

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.

<u>COURSE NUMBER:</u>	INDU 125
<u>COURSE TITLE:</u>	FUNDAMENTALS OF ELECTRONICS DC/AC
<u>SEMESTER CREDIT HOURS:</u>	3
<u>DEPARTMENT:</u>	Manufacturing
<u>DIVISION:</u>	Workforce Education/Community Services
<u>PREREQUISITE:</u>	None
<u>REVISION DATE:</u>	September 2011

COURSE DESCRIPTION:

This course provides a fundamental knowledge of analysis techniques used to solve for current, voltage, wattage, and resistance in various DC/AC circuits.

COURSE OUTCOMES AND COMPETENCIES:

Students who successfully complete this course will be able to:

1. 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. Solve problems, identify sources, define, apply, read, interpret, measure and troubleshoot proficiency in DC/AC circuits

- Solve algebraic and trigonometric problems to include exponentials (prerequisite to DC)
- Relate electricity to the nature of matter
- Apply and relate Ohm's law

- Apply and relate Ohm's law to series circuits, to parallel circuits, and to series-parallel circuits
- Use the procedures necessary for solutions using various theorems, including: Branch Circuit, Kirchoff's Laws, Thevenin's, Superposition, Norton's and maximum power
- Read and interpret color codes and symbols to identify electrical components and values
- Measure properties of a circuit using DMM meters
- Compute and measure conductance and resistance of conductors and insulators
- Construct and verify operation of series circuits, parallel circuits, series-parallel circuits, voltage divider circuits (loaded and unloaded), DC circuits
- Troubleshoot series circuits, parallel circuits, series-parallel circuits, voltage divider circuits (loaded and unloaded)
- Set up and operate a DMM for DC circuits
- Set up and operate power supplies for DC circuits.

<p>3. Solve problems, identify sources, define, apply, read, interpret, measure and troubleshoot proficiency in AC circuits</p>

- Identify sources of electricity, identify and define voltage divider circuits (loaded and unloaded), identify the output of differentiators and integrators, identify properties of an AC signal, and AC sources
- Define voltage, current, resistance, power, energy, magnetic properties of circuits, devices, RC and RL time constants, and basic motor theory and operation.
- Define the characteristics of AC capacitive circuits, of AC inductive circuits, or RLC circuits (series, parallel, and complex), of series and parallel resonant circuits, of filter circuits, and of poly-phase circuits.
- Define and apply the principles of transformers to AC circuits
- Apply and relate Ohm's law
- Apply and relate Ohm's law to series circuits, to parallel circuits, and to series-parallel circuits
- Use the procedures necessary for solutions using various theorems, including: Branch Circuit, Kirchoff's Laws, Thevenin's, Superposition, Norton's, and maximum power
- Read and interpret color codes and symbols to identify electrical components and values
- Measure properties of a circuit using DMM meters
- Compute and measure conductance and resistance of conductors and insulators
- Construct and verify operation of series circuits, parallel circuits, series-parallel circuits, voltage divider circuits (loaded and unloaded), DC circuits, AC capacitive circuits, AC inductive circuits, AC circuits utilizing transformers, RC Circuits (series, parallel, and complex), series and parallel resonant circuits.
- Troubleshoot series circuits, parallel circuits, series-parallel circuits, voltage divider circuits (loaded and unloaded), differentiator, integrator circuits, AC capacitive circuits, AC inductive circuits, AC circuits utilizing transformers, and filter circuits.

- Set up and operate a DMM for DC and AC circuits, oscilloscopes for DC and AC circuits, power supplies for AC circuits, frequency counters for AC circuits, signal generators for AC circuits, and impedance bridges for AC circuits
- Analyze capacitor/inductor for AC circuits

4. Demonstrate proficiency in technical recording & 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