

Course code	Course Name	L-T-P-Credits	Year of Introduction
BM305	ADVANCED MICROPROCESSORS & MICROCONTROLLERS	3-0-0-3	2016
Prerequisite: IC206 Microcontrollers			
Course Objectives <ul style="list-style-type: none"> To get an insight to the architecture, registers and addressing modes of advanced microprocessors To study in detail 8086,80386 and Pentium To study in detail salient features and programming of PIC microcontroller 			
Syllabus 8086 Microprocessor - Architecture, Register organization, Signal descriptions, Physical Memory organization, Maximum and Minimum mode operations, Addressing Modes. 80386 Microprocessor: Salient features, Architecture and Signal Description, Register Organization, Addressing Modes. Pentium: Salient features, pipelining and super scalar architecture. PIC Microcontroller: Introduction, Architectural Overview, Memory Organization, Data Memory and Flash Memory, Addressing modes, Interrupts and Reset.			
Expected Outcome <ul style="list-style-type: none"> At the end of the course students will be able to design and implement systems using advanced microprocessors and microcontrollers in their future projects. 			
Text Books: <ol style="list-style-type: none"> A.K. Ray, K.M. Bhurchandi, "Advanced Microprocessors and Peripherals", 2nd Edition, Tata Mc GrawHill, 2006. John B Peatman, "Designing with Microcontrollers", 1st edition, Mc Graw Hill International Lyla B. Das, The x86 Microprocessors: Architecture, programming and Interfacing (8086 to Pentium), Pearson Education,2010, ISBN 978-81-317-3246-5 			
Reference Books: <ol style="list-style-type: none"> Bamett, Cox & O'Cull, "Embedded C Programming and the Microchip PIC" Thomson India Edition, 2007. Barry B. Brey, The Intel Microprocessors 8086/8088,80286, 80386 80486, Pentium, Pentium Pro Processor, Pentium II, Pentium III, Pentium 4, Architecture, Programming and interfacing, Prentice Hall of India Private Limited, New Delhi, 2003. D. V. Hall, "Microprocessor and Interfacing Programming & Hardware" TMH. Daniel Tabak , "Advanced Microprocessors" McGraw Hill Inc., 1995 James L. Antonakos," An Introduction to the Intel family of Microprocessors " Pearson Education 1999. 			
Course Plan			
Module	Contents	Hours	Sem. Exam Marks
I	Microprocessor Architecture - 8086, Register organization of 8086, Signal descriptions of 8086 chip, Physical Memory organization, Introduction to Maximum and Minimum mode	7	15%

	operation- Addressing Modes.		
II	Instruction set & assembler directives: Machine language Instruction format Instruction set – Assembler directives & operators. Simple assembly language programming. Introduction to Stack, Interrupts & Interrupt service routines.	7	15%
FIRST INTERNAL EXAM			
III	Introduction to Subroutines, Recursion, MACROS – Timing & delays.	3	15%
	Programmable interfacing devices: Programmable peripheral interface (Intel 8255), Programmable timer interface (Intel 8253/ 54).	4	
IV	32-bit Microprocessors: 80386 - Salient features, Architecture and Signal Description, Register Organization and Addressing Modes. Real Address mode, Protected mode Segmentation, Paging & Virtual modes.	6	15%
	Pentium - General features, pipelining and super scalar architecture.	3	
SECOND INTERNAL EXAM			
V	PIC Microcontroller: Introduction, Architectural Overview, Memory Organization, Data Memory and Flash Memory.	6	20%
VI	Instruction set, Addressing modes, Interrupts and Reset.	6	20%
END SEMESTER EXAM			

QUESTION PAPER PATTERN:

Maximum Marks: 100

Exam Duration: 3 Hours

There shall be three parts for the question paper.

Part A includes Modules 1 & 2 and shall have three questions of fifteen marks out of which two are to be answered. There can be subdivisions, limited to a maximum of 4, in each question.

Part B includes Modules 3 & 4 and shall have three questions of fifteen marks out of which two are to be answered. There can be subdivisions, limited to a maximum of 4, in each question.

Part C includes Modules 5 & 6 and shall have three questions of twenty marks out of which two are to be answered. There can be subdivisions, limited to a maximum of 4, in each question.

Note: Each part shall have questions uniformly covering both the modules in it.