

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

**Course Syllabus**

<b>1. General Information:</b>	
Alpha-numeric codification: INEL 6048 Course Title: ADVANCED MICROPROCESSOR INTERFACING Number of credits: 3 Contact Period: 3 hours of lecture per week	
<b>2. Course Description:</b>	
English: Architecture of 8, 16, and 32 bits microprocessors; bus, input/output and memory interfacing; parallel processing architecture; configuration and interfacing of multiprocessors; applications of the multiprocessor system.	
Spanish: Arquitectura de microprocesadores de 8, 16 y 32 bits; interfase del bus, entrada/salida y memoria; arquitecturas de procesamiento en paralelo; configuración e interfase de multiprocesadores; aplicaciones de sistemas de multiprocesadores.	
<b>3. Pre/Co-requisites and other requirements:</b>	
<b>4. Course Objectives:</b>	
Prepare students to work on the development of advance embedded and conventional computer systems by studying modern platforms and to describe the hardware and software aspects of system interfacing.	
<b>5. Instructional Strategies:</b>	
<input checked="" type="checkbox"/> conference <input 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 type="checkbox"/> research <input type="checkbox"/> other, please specify:	
<b>6. Minimum or Required Resources Available:</b>	
Standard lecturing facilities. Microprocessors interfacing laboratory.	
<b>7. Course time frame and thematic outline</b>	
<b>Outline</b>	<b>Contact Hours</b>
1. Embedded system design process	2
2. Architecture and instruction sets	8
3. Hardware interfacing and FPGA's	10
4. Software interfacing and operating systems	8
5. Communication protocols	8
6. System design methods	6
7. Tests	3
<b>Total hours: (equivalent to contact period)</b>	<b>45</b>
<b>8. Grading System</b>	
<input checked="" type="checkbox"/> Quantifiable (letters) <input type="checkbox"/> Not Quantifiable	

## 9. Evaluation Strategies

	Quantity	Percent
<input checked="" type="checkbox"/> Exams	2	30
<input checked="" type="checkbox"/> Final Exam	1	20
<input type="checkbox"/> Short Quizzes		
<input type="checkbox"/> Oral Reports		
<input type="checkbox"/> Monographies		
<input type="checkbox"/> Portfolio		
<input checked="" type="checkbox"/> Projects	1	25
<input type="checkbox"/> Journals		
<input checked="" type="checkbox"/> Other, specify: homework	2-3	25
<b>TOTAL:</b>		<b>100%</b>

## 10. Bibliography:

1. Wayne Wolf, Computers as Components: Principles of Embedded Computing System Design; MORGAN Kaufmann Publishers; Inc. 2001.
2. Frank Vahid and Tony Givargis, Embedded system Design: A Unified Hardware/Software Introduction, John Wiley and Sons, 2002.
3. Stuart Ball, Analog Interfacing to Embedded Microprocessor Systems, Second Edition (Embedded Technology Series) Newnes, 2003
4. Richard Zurawski, Embedded Systems Handbook, CRC Press, 2005
5. Spartan-3 Generation FPGA Users Manual and ISE 9.2i Software Manuals, <http://www.xilinx.com>

## 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:

Manuel Toledo, August 2007