

Systems Design

ESI 6553 Section CAMP, OVER, 2FED, 1FE2

Class Periods: M | Period 6-7 (12:50PM - 2:45 PM); W | Period 7 (1:55 PM - 2:45 PM)

Location: M | MAT 0003; W | WEIL 0273

Academic Term: Fall 2025

Instructor:

Dr. Mengyu Li

mengyu.li@ufl.edu (Please contact through the Canvas message)

(352)-294-6391

Office location: 379 Weil Hall

Office Hours: Wednesdays 3:00 - 4:00 pm (online via Zoom)

Teaching Assistant:

Jaber Qezelbash-Chamak

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Office Hours: Fridays 1:00-3:00 pm (online via Zoom)

Course Description (3 credits)

This course serves as an introduction to systems engineering. It consists of the structured approaches needed to design complex systems. This course introduces basic mathematical techniques for dealing with systems design, and it emphasizes the formulation of systems problems and approaches to their solutions.

Course Pre-Requisites / Co-Requisites

Calculus, linear algebra, basics of statistics

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

Recommended Textbooks and Software

- Systems Engineering and Analysis, 5th Edition.
- Benjamin S. Blanchard, Wolter J. Fabrycky
- Pearson, 2010, 5th Edition
- ISBN-13: 978-0132217354

- 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-13: 978-1119179573

Recommended Materials

- Lecture slides/recordings 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*

*This is a tentative outline. The instructor reserves the right to make adjustments as necessary. *Please note that this is an **EDGE course with flipped classroom instruction**.*

Notation for schedule: In-class; Virtual; **Important Dates**

Week	Date	Topic	Activity	Lecture Recording*
1		None		
2	8/25/2025	Introduction – syllabus, schedule, assignments, exam; Module 1 Overview		
	8/27/2025	<i>View lectures</i>		[ALL] Module 1 Part 1: ESI6553_002 [ALL] Module 1 Part 2: ESI6553_003 [ALL] Module 1 Part 3: ESI6553_005
3	9/1/2025	Holiday	Self Introduction	
	9/3/2025	Module 1 Discussion; Module 2 Overview		[EDGE] Module 1 Discussion: ESI6553_006
4	9/8/2025	<i>View lectures</i>		[ALL] Module 2 Part 1: ESI6553_007; 008 [ALL] Module 2 Part 2: ESI6553_009 [ALL] Module 2 Part 3: ESI6553_009; 010
	9/10/2025	Module 2 Discussion; Module 3 Overview		[EDGE] Module 2 Discussion: ESI6553_012
5	9/15/2025	<i>View lectures</i>	Quiz 1	[ALL] Module 3 Part 1: ESI6553_010; 011 [ALL] Module 3 Part 2: ESI6553_011; 013
	9/17/2025	HW 1 & Quiz 1 Overview; Module 4 Overview		[EDGE] Quiz 1 & HW 1 Overview: ESI6553_012
6	9/22/2025	<i>View lectures</i>	HW 1	[ALL] Module 4 Part 1: ESI6553_013; 014 [ALL] Module 4 Part 2: ESI6553_014; 015
	9/24/2025	Module 3 Discussion; Module 4 Discussion		[EDGE] Module 3 Discussion: ESI6553_015
7	9/29/2025	<i>Break/Catch up</i>		
	10/1/2025	Quiz 1 Discussion; Midterm Overview		[ALL] Quiz 1 Discussion: ESI6553_016 [ALL] Midterm Overview: ESI6553_016
8	10/6/2025	Midterm Exam	HW 2	
	10/8/2025	Module 5 Overview; HW 2 Overview		[EDGE] HW 2 Overview: ESI6553_022
9	10/13/2025	<i>View lectures</i>	Term Project	[ALL] Module 5 Part 1: ESI6553_017; 018
	10/15/2025	Term Project Overview; Quiz 2 Overview		[EDGE] Term Project Overview: ESI6553_025 [EDGE] Quiz 2 Overview: ESI6553_022
10	10/20/2025	<i>View lectures</i>	Quiz 2	[ALL] Module 5 Part 2: ESI6553_018; 020; 021; 023
	10/22/2025	Module 5 Discussion; Module 6 Overview		[EDGE] Module 5 Discussion: ESI6553_022; 025
11	10/27/2025	<i>View lectures</i>	HW 3	[ALL] Module 6 Part 1: ESI6553_023; 024; 026
	10/29/2025	HW 3 Overview; Quiz 2 Discussion		[ALL] HW 3 Overview: ESI6553_028 [ALL] Quiz 2 Discussion: ESI6553_037
12	11/3/2025	<i>View lectures</i>		[ALL] Module 6 Part 2: ESI6553_026; 027 [ALL] Module 6 Part 3: ESI6553_027; 029; 030

	11/5/2025	Module 7 Overview; HW 4 Overview;		[ALL] HW 4 Overview: ESI6553_033
13	11/10/2025	View lectures	HW 4	[ALL] Module 7 Part 1: ESI6553_030; 031 [ALL] Module 7 Part 2: ESI6553_031; 032
	11/12/2025	Module 6 Discussion; Module 8 Overview		[EDGE] Module 6 Discussion: ESI6553_028
14	11/17/2025	View lectures		[ALL] Module 8 Part 1: ESI6553_034; 035 [ALL] Module 8 Part 2: ESI6553_036
	11/19/2025	View lectures		[ALL] HW 4 Discussion: ESI6553_037 [ALL] Final Exam Review: ESI6553_036; 038
15	11/24/2025	Holiday		
	11/26/2025			
16	12/1/2025	Final Exam	Term Project Due	

**The listed recordings are only roughly aligned with the covered topics. Some topics span multiple recordings. Please ensure you watch all the lecture recordings to cover the material thoroughly.

[ALL]: All students are required to watch the recordings.

[EDGE]: EDGE students are required to watch the recordings; for CAMPUS students, viewing is optional but recommended if needed.

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 discussion sessions (at the regularly scheduled class times). Class attendance is not required, but available students are encouraged to attend.

Attendance is required for online exams via Canvas Honorlock proctoring services. Make-up exams will only be arranged in cases of documented family or medical emergencies (Please contact the instructor prior to the exam to discuss any circumstances). Excused absences must be consistent with university policies in the Graduate Catalog (<https://catalog.ufl.edu/graduate/regulations>) and require appropriate documentation. Additional information can be found here: <https://gradcatalog.ufl.edu/graduate/regulations/>

Late Assignment Policy: The assignments are to be submitted on or before the posted due date. Students are responsible for all material presented in each session. Late submission penalty of 25% per day (3 days maximum allowance) will be applied to late submissions. If the grades have been released/assignments have been evaluated, your assignment is excessively late, a zero will be given. **It is your responsibility to visit the course website regularly, read the posted announcements and be aware of assignment submission deadlines and procedures.**

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homework Sets (4)	25 each	24% (6% each)
Quizzes (2)	10 each	10% (5% each)
Midterm Exam	100	20%
Final Exam	100	26%
Project	100	20%
TOTAL		100%

Grading Policy

Percent	Grade	Grade Points
93.0 - 100.0	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:

[UF Graduate Catalog](#)
[Grades and Grading Policies](#)

Academic Policies & Resources

To support consistent and accessible communication of university-wide student resources, instructors must include this link to academic policies and campus resources: <https://go.ufl.edu/syllabuspolices>. Instructor-specific guidelines for courses must accommodate these policies.

Commitment to a Positive Learning Environment

The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values.

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 Coordinator
- HWC OE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu