HUDSON COMMUNITY COLLEGE

SCIENCE, TECHNOLOGY, ENGINEERING & MATH DIVISION

EET 222-01 SYLLABUS

Analog Integrated Circuits

CREDITS: 4

PREREQUISTE: EET 214- ACTIVE ELECTRINIC DEVICES

TEXT: ELECTRONIC PRINCIPLES, 8th EDITION, Albert Malvino, David Bates, Prentice Hall

ISBN 978-0-07-337388-1

INSTRUCTURE:

Email:

Course Objective: To study the building blocks of analog systems. The semester starts teaching Thyristors, Silicon Control Rectifiers (SCRs), Frequency Response of Amplifiers and the Differential and Operational Amplifiers

Attendance Policy: Attendance is **mandatory** at lectures and laboratory sessions. Either we offer a remote lecture and on ground labs. Every lab will be done in room 407 as usual. Lectures could be sometimes online and some of them on ground, depending on the complexity of the chapter. We will keep email communication with the students that should be checked daily.

Material covered in missed classes is the responsibility of the students. If you miss two consecutive classes, you will be referred to the Division Dean. Students get a failing grade (F) in the course after 3 unjustified absences.

Homework: Problems related to covered topics are assigned on a regular basis. Selected problems will be discussed in class. Laboratory reports are due the following week after completion of the current experiment.

Grading Policy: There will be Midterm, Final as main examinations, and other additional evaluations

Midterm 25%
Final 25%
Quizzes 20%
Homework 10%
Labs 15%
In class participation 5%

Grading Range	**A 90** - 100	**B+** 85 -89
B 80 - 84	**C+ 75 - 79**	**C 70 -74**
D 60 -69	**F 00 -59**	

Disability Support Services: Students with disabilities who believe that they might need accommodations in this class are encouraged to contact the Disability Support Services at 201-360-4157 as soon as possible to better ensure that such assistance can be implemented in a timely fashion. All disabilities must be documented by a qualified professional such as a physician, licensed learning disability teacher (LDTC), psychologist, psychiatric nurse, licensed social worker or licensed professional counselor, who is qualified to assess the disability that the student claims to have and note recommendations on accommodations for the student. All information provided to the Disability

Support Services Program will be confidential between the programs, professors involved with the student and the individual student.

Course Outline:

Week	Topic	Reading Assignment
1,2,3	**12-MOSFETS** **12-1** The Depletion-Mode MOSFET **12-2** D-MOSFET Curves **12-3** Depletion-Mode MOSFET Amplifiers **12-4** The Enhancement-Mode MOSFET **12-5** The Ohmic Region **12-6** Digital Switching **12-7** CMOS **12-8** Power FETs **12-9** High-Side MOSFET Load Switches **12-10** MOSFET H-Bridge **12-11** E-MOSFET Amplifiers **12-12** MOSFET Testing	Chapter 12, p471
4,5	**13-THYRISTORS** **13-1** The Four-Layer Diode **13-2** The Silicon Controlled Rectifier **13-3** The SCR Crowbar **13-4** SCR Phase Control **13-5** Bidirectional Thyristors **13-6** IGBTs **13-7** Other Thyristors **13-8** Troubleshooting	Chapter 13, p525
6,7	**14-FREQUENCY EFFECTS** **14-1** Frequency Response of an Amplifier **14-2** Decibel Power Gain **14-3** Decibel Voltage Gain **14-4** Impedance Matching **14-5** Decibels above a Reference **14-6** Bode Plots **14-7** More Bode Plots **14-8** The Miller Effect **14-9** Risetime-Bandwidth Relationship **14-10** Frequency Analysis of BJT Stages **14-11** Frequency Analysis of FET Stages **14-12** Frequency Effects of Surface-Mount Circuits	Chapter14, p568
8	**MIDTERM REVIEW**	
9	**MIDTERM TEST**	
10,11	**15-DIFFERENTIAL AMPLIFIER**	Chapter 15, p624

	15-1 The Differential Amplifier **15-2** DC Analysis of a Diff Amp **15-3** AC Analysis of a Diff Amp **15-4** Input Characteristics of an Op Amp **15-5** Common-Mode Gain **15-6** Integrated Circuits **15-7** The Current Mirror **15-8** The Loaded Differential Amp	
12,13	**16-THE OPERATIONAL AMPLIFIER** **16-1** Introduction to Op Amps **16-2** The 741 Op Amp **16-3** The Inverting Amplifier **16-4** The Noninverting Amplifier **16-5** Two Op-Amp Applications **16-6** Linear ICs **16-7** Op-Amps as Surface-Mount Devices	Chapter 16, p666
14	**Final Review**	
15	**Final Test**	

Laboratory Assignments

Week	Topic	Report	Week Due
4	The Silicon Control Rectifier (36)	Abridged	5
6	Frequency Effects (37)	Complete	8
9	The Differential Amplifier (38)	Abridged	11
11	Differential-Amplifier Supplement (39)	Complete	13

Academic Integrity Policy:

Academic integrity is central to the pursuit of education. For students at HCCC, this means maintaining the highest ethical standards in completing their academic work. In doing so, students earn college credits by their honest efforts. When they are awarded a certificate or degree, they have attained a goal representing genuine achievement and can reflect with pride on their accomplishment. This is what gives college education its essential value. Violations of the principle of academic integrity include:

- Cheating on exams.
- Reporting false research data or experimental results.
- Allowing other students to copy one's work to submit to instructors.
- Communicating the contents of an exam to other students who will be taking the same test.
- Submitting the same project in more than one course, without discussing this first with instructors.
- Submitting plagiarized work. Plagiarism is the use of another writer's words or ideas without properly crediting that person. This unacknowledged use may be from published books or articles, the Internet, or another student's work.

When students act dishonestly in meeting their course requirements, they lower the value of education for all students. Students who violate the college's policy on academic integrity are subject to failing grades on exams or projects, or for the entire course. Serious cases may be reported to a division dean or director for further disciplinary action, including suspension or dismissal from HCCC.

Detailed information on the College's Academic Integrity policy may be found in the *HCCC Student Handbook*. The handbook also contains useful information for students on completing research projects and avoiding plagiarism.

Hudson County Community College Classroom Recording Policy

Student Classroom Recording Policy

- Hudson County Community College prohibits the audio-visual recording, transmission, and distribution of classroom sessions. Classes may only be recorded with the advance written permission of the instructor. The Hudson County Community College classroom recording policy must be listed in all syllabi.
- All classroom recordings can only be used for academic purposes by students enrolled in that class. Recordings may not be shared, reproduced, or uploaded to public websites or other mediums, and these recordings may contain copyrighted material and are prohibited from any form of commercial use.
- All students and guests must be informed that the class may be recorded. Due to issues related to privacy and the possible inhibition of student participation, instructors should be mindful of the effects of permitting classroom recording.
- Instructors should retain electronic or paper copies of their written consent to grant classroom recordings.
- Students must destroy their recordings at the end of the semester.
- Students who are granted permission to record their class by the office of Disability Support Services should inform the instructor beforehand and are subject to the policies outlined in this document.
- Violation of this policy is subject to disciplinary action listed under the code of conduct as included in the Student Handbook.

Instructor Classroom Recording Policy

- Instructors may record their classes if students are informed in writing in advance that recording will take place. Instructors may distribute their own lectures, but this must be limited to the lecture portion of the class. Recordings of student presentations or activities may be used in the class if the students are notified in advance of the recording. Recordings of student presentations or activities may not be distributed in any way without the advance written consent of the students.