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

Course Title: Basic Digital Electronics

Course Prerequisite: TEED 101


Course Description: A course in basic digital circuits with emphasis on logic gates, truth tables, counters, binary code, hexadecimal code, decoder/driver, three-state logic, multivibrators, RAM, ROM, and registers.

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. measure physical parameters such as frequency, pulse characteristics, data packets, timing/clocking, and the like to support analysis and troubleshooting of digital logic circuits;
C. prepare timing and truth table diagrams to support analysis and troubleshooting of digital logic circuitry;
D. interpret and apply technical information contained in vendor supplied technical data sheets; and
E. explain the application of half-adders and full-adders and subtractors in digital math processes.

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. differentiate between digital and analog signals; (B)
2. list types of multivibrators used in making circuits that produce digital signals; (B, D, E)
3. convert binary to decimal, hexadecimal to binary, and octal to decimal; (A, B, C, D, E)
4. list the symbol, truth table, function, and Boolean expression for the eight basic logic gates; (A, D, E)
5. given a Boolean expression, draw a network of logic symbols which will perform that function; (A, D, E)
6. given a sum-of-products Boolean expression, implement the expression using NAND gates; (A, D, E)
7. translate from one code to another in whole numbers; (A, D, E)
8. compare the important characteristics of LCD, LED, and vacuum fluorescent seven-segment displays; (A, D, E)
9. fill in a blank truth table for a D and J-K flip-flop; (A, D, E)
10. draw a symbol for a Schmitt trigger inverter and describe at least one use for the device; (A, D, E)
11. draw from memory a circuit diagram of a ripple counter using J-K flip-flops; (A, D, E)
12. draw a block diagram of a frequency divider circuit; (A, B, C, D, E)
13. draw from memory a circuit diagram of a series shift register using D flip-flops; (A, B, C, D, E)
14. identify diagrams for a half adder, full adder, half subtractor and able to draw the block symbols for each; (A, B, C, D, E) and
15. solve binary addition and binary subtraction problems by hand. (A, B, C, D, E)

**Course Requirements:** Complete all homework 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](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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