Course number and name ECE 394, Digital Systems Lab

Credits, contact hours 1 credit, 3 contact hours

Name(s) of instructor(s) or course coordinator(s) John Carpinelli

Instructional Materials *Laboratory Manual and Supplementary Notes: ECE 394, Digital Systems Lab*

Specific course information

brief description of the content of the course (catalog description)

Experiments emphasize digital design from basic electronic circuits to complex logic. Topics include switching speed, basic sequential circuits, the arithmetic/logic unit, and computer memories.

prerequisites ECE 251, ECE 271, ECE 291

Educational objectives for the course (e.g. The student will be able to explain the significance of current research about a particular topic.)

1. The student will be able to design and construct combinatorial circuits using discrete logic gates.
2. The student will be able to design and construct sequential circuits using flip-flops.
3. The student will be able to design and construct more complex digital circuits using more complex digital components, including shift registers, counters, memory, and ALUs.
4. The student will be able to use CAD tools to program PLDs to implement combinatorial and sequential digital designs.
5. The students will be able to communicate their designs via written laboratory reports documenting the results of the lab experiments.
6. The student will be able to work in teams enhancing skills in leadership and contribution to a team.

Brief list of topics to be covered

- Combinatorial Circuits
- Sequential Circuits
- Logic Gates and Logic Families
- Shift Registers
- Gate Function Detector
- Counters
- Memory and ALU
- Project: 4-bit RPN Calculator