

NEW YORK CITY COLLEGE OF TECHNOLOGY
The City University of New York

DEPARTMENT: Electrical and Telecommunications
Engineering Technology

SUBJECT CODE EET1240/ET212
AND TITLE: Electronics

COURSE DESCRIPTION: Characteristics and Applications of semiconductor elements such as diodes, bipolar junction transistors and field effect transistors are covered. Applications include dc power supplies, voltage regulators, small signal amplifiers (single and multi-stage), operational amplifiers, negative feedback, and frequency response.

PRE -COREQUISITE: EET1222/ET242
TEXTBOOK: Electronics Devices
By Floyd, Seventh Edition, 2005 Prentice Hall

**COURSE OBJECTIVES/
COURSE OUTCOMES** Upon completion of this course, students will be able to:

1. Analyze diode circuits used for clipping and clamping of signals (ABET Criteria 2a, 2b, 2c, 2d, 2e, 2f, 2k).
2. Analyze diode applications for half-wave and full-wave rectifier circuits (ABET Criteria 2a, 2b, 2c, 2d, 2e, 2f, 2k).
3. Analyze transistor common emitter, common collector, common base amplifiers and their applications (ABET Criteria 2a, 2b, 2c, 2d, 2e, 2f, 2k).
4. Analyze and design semiconductor amplifiers (single and multi-stage (ABET Criteria 2a, 2b, 2c, 2d, 2e, 2f, 2k).
5. Analyze amplifier frequency response (High and Low Bands) and applications for these amplifiers. (ABET Criteria 2a, 2b, 2c, 2d, 2e, 2f, 2k).
6. Use of negative feedback for amplifiers and the application of operational amplifiers. (ABET Criteria 2a, 2b, 2c, 2d, 2e, 2f, 2k).

TOPICS: Topics include semiconductor diodes characteristics, diode clipping and clamping circuits, zener diode regulators and applications. Characteristics of bipolar junction transistors and field effect transistors. Analysis and design of semiconductor amplifiers.

CLASS HOURS: 4

CREDITS: 4

Prepared by: Professors S. Smilowitz
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Course Coordinator: Professor E. Ayen
email: EAyen@citytech.cuny.edu

GRADING POLICY: EET 1240/ET 212

Homework and class participation	10%
Exams	60%
Final Examination	30%

<u>Letter Grade</u>	<u>Numerical Grade Ranges</u>	<u>Quality</u>
A	93-100	4.0
A-	90-92.9	3.7
B+	87-89.9	3.3
B	83-86.9	3.0
B-	80-82.9	2.7
C+	77-79.9	2.3
C	70-76.9	2.0
D	60-69.9	1.0
F	59.9 and below	0.0

Week	Topic	Reading Assignment	Homework
1	Introduction to Electronics. Semiconductor Physics. The PN junction. Biasing the PN junction. The diode.	Chapter 1 Pages 1-38	1, 3, 5, 7, 9,11, 13, 15, 17, 19
2	Diode applications. Half-wave and full-wave rectifiers. Power supply filters.	Chapter 2 Pages 48-72	1-11
3	Clipping and clamping circuits. The diode data sheet.	Chapter 2: Pages 72-80	12, 14, 24, 26
4	Zener diode and Applications. Zener regulation. Exam 1	Chapter 3 Pages 112-126	6, 7, 8, 10, 12, 13
5	Bipolar Junction Transistors (BJTs). Transistors characteristics and parameters. Basic transistor operation.	Chapter 4: Pages 168-186	1, 6,7, 9,12,15, 18, 20
6	Transistor as an amplifier. Transistor as a switch.	Chapter 4 Pgs. 187-192	22,24-26
7	Transistor Bias Circuits BJT. Small signal Analysis.	Chapter 5 Pages 222-240 Chapter 6 Pages 276-273	Chapter 5 2-5,9,10,20,24
8	Common-Emitter Amplifiers. Exam 2	Chapter 6 Pages 274-286	7-12
9	Common-Collector amplifiers. Common-Base amplifiers. Multistage amplifiers.	Chapter 6 Pages 287-300	18,20,24,25,30
10	General concepts of amplifiers frequency response. The Decibel. Low-frequency amplifier response.	Chapter 10 Pages 475-492	2,5,6,9,10
11	High-frequency amplifier response. Operational amplifiers (OP AMPs). The differential amplifier.	Chapter 10 Pages 500-512 Chapter 12 Pages 580-590	Chapter 19,22 Chapter 12 3,5,6,10
12	Negative feedback. Op-Amp configurations with negative feedback.	Chapter 12 Pages 591-603	14,16, 20, 22, 24
13	Junction Field Effect Transistors (JFETs) Exam 3	Chapter 7 Pages 326-340	1-7
14	FET Biasing Metal Oxide semiconductor FETs (MOSFETs).	Chapter 7 Pages 340-362	16,17, 20, 26, 28, 34, 35, 37
15	Final Exam		