

Department of Electrical and Computer Engineering  
University of Puerto Rico  
Mayagüez Campus

## INEL 4206 - Microprocessors Course Outline

Topics	Estimated No. of Hours
<b>Course Introduction and Overview</b>	1.5
<b>The Nature of Information:</b> Elementary information theory, bits, information representation, information encoding	1.5
<b>The Nature of Computing:</b> Mathematical computing models, , Computability, The Halting Problem, Church/Turing thesis, Programmability and Universality, Physical computing models (CMOS, Combinational Logic, Sequential Logic)	4.5
<b>Building Practical Universal Computers I:</b> The von Neuman architecture, Design of a simple yet universal processor	6
<b>EXAM I – Thursday September 26 6-8PM S-113</b>	
<b>Overview of The MIPS architecture</b>	1.5
<b>Programming Universal Computers I:</b> Instruction sets, Architectural support for high level programming languages, control structures, procedures and functions	3
<b>Programming Universal Computers II:</b> Architectural support for data structures, arrays, records, dynamic memory structures.	4.5
<b>EXAM II– Thursday October 17 6-8PM S-113</b>	
<b>Computer Arithmetic:</b> Integer representation and operations, floating point representation (IEEE 754) and operations	4.5
<b>The Intel 80x86 Family:</b> Instruction Set Architecture	4.5
<b>Input/Output Structures:</b> I/O devices, Buses, Polling, Exceptions and Interrupts, direct memory access, I/O processors, device interfaces and drivers	4.5
<b>EXAM III– Thursday November 14 6-8PM S-113</b>	
<b>Operating System Structures:</b> The OS kernel, processes and scheduling, privileged instructions & protection	1.5
<b>Memory Structures:</b> Storage technologies, Memory hierarchy design, Basic caching concepts, Virtual memory, TLBs	4.5
<b>FINAL EXAM</b>	
<b>Total number of hours<sup>1</sup></b>	<b>45</b>

**Prepared by:** Prof. Bienvenido Vélez-Rivera  
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<sup>1</sup> Total includes three hours for exam discussion