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Department of Computer Engineering	
Advanced Microprocessors (66422)	
Total Credits	**3**
major compulsory	
Prerequisites	P1 : Microprocessors (66322)

Course Contents

Advanced architecture topics in Microprocessors, Interface memory and peripherals to advanced processors, Virtual memory and memory addressing modes, DMA, interrupts and intel Microprocessors details.

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Acquire knowledge in advanced architecture topics and their implementation in real processors: Caches, Superscalar machines, Pipelined machines, Out of order execution, Protected Mode, Architecture, Instruction Set, Caches, Pipelining, SIMD machines, Floating point unit, interrupts and programming by assembly code using Intel Processors as example.	A	45 %
2	Interface memory and peripherals to advanced processors using Intel processor as example.	C	25 %
3	Acquire Knowledge of the concepts of advanced practical microprocessors (32- and 64-bits), their relation to the architectures and advanced features usage.	E	20 %
4	Enhance the ability to Design advanced microprocessor systems.	K	10 %

Textbook and/ or Refrences

Brey, The Intel microprocessors architectures, programming and interfacing, Prentice Hall. 7th Edition

Assessment Criteria	Percent (%)
First Exam	20 %
Second Exam	20 %
Quizzes	5 %
Homeworks	5 %
Projects	10 %
Final Exam	40 %

Course Plan

Week	Topic
1-6	Interrupts: (Interrupt vectors in Intel MP, Software and hardware interrupts, Maskable and Non-maskable interrupts, Interfacing devices using interrupts, Interrupt controller).
1-6	Protected mode in Intel MPs: (Descriptors, Data and code descriptors, (Hardware support for descriptors, caching descriptors), System descriptors, Context switching, (286, 386 and Pentium descriptors), Code examples).
6	First exam
7-13	Virtual memory and Paging in Intel MPs: (Page tables and page directories, Pageing, Pentium paging).
7-13	Memory interface for Intel MPs: (Memory interface for 286 (16bit), Memory interface for 386, 486 (32bit), Memory interface for Pentium 1 to 4, Dynamic Memory Interface).

7-13	Intel MP details (80186 to 80486): (80186 architecture and instructions, 80286 architecture and instructions, 80386 architecture and instructions, 80486 architecture and instructions).
7-13	Pentium processors: (Caches in Pentium processors, Pipelining, superscalar, out of order execution, Pentium 1 and Pentium Pro, Pentium 2 to 4).
13	Second exam
14-16	Floating Point Unit (FPU) and MMX technology: (Coprocessors for early Intel processors , FPU in 486+, FPU instructions, Code examples, MMX technology)
14-16	DMA: (Architecture of DMA controllers, Examples).