Bossier Parish Community College
Master Syllabus

Course Prefix and Number: TEED 201 **Credit Hours:** 3-2-1

Course Title: Introduction to Digital Electronics and Programmable Logic Controllers

Course Prerequisite: TEED 101

Textbook(s): Petruzella, Frank D. LogixPro PLC Lab Manual, 4th Edition ISBN: 978-0-07-747407-2

Course Description: An introduction to programmable logic controllers (PLCs) covering installation, programming and maintaining PLC systems and digital topics including logic gates, truth tables, counters, number systems, and memory systems.

Learning Outcomes:
At the end of the course, the student will:

A. identify and explain terminology, number systems and boolean logic principles associated with digital electronics;
B. prepare timing and truth table diagrams to support analysis and troubleshooting of digital logic circuitry;
C. interpret and apply technical information contained in vendor supplied technical data sheets;
D. identify and explain basic components and terminology associated with PLC hardware and functionality;
E. interpret and explain PLC timers, counters and jumps implementable via PLC's for process automation and control; and
F. interpret and explain the logic function of data movement instructions within a PLC including sequencer logic used in process automation and control

To achieve the learning outcomes, the student will or will be able to:
(The letter designations at the end of each statement refer to the learning outcome(s).)

1. convert binary to decimal, hexadecimal to binary, and octal to decimal; (A)
2. list the symbol, truth table, function, and Boolean expression for the eight basic logic gates; (B,C,D)
3. given a Boolean expression, draw a network of logic symbols which will perform that function; (A,B)
4. translate from one code to another in whole numbers; (A)
5. solve binary addition and binary subtraction problems by hand. (A, B, C, F)
6. identify basic parts of, and differences between, PLC's and computers; (D)
7. list and describe the function of the hardware components used in PLC systems; (D)
8. define and identify the function of a PLC memory map and the function of internal relay instruction; (D,E,F)

9. identify the function of electromagnetic control relay and switches commonly found in the PLC's; (D,E,F)
10. convert fundamental relay ladder diagrams to PLC logic ladder programs; (D,E,F)
11. describe and use PLC timer and counter instructions in programs; (D) and
12. describe the forcing capability of a PLC. (D)

Course Requirements: Complete all homework assignments, online assignments, lecture tests, lab assignments and final exam.

Course Grading Scale:

90 – 100 = A
80 – 89 = B
70 – 79 = C
60 – 69 = D
0 – 59 = F

Attendance Policy: The college attendance policy is available at http://www.bpcc.edu/catalog/current/academicpolicies.html

Course Fees: This course is accompanied with an additional non-refundable fee for supplemental materials, laboratory supplies, software licenses, certification exams, and/or clinical fees.

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