Microprocessor & Microcontroller | EC 1402 | 4 Credits | 3 1 0 4

Session: Ian 14 – Mav 14 | Facultv: | Class: Core Subiect

A. Course Outcomes: At the end of the course, students will be able to

[1402.1]. Classify problems related to the device architectural design;

[1402.2]. Estimate problems based on the mathematical reasoning;

[1402.3]. Develop Logical and Conditional programming **skills;** and

[1402.4]. Outline the conceptual details of the devices through programming problems.

B. SYLLABUS

8086 Microprocessor: Introduction to 16-bit microprocessors, History of microprocessors. **8086 Architecture:** Bus Interface Unit and Execution Unit, Instruction pipeline, Data and Address Bus Configuration, Memory Segmentation, Memory Address generation, I/O Port addressing. **8086 Signals:** Functions of all signals, Minimum and Maximum Mode signals; Bus Cycles, Bus driver 8288. **8086 Instruction Set:** Types of Instructions and Addressing Modes, Programming; **8051 Microcontroller:** Architectural features, Programming model, I/O Ports, Addressing Modes, Instruction set of 8051, Programming; **ARM Processor fundamentals:** Introduction, RISC design philosophy, ARM design philosophy. Registers; Current Program Status Register; Pipeline and stages; Exceptions, Interrupts and Vector Table; Core Extensions: Coprocessors. **Instruction Set:** Arithmetic and Logic; Memory Load and Store; Block Load and Store; Branch and Branch with Link; Machine Control. **Thumb Instruction Set:** Thumb Register Usage; ARM-Thumb Interworking; Other Branching Instructions; Data processing; Single-Register Load-Store Instructions; Multiple-Register Load-Store Instructions; Stack instructions; Software Interrupt Instruction.

C. TEXT BOOKS

1) N. Senthil Kumar, M. Saravanan, S. Jeevananthan, "Microprocessors and Microcontrollers", Oxford University Press, 2010

2) Muhammad Ali Mazidi and Janice Gillispie Mazidi, " The 8051 – Microcontroller and Embedded systems",7th Edition, Pearson Education , 2004.

3) S. Ferber, "ARM System-on-Chip Architecture", Addison-Wesley Professional imprint in Pearson, 2001.