

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Electronic Systems Technology Program
Revision Date: August 24, 2020

I. CATALOG DESCRIPTION

Course Number: ELEC1130
Course Title: Fundamentals of Electronic Circuits
Co-Prerequisite(s): None
Catalog Description: Fundamentals of Electronic Circuits covers electronic component identification, schematics and the introduction to simulation software, basic electrical concepts, Ohm's Law, Kirchhoff's laws; series, parallel, and combination circuits. Familiarization with VOM, oscilloscope, power supply and other basic lab equipment. Additionally, standard soldering and ESD training will be taught.
Credit Hours: 6
Class Hours: 68
Lab Hours: 68
Total Contact Hours: 136

II. COURSE OBJECTIVES: *Course will:*

- A. Demonstrate how to use test equipment properly.
- B. Describe and demonstrate soldering techniques.
- C. Identify electronic component and uses.
- D. Prepare schematic and diagrams in ECAE (Electronic Computer Automated Engineering) software.
- E. Analyze DC circuits, series, parallel and combination.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Demonstrate how to use basic test equipment.
 - 2. Demonstrate how to solder through hole and surface mount components.
 - 3. Demonstrate an understanding of electronic component recognition, schematic drawing and reading.
 - 4. Demonstrate the ability to use ECAE software.
 - 5. Demonstrate knowledge of series, parallel, and series/parallel combination circuits and the appropriate analysis techniques.
 - 6. Formulate and evaluate the application of Ohm's Law and Kirchhoff's Laws in DC circuits.
- B. General Learning Outcomes (GELOs)
 - 1. GELO #3: Critical Thinking & Problem Solving
Outcome 2: Synthesize information to arrive at reasoned solutions to problems.

IV. CONTENT/TOPICAL OUTLINE

- A. Basic Electrical Concepts
 - 1. Introduction, components, quantities, and units
 - 2. Basic electricity, voltage, current, resistance
 - 3. Ohm's Law, energy and power
 - 4. Soldering

- B. Series DC circuits
 - 1. Series circuit configuration
 - 2. Ohm's Law in series circuit
 - 3. Calculating resistance, current and power
 - 4. Voltage divider and Kirchhoff's Voltage Law
- C. Parallel DC circuits
 - 1. Parallel circuit configuration
 - 2. Ohm's Law in parallel circuit
 - 3. Calculating resistance, current and power
 - 4. Current divider and Kirchhoff's Current Law
- D. Series-Parallel Circuits
 - 1. Series-parallel circuit configuration
 - 2. Ohm's Law in series/parallel circuits
 - 3. Calculating resistance, current and power
 - 4. Current divider and voltage divider
 - 5. Kirchhoff's Current Law and Kirchhoff's Voltage Law
 - 6. Loaded voltage and current divider circuits
- E. Capacitors and Inductors in DC circuits
 - 1. Principles and applications of capacitors in DC circuits
 - 2. Principles and applications of inductors in DC circuits
- F. Final Comprehensive Exam

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s): Floyd, Thomas L., *Electronic Fundamentals: A Systems Approach*, 2014
ISBN: 978-0-13-314363-8
- B. Supplies: Tool bag and contents purchased via bookstore

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
 - 1. Technology enhanced lecture
 - 2. Classroom discussion
 - 3. Interactive group activities
 - 4. Audio visual materials
 - 5. Presentation by experts from the Electronics and Networking industry

VII. METHODS OF EVALUATION

- A. Methods of evaluation, although determined by the individual instructor, traditionally includes a combination of the following:
 - 1. Participation
 - 2. Daily assignments
 - 3. Written exams and/or quizzes
 - 4. Performance and observational assessment

VIII. SPECIFIC COURSE REQUIREMENTS

- A. A minimum grade of D is required.
- B. Credit by Examination: Credit for the course CANNOT be earned through Credit by Examination.