

Enterprise Software Engineering Practices

CIS4930 Special Topics

Section # TBD

Class Periods: MWF Period 10 (5:10 pm - 6:00 pm)

Location: Virtual

Academic Term: Fall 2022

Instructor:

Sarvenaz Myslicki

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561-352-4873

Office Hours: Friday, 12 - 1 pm or by appointment

Teaching Assistant

Please contact through the Canvas website

- TBD

Course Description

This course aims to introduce students to modern software engineering practices used to build software in large enterprises. Students will learn about processes, frameworks, and tools that help organizations with hundreds or even thousands of engineers collaborate to deliver software. Students will expand upon their knowledge of the Software Development Life Cycle to better understand how to contribute code to existing codebases, automate testing and deployment activities, and proactively monitor and support their software. Even more importantly, students will learn how to evaluate requirements from a business and customer perspective, ensuring that they contribute software that is impactful.

These real-world industry skills will help students stand out as they pursue full-time software engineering opportunities. Time to productivity is an industry key performance indicator, and this course aims to get students a head start in becoming productive faster and more hireable.

The course will be delivered virtually.

Course Pre-Requisites

CEN 3031 Intro to Software Engineering

Course Objectives

By the end of the semester students will:

- Understand how large enterprises manage software projects across dozens of engineering teams
- Understand the operations and responsibilities of different functional teams within a large technology organization
- Learn about different types of enterprise architecture and associated design patterns
- Expand upon the standard software development life cycle, from understanding the business need to deployment and ultimately decommissioning or replacement of software
- Be prepared to hit the ground running in their first industry software engineering job, increasing their hireability and time to productivity.

Instructor Bios

This course will be taught by three UF alumni who are members of the CISE Industry Advisory Board, as well as additional industry guest lecturers.

Sarvenaz Myslicki graduated from the University of Florida in 2013 with a B.S. in Computer Science. Currently, she is Vice President of Technology at American Express, where she leads a team of 350+ software engineers responsible for the americanexpress.com website, Loyalty Experiences, and Site Reliability Engineering. She is a non-profit leader within the Society of Women Engineers, a passionate mentor and career coach, and a published author.

Michael Adrian graduated from the University of Florida in 2009 with an M.S. in Information Systems and Operations Management. He's spent his career since then with ExxonMobil, where he started slinging code for technical applications (which he still loves), and now acts as the Enterprise Architect driving architecture patterns and enablement for how over 7,000 applications are built, delivered, and supported. He is a lead in ExxonMobil's Software Development and Applications Enablement job families, and is passionate about helping people meet their dreams.

Joseph Cutrono graduated from the University of Florida in 2007 with a B.S. and M.S. in Computer Science. He works for UKG, a company that provides HR and workforce management solutions. His current role is Sr. Director of Engineering for their Developer Experience Platform team. They provide tooling for CI/CD, Quality, and Observability services for their engineering teams. He is currently the Chair of the University of Florida Industry Advisory Board and passionate about contributing toward the UF CISE curriculum.

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	High
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	Low
3. An ability to communicate effectively with a range of audiences	Medium
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	Low
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	Medium
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	Low

7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Medium
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Required Textbooks and Software

- N/A - Course notes are developed by the instructors

Recommended Materials

- N/A

Course Schedule

Week	Dates	Topics	Due
0	Aug 22 - Aug 26	- Introduction - Enterprise Software Challenges & Benefits - Measuring Success & Impact	Review Syllabus Participation: Complete Welcome Survey
1	Aug 29 - Sep 2	- Organizational Structures - Cross-Functional Partners - Large-Scale Agile Frameworks - Open Source & Inner Source - Dependency Management & Licensing	Assignment: Open Source Pt 1
2	Sep 5 - Sep 9	- DevOps Practices - Site Reliability Engineering - Production Support	Assignment: Open Source Pt 2
3	Sep 12 - Sep 16	- Code Readability & Documentation - Code Review & Collaboration - Refactoring, Debugging, & Linting	Partner Activity: Open Source Pt 3
4	Sep 19 - Sep 23	Career Fair Prep - Resumes & Technical Portfolios - Technical Interviews - Creating a Personal Brand	Assignment: Resume Partner Activity: Mock Technical Interview
5	Sep 26 - Sep 30	Enterprise Architecture: Part 1 - Domain-Driven Design - Service-Oriented Architecture	Assignment: REST API Design
6	Oct 3 - Oct 7	Enterprise Architecture: Part 2 - Message Broker Architecture - Event-Based Architecture - Business Process Management	Assignment: Event Architecture
7	Oct 10 - Oct 14	- Software Audits and Regulatory Impacts - Data Processing - Data Governance	Assignment: Batch vs Real-time
8	Oct 17 - Oct 21	Web Application Development	Assignment: React

		- Web Frameworks - Front-End & Back-End	Hello World
9	Oct 24 - Oct 28	Mobile Application Development - Android & iOS - Unique Challenges (devices, screen size, performance, battery consumption, accessibility)	Assignment: Mobile Experience Building
10	Oct 31 - Nov 4	Cloud Computing - Containerization - Orchestration - Serverless Computing - PaaS & IaaS - Certifications	Partner Activity: User Feedback
11	Nov 7 - Nov 11	Information Security - Vulnerability Management - Risk Management - Access Control (ID, AuthN, AuthZ)	Assignment: Vulnerability Audit
12	Nov 14 - Nov 18	- Continuous Integration & Delivery - Change Management - Release Management	Assignment: Git Branching Activity
13	Nov 21 - Nov 25	Holiday Break	None
14	Nov 28 - Dec 2	Enterprise Quality Assurance (MA) - Testing Techniques - Automated Test Frameworks - Quality Metrics	Assignment: Automation Testing
15	Dec 5 - Dec 9	- Decommissioning Software - Software Modernization and Innovation in Large Enterprises (MA)	Assignment: UX Simplification Participation: Complete Closing Survey
16	Dec 12 - Dec 16	No Final Exam	Complete Course Evaluation

Attendance Policy, Class Expectations, and Make-Up Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies:

<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Assignments (12)	70	70%

Partner Activities (3)	20	20%
Participation (2)	5	5%
Attendance	5	5%
		100%

Grading Policy

Percent	Grade	Grade Points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

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.ua.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.ua.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 Conduct 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. 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
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@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/>.

COVID-19

- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated.
- If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus.
- If you are withheld from campus by the Department of Health through Screen, Test & Protect, you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.
- UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website](#) for more information.
- Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.

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://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: <http://www.distance.ufl.edu/student-complaint-process>.

