University of Puerto Rico Mayagüez Campus College of Engineering Department of Industrial Engineering Bachelor of Science in Industrial Engineering

Course Syllabus

General Information:
Alpha-numeric codification: ININ 5006
Course Title: Systems Engineering and Analysis
Number of credits: 3
Contact Period: Three hours of lecture per week
Course Description:
English: Introducción al diseño de sistemas considerando su ciclo de vida desde su conceptualización hasta su desecho, incluyendo la teoría básica de gerencia del ciclo de vida de sistemas. Con aplicación para múltiples disciplinas, el curso incluye el estudio de técnicas para evaluar el diseño de sistemas que pueden ser industriales, mecánicos, electrónicos u organizacionales.
Spanish: Introduction to the design of systems considering their lifecycle from concentualization
until disposal, including the basic theory of systems considering their intecycle from conceptualization to multiple disciplines, the course includes the study of techniques to evaluate the design of systems that could be industrial, mechanical, electronic, or organizational.
Pre -requisites:
ININ 4015 or ININ 4007 or INCI 4055 o INCI 4026
Course Objectives:
After completing the course, the student should be able to:
(i) recognize a system and break down its elements,
(ii) discriminate the phases of a system's life-cycle,
(iii) interpret the principles of systems science in everyday design issues
(iv) understand the steps of the systems engineering process,
(v) identify the needs to be fulfilled by the new system (issue formulation),
(vi) gather, organize, analyze, and present information related to new system's requirements of any kind in terms of objectives to be satisfied ,
(vii) generate potential alternative courses of action, document the new system's specifications, (viii) analyze, evaluate, and improve the alternatives based on the operational feasibility of the system
(ix) compile and document the new system's specifications
(x) identify the steps for new system deployment
(xi) present the information from v to ix in a coherent and professional manner
Instructional Strategies:

Seminar with formal presentation seminar without formal presentation workshop								
	art workshop practice trip thesis special problems tutoring							
	research 🖂 other, please specify: Course Project							
Μ	Minimum or Required Resources Available:							
Co	burse time frame and thematic outline							
	Outline		Contact	Hours				
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	Final Exam	1	15%	
	Short Quizzes			
	Oral Reports	1-2	10-20%	
	Monographies			
	Portfolio			
	Projects	1-2	15-30%	
	Journals			
	Other, specify: Homeworks	5-10	5-10%	
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-	Portfolio Projects Journals Other, specify: Homeworks TOTAL:	1-2 5-10	15-30% 5-10% 100%	

Bibliography: Textbook:

Blanchard, B.S., & Fabrycky, W.J. (2010). Systems engineering and analysis (5th ed.). Upper Saddle River, NJ: Prentice Hall.

References:

Blanchard, Benjamin S. (2008). System Engineering Management (4th ed.). John Wiley and Sons, New Jersey.

Meadows, D.H., and Wright, D. (2008). Thinking in Systems: A Primer. Sustainability Institute.

Online Resources:

Crowder, J.A. (2013). Systems Engineering Agile Design Methodologies. Springer. [Available on http://library.uprm.edu]

Adcock, R. (Ed.). (2015, June 29). Guide to the Systems Engineering Body of Knowledge (SEBoK). Retrieved September 29, 2015, from <u>http://sebokwiki.org</u>

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 in the Department of Counseling and Psychological Services at the Dean of Students Office, phone number 787 285-3864 or 787 832-4040 exts: 3864, 2040, or 3372.