

Systems Management
ESI 6555, Sections TBD
Class Periods: Delivered via UF EDGE
Location: UF EDGE
Summer 2020

Instructor:

Don A. Grundel, Ph.D., P.E.

don.grundel.1.ctr@us.af.mil

Phone: 850-582-0716

Office Hours: I have no office on UF campus, you may contact me by email, phone or e-learning website

Taping Times: Wednesdays 2:00 and Fridays 9:00 and 10:15 (Central Time)

Teaching Assistants: N/A

Course Description

Introduction to the concepts of systems and the role of systems engineering in their development. Basic framework for planning and assessing system development, and how systems analysis methods and techniques are integrated into systems engineering processes.

Course Pre-requisites

Calculus, linear algebra, basics of statistics, and probability

Course Objectives

- Knowledge of systems engineering processes and practices
- Knowledge of fundamental tools used to verify system performance

At the end of the course students will be able to:

- Describe processes, methods, and practices of systems engineering and understand their application in systems development
- Apply systems engineering practices and processes
- Develop requirements, manage requirements, and verify
- Analyze systems using a variety of tools to increase performance and/or reduce cost
- Recognize systems engineering and systems analysis strategies in examples and cases

Material and Supply Fees

N/A

Required Textbooks and Software

- Textbook: Blanchard and Fabrycky, *Systems Engineering and Analysis*, 5th edition, Prentice Hall, 2011. EBSN 978-0132217354

- No specialized software required. Microsoft Excel will be used for several exercises. Additional materials developed by instructor are provided in Resources section of e-learning.

Recommended Materials

Some references for the course and for use in daily Systems Engineering activities

- International Council on Systems Engineering, www.incose.org
- IEEE Std 15288, 2015
- Defense Acquisition Guidebook, Feb 2017

Course Schedule

Tape	Lecture #	Topic	Text (read)	Assignments (due ~5 days after posting)
13 May	1	Introduction; Systems Engineering	Chapter 1	1) Introduce yourself
17 May	2	Cont. Systems Engineering; Engineered Systems	Chapter 2	2) Ch 1 Q's 3) Write SRD
17 May	3	Engineering Process/Requirements Mgt; Design Considerations/Implementation	Chapter 2	
20 May	4	Cont. Design Considerations/Implementation; Case Study 1: A-10 Warthog;	Chapter 2; Case Study	
22 May	5	Conceptual System Design;	Chapter 3	
22 May	6	Design Reviews and TPMs;		4) Tolerance Stack Up 5) Case Study 1 Questions
27 May	7	More on Optimization In Design; Risk and Opportunity Management;	Chapter 9	6) Excel Solver, Ch9,Q 27 7) Opt Assignment
29 May	8	Cont. Risk and Opportunity Management;	Ch 19.5	
29 May	9	Trade Off/Decision Analysis; SWaP-C	Chapter 7	8) Ch7,Q19; MC; LOP
3 Jun	10	Cont SWAP-C		
5 Jun	11	Case Study 2: Hubble Space Telescope Preliminary System Design	Case 2 Chapter 4	
5 Jun		Quiz 1 (no lecture)		Quiz Posted 7 Jun
10 Jun	12	Cont Preliminary Design		9) Case Study 2 Questions
12 Jun	13	Detail Design Curve Fitting;	Chapter 5	10) Aging
12 Jun	14	Cont. Curve Fitting; Case Study 3 – Big Dig	Case 3	Mid-Term posted (11) Project Proposal

17 Jun	15	Cont. Big Dig Case Study;		12) Case Study 3 Questions & 13) Curve Fitting
19 Jun	16	Test and Evaluation	Chapter 6	
19 Jun		Mid-Term (due) no lecture		Turn in Project Proposal
22-26		Summer Break		
1 Jul	17	Acceptance Testing; Economic Evaluation;	Chapter 8 Chapter 10	14) Acceptance Testing
2 Jul	18	Queuing Theory and Analysis;	Chapter 12	15) Economic Analysis
8 Jul	19	Design for Reliability;		16) Queuing Theory
10 Jul	20	Cont Reliability		
10 Jul	21	Cont Reliability		17) Reliability
15 Jul		Quiz 2 (no lecture)		
17 Jul	22	Case Study 4: B-2; Maintainability	Case 4; Chapter 13	
17 Jul	23	Cont. Maintainability Human System Interface	Chapter 14 Chapter 16	18) Case Study Questions
22 Jul	24	Cont. Human System Interface; Manufacturing	Chapter 18	19) Maintainability
24 Jul	25	Cont. Manufacturing RAM-C;		
24 Jul		SEP and SEMP;		20) Manufacturing
29 Jul	26	Cont SEP and SEMP Open Systems Architecture		
31 Jul	27	Cont. Open Systems DODAF;		
31 Jul	28	Cont DODAF		Final Exam Posted
5 Aug	29	Integrated Baseline Reviews Control Concepts;		
4 Aug	30	Case Study 5: COBE	Case Study	Submit Project Paper
7 Aug		Final Exam Due (no class)		

Attendance Policy, Class Expectations, and Make-up Policy

Any student who can attend any taping session is welcome. There is no penalty for absence or tardiness. Homework and quizzes may be turned in late with advanced approval from the instructor. Exams may be made-up in extreme circumstances. Please contact instructor in advance. Excused absences are consistent with university policies in the graduate catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation.

Evaluation of Grades

Grades are based on Homework, Quizzes, Project, Midterm and Final Exams.

- a. Homework is due within approximately 5 days after assignment
- b. Homework (25%), Quizzes (25%), Project (25%) midterm (12.5%), final (12.5%) (quizzes, midterm and final are open book, open notes – no proctor required)

Grading Scale

Percent	Grade	Grade Points
90.0 - 100.0	A	4.00
89.0 - 89.9	A-	3.67
87.0 - 88.9	B+	3.33
80.0 – 86.9	B	3.00
79.0 - 79.9	B-	2.67
77.0 - 78.9	C+	2.33
72.0 – 76.9	C	2.00
69.0 - 71.9	C-	1.67
66.0 - 68.9	D+	1.33
63.0 - 65.9	D	1.00
60.0 - 62.9	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:

<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades>

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or

<http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

<https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus:

https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.