ELE 455: COMPUTER SYSTEM ARCHITECTURE (elective)

Credit: 3 hours.

Catalog Description: Register transfer and micro-operation, basic computer organization and design; central processing unit; micro-programmed control; pipeline and vector processing; computer arithmetic, input/output organization, and memory organization.

Prerequisites: ELE 250.

Textbooks(s) and/or Other Required Materials: Microprocessors and Interfacing: Programming and Hardware, Hayes, John P., McGraw-Hill Primis Custom Publishing. Instructor generated notes.

Topics Covered:

Computing and Computers, Ch 1:
- Turing machines, finite state automata
- The IAS computer will (initially) not delivered
- Design Methodology, Ch 2
- Computer Organization, Ch 3, Ch 4, Ch 5
- Chapter 6, Memory Organization not delivered
- Parallel Processing
- Communication
- Protocols
- Computer Arithmetic

Class/Laboratory Schedule:
  Lecture: 2.5 hours/week
  Lab: none

Course Objectives and Relationship to Program Outcomes:

1. The acquisition of the fundamental microprocessor interfacing techniques. Outcomes: A, C, E.

2. The ability to read, interpret, and utilize appropriate data sheet information. Outcomes: A, C, E, I, J.

3. The ability to analyze, design, implement microprocessor-based systems. Outcomes: A, C, E, G, J.

This course is structured to impart a thorough fundamental understanding of the relationship between hardware at the gate and subsystem levels to machine language. The successful participants will be able to articulate the salient computer generational features, identify the
major components of a computer system, articulate the function of each major component, analyze computer embedded hardware and design computer embedded hardware.

**Coverage (and level) of ABET Outcomes:**  A (3), C (3), E (3), G (2), I (3), J (1).

**Contribution of Course to meeting the Professional Component:**
  Engineering Topics:  100%

**Date:**  June 2004.