

Systems Architecture

ESI 6552 Section REEF/1FE2/2FED/CAMP

Class Periods: M, W, F | Period 8 (3:00 pm - 3:50 pm EST)

Location: Online/REEF

Academic Term: Spring 2024

Instructor:

Alexander Semenov

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(850)-460-9903, Office location: REEF 132

Office Hours: Mondays, 11 – 12 pm EST; Fridays, 4 – 5 pm EST

Teaching Assistant/Grader:

Please contact through the Canvas website

- TBA

Course Description

System architecture is an abstract description of the entities of a system and the relationship between those entities. This course will acquaint students with concepts of systems architecture and the application of related methods to real-world systems. It provides foundations for developing and evaluating architectures for systems of systems, as well as process for generating functional, physical, and operational architecture from a top-level operations concept. This is a 3 credit hours project course.

Course Pre-Requisites / Co-Requisites

Prerequisite: calculus, linear algebra.

Course Objectives

Upon completion of this course, students will obtain foundational knowledge of the entities of a system and relationships among the entities from a system architecture perspective. Students will understand foundational knowledge of principles, processes, and tools of system architecting. Students will be able to analyze and critique the architecture of existing systems and structures and lead the early, conceptual phases of the system development process.

Special Emphasis:

- Understanding of basic principles
- Applications to system architecture analysis and development
- This is a course in **how** to think, not **what** to think

Materials and Supply Fees

This class is based primarily on lectures. Students may attend lectures in person or watch the lectures on video. Any additional supplemental material will be provided. Supply fees are not applicable in this course.

Recommended Textbooks and Software

Textbooks:

- E. Crawley, B. Cameron, and D. Selva, System Architecture: Strategy and Product Development for Complex Systems, 1st edition, 2016, Pearson. ISBN: 9780133975345.
- Maier, The Art of Systems Architecting, 3rd edition, 2009, CRC Press. ISBN: 781420079135.

Software:

- Any video recording/editing program

Course Schedule

The course Schedule is offered as a guide. This means that it is subject to change, depending on the pace of the class. The instructor might choose to cover parts of the curriculum more extensively, or give extensions to deadlines.

Week	Date	Topic
1	Jan 8 - 12	Course Introduction System Review Forms & Functions
2	Jan 15 - 19	Forms & Functions (cont.) System Emergence Assignment 1
3	Jan 22 - 26	System Emergence (cont.) Assignment 2
4	Jan 29 - Feb 2	Thinking about Complex Systems Case study 1
5	Feb 5 - 9	Systems Thinking Quiz 1
6	Feb 12 - 16	Structure and Behavior of Networks
7	Feb 19 - 23	Structure and Behavior of Networks Case study 2
8	Feb 26 - Mar 1	Structure and Behavior of Networks System Complexity
9	Mar 4 - 8	System Complexity, Heuristics Case study 3
Spring break		
11	Mar 18 - 22	Midterm Project Review Midterm Project Peel Eval
12	Mar 25 - 29	Solution-Neutral Functions and Concepts
13	Apr 1 - 5	From Concept to Architecture Quiz 2
14	Apr 8 - 12	Upstream/Downstream Influences Assignment 3
15	Apr 15 - 19	Translating Needs into Goals
16	Apr 22 - 26	Architecture as Decisions, Review
	Final Exam	5/02/2024 @ 3:00 PM - 5:00 PM

Attendance Policy, Class Expectations, and Make-Up Policy

- This course is offered through the UF EDGE program. All lectures will be recorded and made available to all students (EDGE and on-campus). You are responsible for the announcements made in class. Students are expected to know the material covered in the prerequisite courses. Makeup quizzes or exams are not offered. 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 p.p. per day (4 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
Assignments (3)	10 each	20% (5% or 10% each)
Case Studies (3)	50 each	30% (10% each)
Quizzes (2)	10 each	10% (5% each)
Midterm	100	20%
Final	100	20%
		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: <https://catalog.ufl.edu/graduate/?catoid=10&navoid=2020#grades>

Grades and Grading Policies: <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

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/>.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

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/process/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 varied perspectives and lived experiences within our community and is committed to supporting the University’s core values, including the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information, and veteran status.

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
- HWCOE Human Resources, 352-392-0904, student-support-hr@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: <https://counseling.ufl.edu>, 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 support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.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://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

On-Line Students Complaints: <https://distance.ufl.edu/getting-help/>; <https://distance.ufl.edu/state-authorization-status/#student-complaint>.