

**ELEC 61 Course Outline as of Summer 2008****CATALOG INFORMATION**

Dept and Nbr: ELEC 61 Title: FUND ELEC CIRCUITS

Full Title: Fundamentals of Electronic Circuits

Last Reviewed: 11/5/1997

Units	Course Hours per Week		Nbr of Weeks		Course Hours Total	
Maximum	5.00	Lecture Scheduled	5.00	17.5	Lecture Scheduled	87.50
Minimum	5.00	Lab Scheduled	0	17.5	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 175.00

Total Student Learning Hours: 262.50

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:**

Analysis of linear electronic circuits. Concepts of rectification, amplification, and oscillating circuits utilizing both vacuum and solid-state devices.

**Prerequisites/Corequisites:**

Completion of ELEC 60, ELEC 60L and ELEC 90A or MATH 27 (formerly MATH 57) or higher.

**Recommended Preparation:**

Course Completion of MATH 11

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

Description: Concepts of rectification, amplification & oscillating cir both vacuum & solid-state devices. (Grade Only)

Prerequisites/Corequisites: Completion of ELEC 60, ELEC 60L and ELEC 90A or MATH 27 (formerly MATH 57) or higher.

Recommended: Course Completion of MATH 11

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:**

Certificate Applicable Course

## **COURSE CONTENT**

**Outcomes and Objectives:**

The student will be able to:

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.
7. recognize the effects of loading upon an individual stage.
8. design and evaluate the performance of a JFET amplifier.
9. describe the behavior of both series and parallel resonance.
10. synthesize the basic power supply with voltage regulation and short circuit protection.
11. recall the operating characteristics of an SCR and a TRIAC.
12. identify and explain the basic L-C and R-C oscillator circuit.

**Topics and Scope:**

1. Semi-conductor physics "PN" junction forward and reverse-bias.
2. Diode circuits, power supply circuits: Full wave, half wave, and bridge.
3. Filter circuits, capacitor and choke input.
4. Bi-polar supplies, voltage doubler, percent of ripple, and regulation.
5. BJT structure, characteristics curves; alpha and beta.

6. Biasing, DC load line, amplification, thermal stability.
7. Common emitter, common base, common collector design, and characteristics.
8. Series and parallel resonance, Q and bandwidth.
9. Classes of amplification, power amplifiers.
10. JFET structure and characteristics.
11. MOSFET structure and characteristics.
12. Regulated power supplies.
13. Short circuit protection.
14. S.C.R. - crowbar.
15. Oscillator basics.
16. Vacuum tube triode characteristics.

**Assignment:**

1. Textbook readings.
2. Textbook homework problems.
3. Handout homework problems.

**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, Quizzes, Exams

Problem solving  
40 - 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 - 60%

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

None

Other Category  
0 - 0%

**Representative Textbooks and Materials:**

SEMICONDUCTOR CIRCUIT APPROXIMATIONS by Malvino.