MIDDLESEX
COUNTY COLLEGE

Engineering Technologies Department

Program: Electrical Engineering Technology

Course Number: ELT 210

Title of Course: Electrical/Electronics Devices and Circuits

Curriculum Coordinator: James Finne

Course Designation: Required

Course Description:
Continuation of ELT 110. Study of time-domain and frequency-domain concepts as it relates to passive and active circuits and systems. Additional topics, such as power supply applications, power control and power amplifier circuits are studied. Computers are used for simulation and analysis of electronic circuits. Laboratory experiments are used to supplement the studies of electronic circuits and to verify analytical results.

Prerequisite:
ELT 110

Co-requisite:
None

Textbooks (s) and /or other required material:
Electronics Technology Fundamentals by Paynter and Boydell, Pearson, 3rd Ed
On-line resources
Scientific Calculator

Course learning outcomes and their relationships to Student Outcomes:
1. Perform frequency analysis and design of passive and active filters. Draw and interpret Bode plots of frequency responses.
2. Analyze and design OP-AMP circuits, including oscillators. **(SO e)**
3. Analyze and design discrete voltage, current, and power amplifiers.
4. Analyze and design power supply circuits and systems.
5. Analyze SCR-TRAIAC and other power control devices and systems.
6. 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)**

Lecture Topics Covered:

- Time domain concepts-RC, RL, and RLC Transients
- Timers, Oscillators, and Integrators
- Frequency domain concepts-passive and active filters
- Resonance, Bode plots and DB
- Amplifier frequency response characteristics
- Power supplies
- Power switching devices and circuits
- Power electronics applications including PLCs

Laboratory Topics Covered:

- RC, RL and RLC Transients
- Timing circuits
- Passive and active filters
- Resonance, Bode plots and DBs
- Frequency response of amplifiers
- Regulated power supplies
- Switching power supplies
- Power amplifiers
- Power switching circuits
- Programmable Logic Controllers (PLCs)

Class/laboratory schedule. Number of sessions each week and duration of each session:
3 lecture hours per week for 14 weeks
3 laboratory hours per week for 14 weeks

Criterion 5 Contribution: Technical Content

Prepared By:	Jack L. Waintraub, P.E.	**Date:**	8/26/2008
Updated By:	Jack L. Waintraub, P.E.	**Date:**	9/20/2010
Rev 2:	Jack L. Waintraub, P.E. Update course outcomes and mapping to 2014-2015 ABET student outcomes	**Date:**	4/8/14
Rev 3:	General Update	**Date:**	3/15/21