Course number and name: CS06311: Digital Computer Laboratory
Credits and contact hours: 1 credit / 2 contact hours
Instructor’s or course coordinator’s name: John Robinson

Specific course information

Catalog description: This lab course provides the student with hands-on experience in the design and implementation of digital components. State-of-the-art systems are used to design, test, and implement digital circuits: Combinational circuits, sequential circuits, registers, counters, datapath, arithmetic/logic units, control units, and CPU design. This course is taken concurrently with Principles of Digital Computers.

Prerequisites: CS 06205 Data Structures and Algorithms and CS 06310 Principles of Digital Computers - Corequisite

Type of Course: ☒ Required □ Elective □ Selected Elective

Specific goals for the course

1. **combinational circuits.** Students have implemented and tested digital combinational circuits.
   - ABET (c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

2. **sequential circuits.** Students have implemented and tested digital sequential circuits.
   - ABET (c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

3. **teamwork.** Students have worked effectively in teams,
   - ABET (d) An ability to function effectively on teams to accomplish a common goal
Required list of topics to be covered

1. Combinational Logic circuits Lab 1, NAND implementations. Intro to VHDL coding
2. Decoders, Multiplexers Lab 2, 3 VHDL Implementations
3. Half and Full Adders
4. Seven segment LED decoder/driver
5. Sequential Circuits
6. ALU design
7. Memory Design RAM
8. Finite State Machines
9. Datapaths and Controllers
10. Single Purpose Processor