

TECHNOLOGY 472 – Integrated Circuit Devices

2007-08 Catalog Data: TECH 472 Integrated Circuit Devices (3 Credits)

Course Description: Application of linear integrated circuits in communications, instrumentation, control systems and other related areas in electrical engineering technology.

Prerequisite: TECH 277 and TECH 376

Co-requisites: None

Textbook:

Instructor: Dr. Said Oucheriah, P.E

Office: SH 203

Office Hours: MW: 8:30 a.m.-10:00 a.m.

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Course Meetings:

Objective with relationship to ABET outcomes:

Learn about the operation, applications and limitations of a select number of integrated circuit devices used in communications, instrumentations and control systems (Outcome A, B, C, D, F, G, M, N).

ABET Learning Outcomes:

An engineering technology program must demonstrate that graduates have:

- A. An appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines.
- B. An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology.
- C. An ability to conduct, analyze and interpret experiments and apply experimental results to improve processes.
- D. An ability to apply creativity in the design of systems, components or processes appropriate to program objectives.
- E. An ability to function effectively on teams.
- F. An ability to identify, analyze and solve technical problems.
- G. An ability to communicate effectively in writing.
- H. An ability to communicate effectively orally.
- I. A recognition of the need for, and an ability to engage in lifelong learning.
- J. An ability to understand professional, ethical and social responsibilities.

- K. A respect for diversity and a knowledge of contemporary professional, societal and global issues.
- L. A commitment to quality, timeliness, and continuous improvement.
- M. An ability to program computers and/or utilize computer applications effectively.
- N. An ability to use modern laboratory techniques, skills, and/or equipment effectively.
- O. An ability to manage projects effectively.
- P. An ability to design, manipulate and manage industrial systems.
- Q. An ability to manage or lead personnel effectively.

TOPICS

I. Filters

- A. Switched Capacitors Filter Fundamentals
- B. State Variable Switched Capacitor Filter IC

II. Waveform Generators

- A. The 555 Timer
- B. Crystal Controlled Oscillators
- C. IC Function Generator
- D. Phase Locked Loop Fundamentals
- E. Totally Digital Synthesizer

III. Switching Regulators

- A. Step-Down Power Supply
- B. Step-Up Power Supply

IV. Nonlinear Circuits

- A. True RMS Converter
- B. Logarithmic and Antilogarithmic Amplifiers
- C. Multiplier Integrated Circuits
- D. Dividers
- E. Operational Transconductance Amplifiers

V. Analog-to-Digital and Digital-to-Analog Conversions (Time Permitting)

- A. Successive Approximation A/D Converter
- B. Flash A/D Converter
- C. Dual Slope A/D Converter
- D. Binary-Weighted-Input D/A Converter

Grading:	Lab/Projects	70%
	Final Project	30%

Attendance Policy:

Class attendance will not be taken. However, the student will be responsible for any/all lecture information, class assignments, or demonstrations given during his/her absence.

Tardiness is very disruptive to the class. Please be **ON TIME!!**

Lab attendance is mandatory! Missing three labs will result in an F grade.

LAB REPORTS ARE DUE AT THE BEGINNING OF THE LAB PERIOD, ONE WEEK AFTER THE PERFORMANCE OF THE EXPERIMENT.

NO EXCEPTIONS!!