

## LABETTE COMMUNITY COLLEGE BRIEF SYLLABUS

### **SPECIAL NOTE:**

This brief syllabus is not intended to be a legal contract. A full syllabus will be distributed to students at the first class session.

### **TEXT AND SUPPLEMENTARY MATERIALS USED IN THE COURSE (if any):**

Please check with the LCC bookstore <http://www.labette.edu/bookstore> for the required texts for this class.

**COURSE NUMBER:** INDU 123

**COURSE TITLE:** ELECTRONIC DEVICES

**SEMESTER CREDIT HOURS:** 3

**DEPARTMENT:** Manufacturing

**DIVISION:** Workforce Education/Community Services

**PREREQUISITE:** INDU 125 Fundamentals of Electronics DC/AC  
INDU 167 Fundamentals of Electronics DC/AC LAB  
Or Equivalent

**REVISION DATE:** 1/2017

### **COURSE DESCRIPTION:**

This course will provide a fundamental knowledge of DC Power Supplies, Diodes, Transistors, Amplifiers and Troubleshooting. Operational Amplifiers, Oscillators, Integrated Circuits, Thyristors, Switch Mode Regulators, and AM/FM Radio Circuits.

### **COURSE OUTCOMES AND COMPETENCIES:**

**Students who successfully complete this course will be able to:**

1. Understand and demonstrate proficiency in laboratory practices

- Apply proper OSHA safety standards
- Make electrical connections
- Identify and use hand tools and power tools properly
- Demonstrate acceptable soldering and de-soldering techniques
- Demonstrate knowledge of surface mount technology

2. Demonstrate proficiency in solid-state devices

- Identify properties of semiconductor materials
- Identify and define operating characteristics and applications of pn junctions

- Identify and define operating characteristics and applications of special diodes
- Analyze diode circuits
- Construct diode circuits
- Troubleshoot diode circuits
- Identify and define operating characteristics and applications of field effect transistors (FET's)
- Setup and operate a DMM for solid-state devices
- Setup and operate power supplies for solid-state devices
- Setup and operate oscilloscopes for solid-state devices
- Setup and operate signal generators for solid-state devices
- Setup and operate capacitor/inductor analyzers for solid-state devices
- Analyze solid-state devices
- Setup and operate impedance bridges for solid-state devices
- Setup and operate curve tracers
- Setup and operate transistor testers
- Understand electro-static devices

### 3. Demonstrate proficiency in analog circuits

- Identify and define operating characteristics and applications of differential and operational amplifiers
- Construct differential and operational amplifiers
- Troubleshoot differential and operational amplifiers
- Identify and define operating characteristics and applications of power supply regulators
- Construct power supply regulators
- Troubleshoot power supply regulators
- Identify and define operating characteristics and applications of active filters
- Construct active filters
- Troubleshoot active filters
- Identify and define operating characteristics and applications of sinusoidal and non-sinusoidal oscillators
- Demonstrate basic knowledge of microwave theory
- Demonstrate basic knowledge of lasers
- Construct oscillators
- Troubleshoot oscillators
- Identify and define operating characteristics and applications of motor phase-control circuits (single-phase and multiphase)
- Identify and define operating characteristics and applications of cathode ray tubes (CRT's) as used in video terminals
- Identify and define operating characteristics and applications of optical devices
- Setup and operate a DMM for analog circuits
- Setup and operate power supplies for analog circuits
- Setup and operate oscilloscopes for analog circuits
- Setup and operate frequency counters for analog circuits

- Setup and operate signal generators for analog circuits
- Setup and operate impedance bridges for analog circuits

#### 4. Demonstrate proficiency in technical recording and reporting

- Draw and interpret electronic schematics
- Record data and design curves and graphs
- Write reports and make oral presentations
- Maintain test logs
- Make equipment-failure reports
- Specify and requisition simple electronic components
- Compose technical letters and memoranda
- Write formal reports of laboratory experiences
- Draft preventive maintenance and calibration procedures

#### 5. Demonstrate employability skills

- Conduct a job search
- Secure information about a job
- Identify documents that may be required when applying for a job
- Complete a job application
- Demonstrate competence in job interview techniques
- Identify or demonstrate appropriate responses to criticism from employer, supervisor or other persons
- Identify acceptable work habits
- Demonstrate knowledge of how to make job changes appropriately
- Demonstrate acceptable employee health habits