

COURSE NUMBER: IE 5111, 4 credits	COURSE TITLE: Systems Engineering I
TERMS OFFERED: Fall	PREREQUISITES: IT upper division or graduate student
TEXTBOOKS/REQUIRED MATERIAL: Blanchard, B.S., Fabrycky, W.J. (2005), Systems Engineering and Analysis, Fourth Edition, ISBN #0131869779, Prentice Hall	PREPARED BY: Saif Benjaafar DATE OF PREPARATION: May 23, 2007
COURSE LEADER(S): Robert Monson, Ph.D. Lockheed Martin Adjunct Professor	CLASS/LABORATORY SCHEDULE: 2 hour lecture once per week CONTRIBUTION OF COURSE TO MEETING PROFESSIONAL OBJECTIVES: 100 % Engineering Topics
CATALOG DESCRIPTION: Overview of systems-level thinking/techniques in context of an integrated, design-oriented framework. Elements of systems engineering process, including lifecycle, concurrent, and global engineering. Framework for engineering large-scale, complex systems. How specific techniques fit into framework.	COURSE TOPICS: 1. Elements of Systems Engineering 2. Systems Thinking 3. Concurrent Engineering 4. Project Management 5. Total Quality Management 6. Products / Life Cycles 7. Acquisition Models 8. Requirements Development / Strategy 9. Functional Analysis and Allocation 10. Design Synthesis / Systems Architecture 11. Risk Management 12. Integration and Verification 13. Reliability, Maintainability and Availability 14. Usability / Human Factors 15. Coherence in Systems Engineering

COURSE OBJECTIVES	By the end of the course, students will be able to demonstrate a general knowledge of Systems Engineering methodologies and skills, and exhibit a heightened awareness of the challenges facing a Systems Engineer.
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COURSE OUTCOMES	<p>(Letters shown in brackets are linked to program outcomes a-k)</p> <ol style="list-style-type: none"> 1. Understand Systems Thinking [c, d, j, k] 2. Define and formulate the underlying requirements of a project [c, e, g] 3. Plan and document a project or program, including (1) performance specification, (2) project schedule, and (3) project budget [c, d, f, g] 4. Understand acquisition models and life cycle cost [a, e] 5. Understand functional analysis and systems architecture [c, e] 6. Understand reliability, maintainability and availability [a] 7. Recognizing the value of coherence in systems engineering [c, d, e, k] 										
ASSESSMENT TOOLS:	<table border="0"> <tr> <td>1) Panel Presentation</td> <td>20%</td> </tr> <tr> <td>2) Exam - Midterm</td> <td>20%</td> </tr> <tr> <td>3) Term Paper</td> <td>25%</td> </tr> <tr> <td>4) Exam - Final</td> <td>25%</td> </tr> <tr> <td>5) Class Participation</td> <td>10%</td> </tr> </table>	1) Panel Presentation	20%	2) Exam - Midterm	20%	3) Term Paper	25%	4) Exam - Final	25%	5) Class Participation	10%
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Nature of Changes

This syllabus is an entirely new document, no previous versions exist.