Systems Design

ESI6553 Sections OVER, CAMP, 616H, 2FED, 1FE2
Class Periods: Tuesday: 3:00-4:55pm; Thursday: 4:05-4:55pm
Location: CSE E107 & Online
Academic Term: Fall 2020

Instructor:
Name: David Kaber
Email Address: dkaber@ufl.edu
Office Phone Number: 352-294-7700
Office Hours: Tuesday/Thursday 2-3pm or by appointment, UF Weil Hall, Room 302A

Teaching Assistant/Peer Mentor/Supervised Teaching Student:
- TBD

Course Description (3 credits)
Broad introduction to systems engineering and the structured approaches needed to design complex systems. Emphasizes formulation of systems problems and approaches to their solution. Introduces basic mathematical techniques for dealing with systems design.

Course Pre-Requisites / Co-Requisites
Calculus, linear algebra, basics of statistics, ESI 6314 (waived with instructor consent)

Course Objectives
This course will acquaint students with concepts of systems and the role systems engineering plays in their development. Students will obtain introductory knowledge of the system design process, including conceptual, preliminary and detailed design requirements, and test and evaluation methods. Students will also develop knowledge of engineering methods for systems design and analysis, and systems safety engineering. The course will also provide introductory knowledge of data mining, sampling, classification and cluster analysis for systems design decision making. As this is a project oriented course, a final project is required.

Materials and Supply Fees
Not applicable

Required Textbooks and Software
- "How To Do Systems Analysis: Primer and Casebook"
- John E. Gibson , William T. Scherer , William F. Gibson , Michael C. Smith
- John Wiley & Sons, 2017, 1st Edition
- ISBN#: 978-1119179573

Recommended Materials
- Lecture slides will be prepared and distributed by the instructor in advance of discussion sessions
- Supplemental reading materials will be provided by the instructor according to the course schedule.
- An analytical software of your choice: Excel, MatLab, R Studio, etc.

Course Schedule (also see detailed course schedule at Canvas site)
Week 1: Intro to systems engineering / Kaber / "Systems Thinking" & Chap. 1 / No HW / No quiz / No exam
Week 2: Systems models, evaluation and conceptual design / Kaber / Chap. 1 / No HW / No quiz / No exam
Week 3: Preliminary design and detailed design / Kaber / Chap. 2 / No HW / No quiz / No exam
Week 4: Test & evaluation and goal development / Kaber / Chap. 2 & 3 / No HW / No quiz / No exam
Week 5: Systems design, analysis and complexity / Kaber / Chap. 4 / HW 1 / No quiz / No exam
Week 6: Intro to systems safety / Kaber / Slides / No HW / No quiz / No exam
Week 7: Exam review and exam / Kaber / None / No HW / No quiz / EXAM 1

Week 8: Hazard analysis and control methods / Kaber / Slides / HW 2 / No quiz / No exam
Week 9: Intro to data mining / Kaber / Chap. 5 & Slides / No HW / No quiz / No exam
Week 10: Defining data and sampling / Kaber / Chap. 5 & Slides / HW 3 / No quiz / No exam
Week 11: Data classification tasks and methods / Kaber / Chap. 5 & Slides / No HW / No quiz / No exam
Week 12: Decision trees and cluster analysis / Kaber / Chap. 5 & Slides / No HW / No quiz / No exam
Week 13: Rules of systems analysis / Kaber / Chap. 6 / HW 4 / No quiz / No exam
Week 14: Exam review / Kaber / None / No HW / No quiz / No exam
Week 15: Exam / Kaber / None / No HW / No quiz / EXAM 2

Online Course Recording

Our class discussion sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live sessions. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Attendance Policy, Class Expectations, and Make-Up Policy

This course is offered through the UF EDGE program. All lectures will be pre-recorded and made available to all students (EDGE and on-campus). It is expected that students will watch the course lectures in advance of online discussion sessions (at the regularly scheduled class times). Attendance of discussion sessions is not required, but available students are encouraged to attend. Make-up exams will only be arranged in cases of documented family or medical emergencies. If at all possible, please contact the instructor prior to the exam to discuss any circumstances. Excused absences must be in compliance 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

Assignment	Total Points	Percentage of Final Grade
Homework Sets (4)	25 ea.	~28%
Midterm Exam	100	~28%
Final Exam	100	~28%
System Analysis Paper	50	~15%
TOTAL	350	100%

Grading Policy

Percent	Grade	Grade Points
93.0 – 100	A	4.00
90.0 - 92.9	A-	3.67
87.0 - 89.9	B+	3.33
83.0 – 86.9	B	3.00
80.0 – 82.9	B-	2.67
77.0 - 79.9	C+	2.33
73.0 – 76.9	C	2.00
70.0 - 72.9	C-	1.67
67.0 - 69.9	D+	1.33
63.0 - 66.9	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 who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-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://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-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.

Commitment to a Safe and Inclusive Learning Environment
The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Donna Stilwell, Assistant Director of Human Resources, 352-392-0903, dstil@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

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: https://registrar.ufl.edu/ferpa.html

Campus Resources:

Health and Wellness

U Matter, We Care:
Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

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 Discrimination, Harassment, Assault, or Violence
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

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 suppor*t*, 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://care.dso.ufl.edu.

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