICES 1

Full Title: Electronic Devices 1

Last Reviewed: 9/29/2008

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	17.5	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**

Linear electronic circuits. Electronic devices for rectification, amplification, and oscillating circuits. Not open to students who have completed ELEC 61.

**Prerequisites/Corequisites:**

Course Completion of ELEC 70B and Course Completion of ELEC 70BL OR Concurrent Enrollment in ELEC 71AL

**Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: Linear electronic circuits. Electronic devices for rectification, amplification and oscillating circuits. Not open to students who have completed ELEC 61. (Grade Only)

Prerequisites/Corequisites: Course Completion of ELEC 70B and Course Completion of ELEC 70BL OR Concurrent Enrollment in ELEC 71AL

Recommended:

Limits on Enrollment:

Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:

<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
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<b>CSU Transfer:</b>	Effective:	Inactive:
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<b>UC Transfer:</b>	Effective:	Inactive:
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**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

1. State the characteristics of and identify a PN junction.
2. Classify the common power supply diode circuits.
3. Compare the characteristics of power supply filter types.
4. Compute power supply performance in terms of percent of ripple and regulation.
5. Calculate component values necessary to construct a common emitter, common base, and common collector amplifier.
6. Calculate amplifier performance in terms of gain, phase and bandwidth, and compare to actual measured values.

### **Topics and Scope:**

1. Semiconductor physics of a PN junction
2. Applications of PN junctions
  - A. Diodes and diode circuits
  - B. Basic power supply circuits
    - i. Full wave
    - ii. Half wave
    - iii. Bridge
3. Filter circuits
  - A. Capacitor
  - B. Choke input
4. Power supplies
  - A. Bi-polar supplies
  - B. Voltage doubler
  - C. Percentage of ripple
  - D. Percent regulation
5. Bipolar junction transistor (BJT)
  - A. Structure
  - B. Characteristic curves

- C. Alpha and beta
- 6. Transistor biasing
  - A. Direct Current (DC) load lines
  - B. Amplification
  - C. Thermal stability
- 7. Basic transistor circuit design and characteristics
  - A. Common emitter
  - B. Common base
  - C. Common collector
- 8. Basic field effect transistor (FET) operation
  - A. FET biasing
  - B. FET circuit configurations
    - i. Common source
    - ii. Common gate
    - iii. Common drain

### Assignment:

- 1. Textbook readings, approximately 10-20 pages per week
- 2. Textbook homework problems 1-30 per week
- 3. Homework problem handouts.
- 4. 2-4 Quizes, 1 midterm exam, and 1 Final exam

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.

Writing  
0 - 0%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems

Problem solving  
30 - 40%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations  
0 - 0%

**Exams:** All forms of formal testing, other than skill performance exams.

Multiple choice, true/false, matching items, completion

Exams  
60 - 70%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

Class participation
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Other Category 0 - 10%
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**Representative Textbooks and Materials:**

Thomas L. Floyd. Electric Circuit Fundamentals, seventh edition. Prentice Hall, 2006.