

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

**Course Syllabus**

<b>1. General Information:</b>	
Alpha-numeric codification: INEL5326 Course Title: Communication Systems Design: Digital Signal Processing Number of credits: 5 Contact Period: 1 hour lecture, 4 hours laboratory per week Elective in INEL and ICOM	
<b>2. Course Description:</b>	
English: Block diagram design and simulation of communication systems. Design projects including: specification, evaluation and selection of alternatives, and implementation. Computer and laboratory work and written reports required.	
Spanish: Access available at RUMAD	
<b>3. Pre/Co-requisites and other requirements:</b>	
INEL5309	
<b>4. Course Objectives:</b>	
After completing the course, students should understand and be able to manage different aspects of the design of a communication or signal processing system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability .	
<b>5. Instructional Strategies:</b>	
<input checked="" type="checkbox"/> conference <input checked="" type="checkbox"/> discussion <input checked="" type="checkbox"/> computation <input checked="" 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 checked="" 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>	
Materials, equipment, and physical facilities needed to fulfill the course objectives.	
<b>7. Course time frame and thematic outline</b>	
<b>Outline</b>	<b>Contact Hours</b>
Introduction to design	15
Introduction to proposal preparation	3
Ethics Seminar	2
Guidelines for Literature Review	3
Revision, discussion and update of proposals	8
Algorithm Design, Testing and implementation	30
Design process	4
Periodic and Final Project Presentations	10
<b>Total hours: (equivalent to contact period)</b>	<b>75</b>
<b>8. Grading System</b>	

Quantifiable (letters)  Not Quantifiable

## 9. Evaluation Strategies

	Quantity	Percent
<input type="checkbox"/> Exams		
<input type="checkbox"/> Final Exam		
<input type="checkbox"/> Short Quizzes		
<input type="checkbox"/> Oral Reports		
<input type="checkbox"/> Monographies		
<input type="checkbox"/> Portfolio		
<input type="checkbox"/> Projects		
<input type="checkbox"/> Journals		
<input checked="" type="checkbox"/> Other, specify: <b>Written reports, Demonstrations.</b>	<b>15</b>	<b>100</b>
<b>TOTAL:</b>		<b>100%</b>

## 10. Bibliography:

1. Barry Hyman, Fundamentals of Engineering Design, Prentice Hall, Second Edition, 2003
2. P. Gaydecki, Foundations, of Digital signal Processing; Theory , Algorithms and Hardware Design, Institution of Electrical Engineers, 2005
3. S. Mitra, Digital Signal Processing: A Computer Based Approach, McGraw Hill 3<sup>rd</sup> ed. 2006.
4. V.K. Ingle, J.G. Proakis, Digital Signal Processing using MATLAB, Engineering-Nelson, 2006.
5. J.G. Proakis, D.G. Manolakis, Digital Signal Processing, Thomson Delmar Learning, 2007
6. <http://101science.com/dsp.htm>
7. IEEE Standards: <http://ieeexplore.ieee.org/xpl/standards.jsp>
8. International Committee for Information Technology standards (INCITS):
9. <http://www.incits.org/>
10. MPEG Standard:<http://www.chiariglione.org/mpeg/>
11. JPEG Standard: <http://www.jpeg.org/jpeg/>
12. ISO Standards: [http://en.wikipedia.org/wiki/Category:ISO\\_standards](http://en.wikipedia.org/wiki/Category:ISO_standards)

## 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.