

ECE-684 Objectives : To thoroughly understand the internal operation, layout and underlying design principles of modern systems containing advanced microprocessors. Throughout the semester, the Intel family of microprocessors will be the baseline used to illustrate the particular concepts.

Course Contents

Textbook = "Microprocessors and Microcomputer Based System Design," 1995; Mohamed Rafiqzamen; 2ndEd.; CRC Press; ISBN 0-8493-4475-1

Supplemental reading = Datasheets for other processors : Sun Niagara, IBM PPC, Cell processor, ARM processors, microcontrollers, select SoC processors, etc.

Textbook Chapters	Topics	Week
1,2,3	Microprocessor history Semiconductor processing Benchmarks	1
4	Advanced Micro's Floating pt., 80186 architecture Mass Storage	2
5	Embedded x86 MC68000 Encryption	3
7	Caching Error detection & correction Modems/Networking	4
8	Functional units, memory FLASH, MRAM	5
Supplemental reading	Pipelining, 80386 architecture 80486 architecture	6
Supplemental reading	Microcontrollers Embedded Processors	7
	Mid-term exam	8
Supplemental reading	ARM processors LVDS signalling	9
Supplemental reading	Pentium1 – 4, Branch Prediction, IBM Power-PC, IA-32	10
Supplemental reading	AMD processors, PCI bus Hypertransport bus	11
Supplemental reading	Threading SUN Niagara processors	12
Supplemental reading	IBM Cell Processor Architecture	13
Supplemental reading	GPU Architectures	14
	Final Exam	15