

University of Puerto Rico
 Mayagüez Campus
 College of Engineering
 Department of Electrical and Computer Engineering
 Bachelor of Science in Electrical Engineering

Course Syllabus

1. General Information:			
Alpha-numeric codification: INEL 5206 Course Title: Digital System Design Number of credits: 3 Contact Period: 3 credit hours, 3 hours of lecture per week Elective in INEL			
2. Course Description:			
English: Design methods in combinational and sequential systems. Use of programmable logic devices in digital systems design. Analysis and design of system controllers.			
Spanish: Métodos de diseño para sistemas combinatorios y secuenciales. Utilización de dispositivos lógicos programables en el diseño de sistemas digitales. Análisis y diseño de controladores de sistema.			
3. Pre/Co-requisites and other requirements:			
INEL 4205. Required			
4. Course Objectives:			
To provide students with the basic tools required to design non-trivial digital systems.			
5. Instructional Strategies:			
<input checked="" type="checkbox"/> conference <input checked="" type="checkbox"/> discussion <input type="checkbox"/> computation <input type="checkbox"/> laboratory			
<input checked="" 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: Design project			
6. Minimum or Required Resources Available:			
7. Course time frame and thematic outline			
Outline		Contact Hours	
1. Introduction to system controllers, design procedures		6	
2. Use of MDS diagrams for system specification		3	
3. System controller design		6	
4. Use of decoders and multiplexers in system controller design.		4	
5. Combinational design with ROMs.		2	
6. Combinational design with programmable logic devices (PLD).		2	
7. Use of ROMs in controller design.		2	
8. Use of PLDs in controller design.		6	
9. Design of system controllers based on shift registers and counters.		4	
10. Introduction to asynchronous machines.		2	
11. Design of asynchronous machines.		2	
12. Design of digital systems based on asynchronous controllers.		4	
13.Exams		2	
8. Grading System			
<input checked="" type="checkbox"/> Quantifiable (letters) <input type="checkbox"/> Not Quantifiable			
9. Evaluation Strategies			
		Quantity	Percent
<input checked="" type="checkbox"/>	Exams	1	25%
<input type="checkbox"/>	Final Exam	1	25%
<input type="checkbox"/>	Design Project	1	50%
<input type="checkbox"/>	Oral Reports	1	
<input type="checkbox"/>	Project report	1	
<input type="checkbox"/>			
	TOTAL:		100%

10. Bibliography:

M. Morris Mano, Ciletti, M., Digital Design 4th edition (2006) Prentice Hall.

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.

12. Contribution of Course to meeting the requirements of Criterion 5:

Math	Basic Science	General	Engineering Topic
			√

13. Course Outcomes

1. Design and analysis of digital systems
2. Digital systems characteristics and limitations
3. Design of applications to solve problem
4. Be aware of Ethical Considerations
5. Present a project and give demonstrations explaining the design and the decisions taken
6. Project design must take into account safety.
7. Information research and gathering, such as reference papers, manuals and theory
8. A report including g cost of the project is done

Map to Program Outcomes

- (a)
- (b)
- (e)
- (f)
- (g)
- (h)
- (i)
- (j)

Person(s) who prepared this description and date of preparation: Jaime Arbona, Feb 2007
 Submitted by: Gladys O. Ducoudray, June 2008