Louisiana Delta Community College
Academic Affairs Master Syllabus

Course Name: DIGITAL CIRCUITS I
Course Number: ETRN 1230
Credit Lecture hours: 1   Credit Lab Hours: 2   Contact Hours: 75
Textbook, Author, and Publisher: To be provided by College Campus
Instructor Information: To be provided by College Campus
Class Location: To be provided by College Campus

Course Description: An introduction to numbering systems, logic gates, digital integrated circuits, Boolean logic operations

Prerequisites: ETRN 1120, 1130 and 1210
Co-requisites: None

Learning Outcomes:
On completion of this course, the student will be able to:

Competency:
   1. Perform conversions of various numbering systems.
Objectives:
   a. Define terms associated with the various numbering systems.
   b. Convert numbers in decimal, binary, octal, and hexadecimal.

Competency:
   2. Analyze various types of digital integrated circuits.
Objectives:
   a. Define terms associated with digital integrated circuits.
   b. Describe the characteristics of digital integrated circuits.
   c. Identify the different families of logic.

Competency:
   3. Analyze NOT, OR, AND, NAND, and NOR logic gates.
Objectives:
   a. Define terms and identify types of logic gates.
   b. Describe the operation of logic gates.
   c. Construct basic logic gates.
   d. Troubleshoot and repair basic logic circuits.

Competency:
   4. Analyze Exclusive OR and Exclusive NOR logic gates.
Objectives:
   a. Define terms associated with Exclusive OR and Exclusive NOR logic gates.
   b. Describe the operations of Exclusive OR and Exclusive NOR logic gates.

Learning Outcomes continued:

Competency:
    5.   Describe Boolean operations and logic.
Objectives:
    a.   Define terms associated with Boolean operations and logic.
    b.   Describe how to simplify combination/sequential logic circuits using Boolean operations.

Competency:
    6.   Demonstrate the use of Reset-Set (RS), Data (D), and JK flip-flops.
Objectives:
    a.   Define associated terms.
    b.   Describe the operation of flip-flop circuits.
    c.   Construct and demonstrate the types of flip-flops.
    d.   Troubleshoot and repair flip-flop circuits.

Competency:
    7.   Demonstrate the principles of binary counters.
Objectives:
    a.   Define terms associated with binary counters.
    b.   Describe the operations of binary counters.
    c.   Construct binary counters.
    d.   Troubleshoot and repair various binary counters.

Competency:
    8.   Demonstrate the principles of shift registers.
Objectives:
    a.   Describe the operational characteristics and uses of shift registers.
    b.   Construct and troubleshoot shift registers.

Competency:
    9.   Demonstrate the operations of clock and timing circuits.
Objectives:
    a.   Describe the principles and characteristics of clock and timing circuits.
    b.   Explain the uses of clock and timing circuits.
    c.   Construct clock and timing circuits.
    d.   Troubleshoot and repair clock and timing circuits.
Competency:
    10. Demonstrate the operations of binary encoders and decoders.
Objectives:
    a.   Define associated terms.
    b.   Explain the various uses of digital encoders and decoders.
    c.   Construct digital encoders and decodes.
    d.   Troubleshoot and repair digital encoders and decoders.

Learning Outcomes continued:

Competency:
    11. Demonstrate the operations of digital display circuits and devices.
Objectives:
    a. Define terms associated with digital displays.
    b. List the uses of digital displays.
    c. Identify the principles of digital displays.
    d. Construct digital display circuits.
    e. Troubleshoot and repair digital display circuits and devices.

Competency:
    12. Describe the conversions of digital to analog (D-A) and analog to digital (A-D) circuits.
Objectives:
    a. Identify the design and construction of D-A and A-D circuits.
    b. Explain the principles and operation of D-A and A-D circuits.
    c. Analyze D-A and A-D conversions.
    d. Troubleshoot and repair D-A and A-D circuits.

Competency:
    13. Demonstrate the operation of digital arithmetic-logic circuits.
Objectives:
    a. Define terms associated with arithmetic-logic circuits.
    b. Describe the principles of arithmetic-logic circuits.
    c. Analyze digital arithmetic-logic circuits.
    d. Troubleshoot and repair digital arithmetic-logic circuits.

Competency:
    14. Identify the principles and types of multiplexer and demultiplexer circuits.
Objectives:
    a. Define terms in conjunction with multiplexer and demultiplexer circuits.
    b. Describe the operations of multiplexer and demultiplexer circuits.
    c. Troubleshoot and repair multiplexer and demultiplexer circuits.

Assessment Measures: To be provided by the College Campus.

Library Resource Center:
The Delta Library and Learning Resource Center is committed to providing quality information and learning resources and services, including technology, in supporting the overall mission of Delta Community College and its commitment to lifelong learning.

Special Accommodations:

Louisiana Delta Community College complies with Section 504 of the Rehabilitation Act, as well as the Americans with Disabilities Act. Students with disabilities who attend the Monroe campus may make a request by contacting the Director of Counseling and Disability Services (See College Directory for contact information.) at the beginning of each semester. Reasonable accommodations will be attempted for students with documented disabilities. If an impairment is identified later in the semester, a non-retroactive accommodation plan will be developed. Students at satellite campuses should contact the Coordinator of Student Affairs at their particular campus.

Title IX:

Louisiana Delta Community College is committed to protecting the rights of students, which includes compliance with Title IX requirements. As such, the institution and members of our community will not tolerate the offenses of dating violence, domestic violence, sexual assault, and stalking. Students with Title IX concerns should contact the College's Title IX Coordinator (See College Directory for contact information.) Students are required to complete Sexual Assault Awareness and Prevention Online Training. Access to this online course will be sent out through the Delta email account.

Student Code of Conduct:

Louisiana Delta Community College encourages an environment of academic integrity and mutual respect. Students should read and follow both academic and behavioral expectations identified in the Code of Student Conduct that can be found online at www.ladelta.edu. Students are expected to act with integrity, respect the rights of others, and conduct themselves in a professional manner. The Honor Code prohibits academic misconduct such as cheating, engaging in unauthorized collaboration, and plagiarism. Violations of the Code of Student Conduct may result in disciplinary action as provided in the Code. Incidents are reported through the online Student Conduct system.