LABETTE COMMUNITY COLLEGE BRIEF SYLLABUS

SPECIAL NOTE:

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 127

COURSE TITLE: DIGITAL LOGIC CIRCUITS WITH LAB

SEMESTER CREDIT HOURS: 3

DEPARTMENT: Manufacturing

DIVISION: Continuing Education/Workforce

PREREQUISITE: None

COURSE DESCRIPTION:
Theory and experimentation with building block circuits in logic systems and computers in a hands-on environment. Small scale ICs are used to learn the basic fundamentals of these systems and subsystems. Simply analysis techniques are taught to build the student's ability to troubleshoot. Binary mathematics and Boolean concepts are introduced and explained as needed.

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 digital devices
   - Define and apply numbering systems (hex, bin, and oct.) to codes and arithmetic
   - Analyze/minimize logic circuits using Boolean operations
   - Setup and operate a DVM for digital devices
   - Setup and operate a logic probe for digital devices

- Setup and operate power supplies for digital devices and solve power distribution and noise problems
- Setup and operate pulsers for digital devices
- Setup and operate oscilloscopes for digital devices
- Identify types of logic gates and their truth tablets
- Construct logic gates using discrete components
- Troubleshoot logic gates
- Analyze types of flip-flops and their truth and excitation tables
- Construct flip-flops using discrete components
- Troubleshoot flip-flops
- Identify, define, and measure characteristics of integrated circuit IC logic families
- Identify types of registers and counters
- Construct registers and counters for flip-flops and logic gates
- Troubleshoot registers and counters
- Analyze clock and timing circuits
- Construct clock and timing circuits
- Troubleshoot clock and timing circuits
- Identify and relate types of logic-arithmetic circuits
- Construct logic-arithmetic circuits
- Troubleshoot logic-arithmetic circuits
- Identify types of encoding and decoding devices
- Construct encoders and decoders
- Troubleshoot encoders and decoders
- Identify types of memory circuits (static, dynamic, volatile, nonvolatile, etc)
- Use memory devices in circuits
- Troubleshoot memory-devices circuits
- Relate the uses of digital-to-analog and analog-to-digital circuits
- Construct digital-to analog and analog-to-digital circuits
- Troubleshoot digital-to-analog and analog-to-digital circuits
- Identify types of displays (LED, LCD, etc.)
- Construct display circuits
- Troubleshoot display circuits
- Analyze representative digital systems (class project)
- Design, construct, and troubleshoot representative digital systems (class project)
- Demonstrate applications of representative digital systems (class project)

3. 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

4. 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