
MIDDLESEX COUNTY COLLEGE

COURSE SYLLABUS

Department:	Engineering Technologies
Program:	Electrical Engineering Technology
Course Number:	ELT 110
Title of Course:	Electrical/Electronic Devices and Circuits
Curriculum Coordinator:	James Finne
Designation:	Required Course

Course Description:

Continuation of ELT 105. Topics include: applications of electric circuit theorems, inductive and capacitive devices and their use in ac and dc circuits, operational amplifier and transistor circuits. Computer analysis and simulation of electric/electronic circuits is performed. Theory is supplemented by laboratory experiments and projects.

Prerequisites:

ELT 105 Foundation of Electrical and Electronics Technology with a grade of “C” or better.

Co-requisite:

MAT 129 PreCalculus

Textbooks and /or other required material:

Electronics Technology Fundamentals by Paynter and Boydell, Pearson, 3rd Ed

Course objectives and their relationships to Student Outcomes:

1. Apply Superposition, Thevenin’s and Maximum Power Transfer theorems. **(SO e)**
2. Analyze AC circuits.
3. Analyze and design basic OP-AMP circuits. **(SO e)**
4. Analyze transistor amplifier and switching circuits.
5. Demonstrate as an individual and as a team member, problem solving, written and oral communication skills, as well as, the use of computers, calculators, and simulation software in the analysis of electric/electronic circuits. **(SO c, f)**

Topics Covered:

- Review of Fundamentals of Electricity and Electronics
- Superposition, Thevenin's and Norton's Theorems, and Maximum Power Transfer
- Capacitors and Inductors
- Reactance and Impedance of RC, RL, and RLC circuits
- AC power analysis
- Electronic Discrete Devices
- Transistor Amplifiers
- Transistor Switching Circuits
- Operational Amplifiers and related circuits

Laboratory Topics

- Super position theorem
- Thevenin's Theorem I
- Thevenin's Theorem II
- RC AC circuit
- RLC AC circuit
- Determining the inductor value in an RLC circuit
- Operational amplifiers
- Project: Operational amplifier application
- BJT amplifiers – gain and frequency response
- Project: Design of a BJT amplifier
- MOSFET circuits
- Student presentations

Class/Laboratory schedule. Number of sessions each week and duration of each session:

3 hours of lecture per week for 14 weeks

3 hours of laboratory per week for 14 weeks

Criterion 5 Contribution:

Technical Content

Prepared By:	Jack Waintraub	Date:	3/10/08
Updated By:	J. Waintraub	Date:	1/9/10
Rev 2:	J. Waintraub Update course learning outcomes and mapping to 2014-2015 ABET student outcomes	Date:	4/8/14
Rev 3:	T. Sabol Update Pre & Co-requisites and change course learning objectives	Date:	11/27/18
Rev 4:	General Update	Date:	3/15/21