Solid State Circuits CETT 1441 2A1

LAMAR INSTITUTE OF TECHNOLOGY

CREDIT

4 Semester Credit Hours (3 hours lecture, 4 hours lab)

MODE OF INSTRUCTION
Online

PREREQUISITE/CO-REQUISITE:
Prerequisite CETT 1403 & CETT 1405

COURSE DESCRIPTION
A study of various devices incorporated in circuits and their applications. Emphasis on circuit construction, measurement, and analysis.

COURSE OBJECTIVES
Upon completion of this course, the student will be able to
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Analyze circuit operation with various semiconductor device application.
Measure, test, and troubleshoot circuits containing various semiconductor devices.
Describe the AC small signal development from input to output of a FET voltage follower/configuration.
Describe the AC small signal development from input to output of a BJT push-pull amplifier.

INSTRUCTOR CONTACT INFORMATION

Instructor:	Weldon Jacobs
Email:	wcjacobs@it.edu
Office Phone:	409-247-4945
Office Location:	PATC 206
Office Hours:	MW 4:30 – 5, additional hours posted on instructor's office door

REQUIRED TEXTBOOK AND MATERIALS
Solid State Devices and Systems by Gary Rockis, American Technical Publishers
ISBN 978-0-8269-1637-2

ATTENDANCE POLICY
You must log onto Blackboard and access this course a minimum of three times per week to check for posted announcements, assignment due dates, and to complete assignments. Failure to do so may result in deduction of points off final average.

Approved: Initials/date

DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

COURSE CALENDAR

DATE	TOPIC	READINGS (Due on this Date)	ASSIGNMENTS (Due on this Date)
Week 1 8/25-8/29	Course introduction and policies	Class policies	Handouts
Week 2 9/2-9/5	Safety/PC Board Construction and Repair	Chapters 1/2	Labs and As assigned
Week 3 9/8-9/12	Semiconductor Diodes	Chapter 3	Labs and As assigned
Week 4 9/15-9/19	DC Power Supplies-Single Phase	Chapter 4	Labs and As assigned
Week 5 9/22-9/26	Solid State Transducers	Chapter 5	Labs and As assigned
Week 6 9/29-10/3	Transistor as a DC Switch	Chapter 6	Labs and As assigned
Week 7 10/6-10-10	Silicon Controlled Rectifiers	Chapter 7	Labs and As assigned
Week 8 10/13-10/17	Triac, Diac, and Unijunction Transistor	Chapter 8	Labs and As assigned
Week 9 10/20-10-24	Transistor as an AC Amplifier	Chapter 9	Labs and As assigned
Week 10 10/27-10/31	Field-Effect Transistor and Multistage Amplifier	Chapter 10	Labs and As assigned
Week 11 11/3-11-7	Integrated Circuit	Chapter 11	Labs and As assigned
Week 12 11/10-11/14	Fiber Optics	Chapter 12	Labs and As assigned

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

- Classwork 20% of total grade
- Labwork 20% of total grade
- Quizzes 25% of total grade
- Exams 35% of total grade

GRADE SCALE

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

TECHNICAL REQUIREMENTS

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at https://lit.edu/online-learning/online-learning-minimum-computer-requirements. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

DISABILITIES STATEMENT

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. You may also visit the online resource at Special Populations - Lamar Institute of Technology (lit.edu).

STUDENT CODE OF CONDUCT STATEMENT

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

ARTIFICIAL INTELLIGENCE STATEMENT

Lamar Institute of Technology (LIT) recognizes the recent advances in Artificial Intelligence (AI), such as ChatGPT, have changed the landscape of many career disciplines and will impact many students in and out of the classroom. To prepare students for their selected careers, LIT desires to guide students in the ethical use of these technologies and incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the discretion of the instructor. Students are reminded that all submitted work must be their own original work unless otherwise specified. Students should contact their instructor with any questions as to the acceptable use of AI/ChatGPT in their courses

STARFISH

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

ADDITIONAL COURSE POLICIES/INFORMATION

Late work will NOT be accepted. Check the calendar in Blackboard for due dates.

If you are having issues using Multisim, contact me during the first two weeks of the semester. Do NOT procrastinate and wait until the last minute.

Tentative Schedule

DATE	TOPIC	READINGS	ASSIGNMENTS (Due on this Date)
Week 1 1/21-1/26	DC Review	handouts	DC Review T1-T4
Week 2 1/26-2/2	AC Review	handouts	AC Review T-1
Week 3 2/2-2/9	Diode Applications	Chapter 5	T5-1 through T5-3
Week 4 2/9-2/16	Diode Applications	Chapter 5	Classwork 5-1 through 5-4
Week 5 2/1-2/23	Diode Troubleshooting	Chapter 5	Labs L5-1 through L5-11
Week 6 2/23-3/2	Diode Troubleshooting	Chapter 5	Chapter 5 Exam
Week 7 3/2-3/9	DC Power Supply Operation	Chapter 6	T6-1, T6-2, Cl 6-1 through 6-5
Spring Break 3/9-3/16	DC Power Supply Operation	Chapter 6	Labs L-1 through L-7

Week 8 3/16-3/23	DC Power Supply Trpoubleshooting	Chapter 6	Chapter 6 Exam
Week 9 3/23-3/30	Bipolar Junction Transistors	Chapter 9	9-1 through 9-8, Cl 9-1 through Cl9-4
Week 10 3/30-4/6	Bipolar Junction Transistors	Chapter 9	Labs 9-1 through 9-7
Week 11 4/6-4/13	Bipolar Junction Transistors	Chapter 9	Chapter 9 Exam
Week 12 4/13-4/20	Operational Amplifiers	Chapter 14 Op Amps	14-1 through 14-4, Cl 14-1, Cl 14-2
Week 13 4/20-4/27	Operational Amplifiers	Chapter 14 Op Amps	Labs 14-1 through 14-6, Channel 14 Exam
Week 14 4/27-5/4	555 Timer Operation	Chapter 14 555 Timer	Cl 14-1 through cl 14-3
Week 15 5/4-5/11	555 Timer Operation	Chapter 14 555 Timer	Lab 14-7, Chapter 15 Exam
Week 16 5/11-5/13		Final Exam	Final Exam