

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: 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	
2. Course Description:	
English: Capstone course in which student teams design a project to solve a complete Communication or Signal Processing Engineering Problem considering engineering standards and realistic constraints.	
Spanish: Curso integrador en la cual equipos de estudiantes diseñan un proyecto para resolver un problema completo de Ingeniería en comunicaciones o procesamiento de señales, tomando en consideración estándares de ingeniería y restricciones realistas.	
3. Pre/Co-requisites and other requirements:	
INEL5309	
4. Course Objectives:	
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	
5. Instructional Strategies:	
<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:	
6. Minimum or Required Resources Available:	
7. Course time frame and thematic outline	
Outline	Contact Hours
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

Total hours: (equivalent to contact period)	75

8. Grading System

Quantifiable (letters) Not Quantifiable

9. Evaluation Strategies (Suggested): The faculty member teaching the course will provide the student with the evaluation strategy he/she will be using throughout the semester. This will be done within the first week of classes.

	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: Written reports, Demonstrations.	15	100
TOTAL:		100%

10. Bibliography:

[Chassaing, R. Digital Signal Processing and Applications with the TMS 320C6713 and TMS 320C416 DSK, 2nd Edition, 2008 John Wiley and Sons.](#)

[Chassaing, R. Digital Signal Processing: Laboratory Experiments Using C and the TMS 320C6X DSK \(1999\) John Wiley and Sons.](#)

- IEEE Standards.
- ISO Standards.
- Selected publications depending on project topic.

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. Identify the problem to be solved via a communications or

Map to Program Outcomes
(e)

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- signal processing solution
2. Analyze and discuss the problem along with previous and related work (a)
 3. Write a project proposal to solve an communications or signal processing problem specifying the proposed solution, the work breakdown structure, and realistic constraints. (e)
 4. Organize the teamwork and define individual tasks and responsibilities (d)
 5. Design, implement and test the a system to solve the desired needs, identify and design the components within realistic constraints and using engineering standards (c)
 6. Design a test plan for the system (b)
 7. Evaluate the ethical and some of the legal, environmental, social, health and safety and other impacts of the system and propose the mitigation, or compensation measures when necessary (f)
 8. Write effective technical documentation, progress and final reports using engineering standards. Present the results and make demonstrations of system functionality. (g)
 9. Use electrical engineering tools for analysis of the problem, computer aided design, debugging, implementation and testing of the system. (k)
 10. Make project decisions based on current literature and state-of-the-art tools available on campus, or provided by client/user when applicable (i)
 - 11.
 - 12.

Person(s) who prepared this description and date of preparation: Shawn Hunt. Submitted by: Dr. Miguel Vélez, Julio 07