E C E 352, Digital System Fundamentals

1. Credits: 3  Contact Hours: 5.5
   Logic and Computer Design Fundamentals; Mano & Kime; 4; 2007

a. Other Supplemental Materials: None

- Specific Course Information:

  a. Brief description of the content of the course (Course Catalog Description): Logic components, Boolean algebra, combinational logic analysis and synthesis, synchronous and asynchronous sequential logic analysis and design, digital subsystems, computer organization and design.
  b. Pre-requisites or Co-requisites: Comp Sci/ECE 252
  c. Required

- Specific Goals for the Course:

  a. Course Outcomes:

   1. Students will learn how to design combinational logic circuits
   2. Students will learn how the fundamentals of sequential logic circuits
   3. Students will learn the primary components of a simple CPU architecture
   4. Students will learn how to use modern CAD tools and FPGAs to implement digital circuits.

- ABET Student Learning Outcomes:
(a) Ability to apply mathematics, science and engineering principles.
(b) Ability to design and conduct experiments, analyze and interpret data.
(c) Ability to design a system, component, or process to meet desired needs.
(e) Ability to identify, formulate and solve engineering problems.
(g) Ability to communicate effectively.
(k) Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

- **Brief List of Topics to be Covered:**
  1. Binary, Octal, Hexadecimal number systems
  2. Boolean Algebra
  3. Combination circuit design
  4. Sequential circuit design and timing analysis
  5. Finite state machines
  6. Data path design
  7. Control path design
  8. SRAM operation
  9. Single Cycle CPU design