ENGR 2705

Division: Natural Science and Mathematics
Department: Engineering and Computer Science
Course: ENGR 2705
Title: Digital Circuits Laboratory
Catalog Description:

This laboratory is to accompany ENGR 2700. Digital circuits similar to those studied in ENGR 2700 will be assembled and tested and will be described and programmed in programmable logic devices. Computer software will be used to assist in the design, realization, and to simulation of digital systems.

General Education Requirements: N/A
Semesters Offered: Spring
Credit/Time Requirement: Credit: 1; Lecture: 0; Lab: 2
Clock/Hour Requirements: 0
Offered for Non-Credit: No
Corequisites: ENGR 2700

Justification:

This course is the laboratory component of ENGR 2700 and provides the opportunity for hands-on application of the concepts studied in ENGR 2700. Similar courses are offered in university engineering schools. This course is to be taken during the sophomore year of the pre-engineering curriculum and will prepare the student for subsequent course work.

Student Learning Outcomes:

Students will be able to:

- Use laboratory equipment to verify experimentally the abstract concepts studied in ENGR 2700
- Understand the proper use of electronic instruments including multimeters, function generators, power supplies, logic analyzers, etc.
- Use a computer aided design package to design and simulate the abstract concepts studied in ENGR 2700
- Keep a laboratory notebook and to write reports that conform to engineering standards.

Content:

The following topics will be covered in this course:

- Realization of switching functions
- Combinational logic circuits
- Modular combination logic circuits

- Sequence devices
- Sequential logic circuits
- Programmable logic devices.

General Education Outcomes:

4) Retrieve, evaluate, interpret, and deliver information through a variety of traditional and electronic media.

Students will be required to utilize the text, application software help material, and online information to produce solutions to assigned problems.

7) Apply scientific reasoning to a variety of contexts.

Students will be able to approach problems logically and develop solutions by applying the development process. This will include understanding the problem statement, developing a solution, and verifying the solution.

Key Performance Indicators:

Weekly laboratory reports: 100% of final grade

Representative Text and/or Supplies:

S. Brown and Z. Vranesic, *Fundamentals of Digital Logic with Verilog Design*, current edition, McGraw-Hill

Optimum Class Size: 10
Maximum Class Size: 15

Signatures:

I hereby submit this course syllabus:

Garth O. Sorenson, MS, Associate Professor

I hereby find this course consistent with the goals and resources of the Engineering and Computer Science Department:

Garth O. Sorenson, MS, Associate Professor, Chair

I hereby find this course consistent with the goals and resources of the Natural Science and Mathematics Division:

Dan Black, EdD, Associate Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)