

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: INEL4301 Course Title: Communications Theory 1 Number of credits: 3 Contact Period: 3 hours of lecture per week Rquired in ICOM		
2. Course Description:		
English: Components of Communications Systems; Fourier Transform Analysis of Filtered Signals; Nyquist Theorem; Analog to Digital and Digital to Analog Conversion Processes; Bandwidth; Modulation and Noise. Computer-aided Analysis.		
Español: Componentes de Sistemas de Comunicación; Uso de la Transformada de Fourier en el Análisis de Señales Filtradas; Teorema de Nyquist; Procesos de Conversión de Analógico A Digital y de Digital a Analógico; Ancho de Banda; Modulación y Ruido. Análisis Utilizando Computadoras.		
3. Pre/Co-requisites and other requirements:		
Prerequisite INEL4102 and ININ 4010		
4. Course Objectives:		
Provide students with a classical treatment of analog and digital communications theory.		
5. Instructional Strategies:		
<input checked="" type="checkbox"/> lectures <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:		
6. Minimum or Required Resources Available:		
Materials, equipment, and physical facilities needed to fulfill the course objectives.		
7. Course time frame and thematic outline		
	Outline	Contact Hours
	Introduction to telecommunications	3
	Representation of signals and systems	15
	Introduction to noise	4
	Continuous-wave modulation AM, SSB, FM	12
	Sampling	5
	Pulse Modulation	3
	Exams	3
	Total hours: (equivalent to contact period)	45
8. Grading System		
<input checked="" type="checkbox"/> Quantifiable (letters) <input type="checkbox"/> 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 checked="" type="checkbox"/> Exams	2	60%
<input checked="" type="checkbox"/> Final Exam	1	30%
<input checked="" type="checkbox"/> Other, specify: Homework	Variable	10%
TOTAL:		100%
10. Bibliography:		
Rodger E. Ziemer and William H. Tranter, Principles of Communications: Systems, Modulation, 5th ed., 2002		

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	Map to ABET Outcomes
Explain the components of a modern communication system	a, j
Develop analytical and computational skills to analyze signals and systems using Fourier transforms.	a, k
Understand the process of converting analog to discrete signals and vice versa.	a
Understand linear (DSB, AM,SSB), angular (PM, FM) and digital (PCM) modulation techniques	a
Assess the impact of noise in analog and digital modulation systems	a
Recognition of importance of lifelong learning	i

Person(s) who prepared this description and date of preparation: Mario Ierkic. Submitted by: Miguel Vélez, feb 2007