

**TITLE:** LATI ON-LINE ELECTRONICS FOR HIGH SCHOOL STUDENTS

**COURSE TITLE:** CT00123 –**DIGITAL Circuits-** .5 CREDIT HOUR

**TIME:** TBD through cooperation with the Corona Learning Center

**INSTRUCTOR:** Cheryl Rondeau-Bassett

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### **Mission Statement**

Lake Area Technical Institute offers superior, comprehensive technical education, creating a foundation for success in an every-changing world.

### **Vision Statement**

Lake Area Technical Institute will be the leader in technical education working in partnership with business and industry and all levels of education. Lake Area Tech staff will integrate the latest technology and methods of delivering quality education to meet merging global workforce demands. Lake Area Tech will continue to develop marketing strategies to promote technical education and will maintain excellence in all programs.

### **COURSE DESCRIPTION:**

This is a hands-on (the students uses laboratory equipment) intermediate-level electronics course that provides an understanding of digital circuitry. Students will learn about binary and hexadecimal numbering systems, gates, the various types of flip-flops, registers, and memory circuits. Additionally, the student will learn how to use electronic test equipment – especially the function generator, the logic probe, and the oscilloscope.

*Topics Covered* – The following topics will be covered:

1. Digital Circuits
2. Digital Logic Function
3. Combination Logic Function
4. Flip Flop Circuits
5. Register and Memory Circuits
6. Arithmetic Counting Circuits
7. Conversion and Data Circuits
8. Microprocessors

*Laboratory Exercises*– each student will perform the following labs:

1. Buffers and Inverters
2. Digital Test Equipment
3. AND, OR, NOT, NAND, NOR, XOR Gates
4. Combinational Logic Circuits
5. Number Systems
6. Base 10 Binary Conversion
7. Binary to 7 Segment Conversion

8. 4 Bit Comparator
9. RS, Clocked RS, D Type, JK Type, Master Slave Flip-Flop
10. 4 Bit Storage, 4 Bit Shift, 8 Bit Shift Register
11. 64 Bit Memory Circuit
12. Ripple, Up, Down Counter
13. 4 Bit Adder and Subtractor
14. D to A Conversion
15. Data Selection, Data Distribution Circuits
16. 8086 Microprocessor Circuit

### **PROGRAM OF STUDY:**

This is the third of four-courses offered by CATE. The courses in this series are DC Circuits, AC Circuits, Analog Circuits and Digital Circuits.

### **COURSE LENGTH:**

All CATE courses are self paced; however, students enrolled in DC Circuits should be able to complete the coursework meeting one hour per day for one standard semester.

**COURSE PREREQUISITES:** DC Circuits & Algebra I

This course requires skills in Algebra. It is recommended that the student has passed Algebra I with a C or above prior to enrolling in this course.

Basic foundation skills in the areas of reading, writing, speaking, listening, problem solving, and reasoning are also important.

Responsibility, self-discipline and integrity are vital.

### **COURSE POLICIES:**

1. This is an on-line course, taught primarily using Computer Aided Instruction (CAI), which has been developed by the NIDA Corporation. It also provides exposure to interactive video, hands-on circuit construction, field trips, and regional competition.
2. Students are expected to complete each lesson in the NIDA curriculum. It is required that all students take each of the Block Tests and the Final Test. Lessons must be completed with a minimum score of 70%. All students will complete the pre- and post-tests.
3. Students will work independently; however, they may work in pairs on projects and on the CATE competition.
4. Student evaluation is based on average lesson scores, average Block Tests, the Final Test, pre- and post-test differences, and teacher discretion.
5. **Any form of dishonesty is unacceptable. There is no excuse for cheating and any student caught doing so may be expelled from the course.**

