

University of Puerto Rico
 Mayagüez Campus
 College of Engineering
 Department of Electrical and Computer Engineering
 Graduate Program in Electrical Engineering

Course Syllabus

1. General Information:	
Alpha-numeric codification: INEL 6009 Course Title: Computer Systems Architecture Number of credits: 3 Contact Period: 3 contact hours per week	
2. Course Description:	
English: Basics in computer architecture and organization. High level language concepts. Architectural aid to the operating systems and to the compilation process	
Spanish: Fundamentos de la arquitectura y organización de computadoras. Conceptos de lenguaje de alto nivel. Apoyo arquitectural al proceso de compilación y a los sistemas operativos.	
3. Pre/Co-requisites and other requirements:	
4. Course Objectives:	
Gain Fundamental knowledge of Computer architecture old and contemporary	
5. Instructional Strategies:	
<input checked="" type="checkbox"/> conference <input checked="" type="checkbox"/> discussion <input type="checkbox"/> computation <input type="checkbox"/> laboratory <input type="checkbox"/> seminar with formal presentation <input type="checkbox"/> seminar without formal presentation <input type="checkbox"/> workshop <input type="checkbox"/> art workshop <input type="checkbox"/> practice <input type="checkbox"/> trip <input type="checkbox"/> thesis <input type="checkbox"/> special problems <input type="checkbox"/> tutoring <input checked="" type="checkbox"/> research <input type="checkbox"/> other, please specify:	
6. Minimum or Required Resources Available:	
Journals and other serial publications available in the library in Computer Engineering (IEEE & ACM)	
7. Course time frame and thematic outline	
Outline	Contact Hours
RISC and CISC ARchitectures Definición de arquitectura Distinción Entre Arquitectura y Organización Conjunto de Instrucciones Tipos de Data Registros Acceso a Memoria Efecto de la Arquitectura en la Implementación Ejemplos de Arquitecturas RISC	8
Apoyo Arquitectural a Lenguajes de Alto Nivel Instrucciones de Brinco	5

Subrutinas Register Stack Register Coloring Compiladores Optimizadores	
Pipelining “Hazzards” Implementación Manejo de brincos e interrupcione	3
Paralelismo a Nivel de Instrucciones “Hazzards” “Scheduling” Predicción de hardware Especulación	4
Apoyo Arquitectural a Sistemas Operativos Protección Seguridad Interrupciones de sistema Input/Output Relocalización de Código	5
Sistema de Memoria Memoria Primaria Caches Memoria Virtual Análisis de rendimiento	4
Aritmética Aritmética de punto fijo Aritmética de punto flotante Estándar IEEE de punto flotante	3
Sistema I/O Polling Memory-mapped I/O Programmed I/O DMA	4
Conceptos de Organización Vias de datos ALU Unidad de control	3
Multiprocessors and Thread-Level Parallelism SMP Memoria compartida Memoria distribuida Consistencia de Memoria Sincronización Rendimiento Multithreading	7
Contemporary Commercial Architectures	3
Total hours: (equivalent to contact period)	45

8. Grading System

Quantifiable (letters) Not Quantifiable

9. Evaluation Strategies

	Quantity	Percent
<input checked="" type="checkbox"/> Exams		67%
<input type="checkbox"/> Final Exam		
<input type="checkbox"/> Short Quizzes		
<input type="checkbox"/> Oral Reports		
<input type="checkbox"/> Monographies		
<input type="checkbox"/> Portfolio		
<input checked="" type="checkbox"/> Projects		33%
<input type="checkbox"/> Journals		
<input type="checkbox"/> Other, specify:		
TOTAL:		100%

10. Bibliography:

1. William Stallings, Computer Organization and Architecture, (sixth edition), Prentice Hall, 2002.
2. Hennessy J. and Patterson, David A., Computer Architecture: A Quantitative Approach (3rd Edition) Morgan Kaufmann, 2002.
3. Hamacher, V.C., et. al, Computer Organization (fifth edition), McGraw –Hill, 2001.
4. Miles J. Murdocca & Vincent P. Heuring, Principles of Computer Architecture, Prentice Hall, 2000
5. Hesham El-Rewini and Mostafa Abd-El-Barr, Advanced Computer Architecture and Parallel Processing, Wiley-Interscience, 2005

11. According to Law 51

Students will identify themselves with the Institution and the instructor of the course for purposes of assessment (exams) accommodations. For more information please call the Student with Disabilities Office which is part of the Dean of Students office (Chemistry Building, room 019) at (787)265-3862 or (787)832-4040 extensions 3250 or 3258.

Person who prepared this description and date of preparation:

Nestor Rodríguez, August 2007