1. *Course number and name*

**ENGR 357: Digital Design Lab**

1. *Credits and contact hours*

1 credit hours; One 3-hour lab/per week

1. *Instructor’s or course coordinator’s name*

Instructor: Taylor Artunian

Course coordinator: Hamid Shahnasser, Professor of Electrical and Computer Engineering

1. *Textbook, title, author, and year*

Hu, S. C., Computer Logic Experiments. Second Edition.

* + 1. *References*
  1. M. Morris Mano & Michael D. Ciletti, Digital Design with an Introduction to the Verilog HDL, Fifth Ed

1. *Specific course information*

*a. brief description of the content of the course (catalog description)*

Students will practice implementing digital logic circuits using both a hardware trainer board as well as EDA tools.

*b. prerequisites or co-requisites*

ENGR 205 or CS210 with a grade of C- or better  
ENGR 356 (grade C- or better) (maybe taken concurrently).

*c. indicate whether a required, elective, or selected elective course in the program* Required for Electrical Engineering and Computer Engineering.

*6. Specific goals for the course*

1. *specific outcomes of instruction, ex. The student will be able to explain the significance of current research on a particular topic.*

* The student will demonstrate an ability to design combinational and sequential circuits.
* The student will demonstrate an ability to implement digital logic circuits in both hardware and software.
  1. *explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

The course addresses ABET Student Outcome(s):1, 2, 4, 5, 6, 7

1. *Brief list of topics to be covered*
   * CMOS digital circuits and their electrical properties
   * Sequential and Combinational circuits design and implementation
   * Hands on experiment on Adder, Decoder, Latch Flip-flop, Register and Counter
   * Introduction to EDA tool and VHDL programming.