CS 2170: COMPUTER ORGANIZATION

**Semester Hours:** 3.0  
**Contact Hours:** 3

**Coordinator:** Hassan Rajaei

**Text:** Computer System Architecture

**Author(s):** MORRIS MANO

**Year:** 1993

**SPECIFIC COURSE INFORMATION**

**Catalog Description:**

Fall, Spring, Summer. Organization of digital computer hardware. Combinational and sequential circuits. Assembly language concepts. ALU, CPU, and control unit design. Projects will be implemented on a circuit simulator. Prerequisite: Grade of C or better in CS 2010. Approved for distance education.

**Course type:** REQUIRED

**SPECIFIC COURSE GOALS**

- I can understand and use different data representations (e.g. number systems, 2’s complement arithmetic, etc.)
- I can design combinational and sequential circuits using logic gates and flip-flops
- I can implement digital circuits using a digital logic simulator or kit
- I can explain the fundamental concepts of computer organization
- I can utilize an assembler tool to write and execute simple assembly language programs

**STUDENT OUTCOMES ADDRESSED BY THIS COURSE**

- B.1 Analyze a given problem, and identify and define the computing requirements appropriate to its solution
- B.3 Apply mathematical foundations, algorithmic principles, and computer science theory as appropriate in modeling and solving real-world problems
- B.5 Apply design and development principles in the construction of software systems of varying complexity
LIST OF TOPICS COVERED

- Introduction (1 week)
- Boolean Functions and Logic Gates (1 week)
- Simplification of Boolean Function using K-map (1 week)
- Combinational Logic (1 week)
- Sequential Logic – Registers and Counters (1 week)
- Combinational Logic – Registers and Counters (1 week)
- Data Representation (1 week)
- Register Transfer Logic (2 weeks)
- Arithmetic Logic Unit (1 week)
- Control Logic (1 week)
- Computer Design (2 weeks)