Introduction to Software Engineering
CEN 3031   Sections 11215

Class Periods: Online
Location: Online
Academic Term: Fall 2022

Instructor:
Sanethia Thomas, PhD
sanethiat@ufl.edu
To book office hours. https://calendly.com/drsanethiathomas_meeting/meeting

Teaching Assistant: to be provided
Please contact through the Canvas website

Course Description

This course gives an introduction to software engineering theory, principles and methods. Topics include software planning, software design, configuration management, testing and maintenance. Students will gain experience contributing to an open source project and participating on a team project to develop a product.

Course Pre-Requisites

COP 3530 - Data Structures and Algorithms

Course Objectives

- Understand what software engineering is and why it is important.
- Understand ethical and professional issues that are important for software engineers.
- Have extensive experience using the Agile "Scrum" Software Development Process.
- Have experience working on a team to complete a large-scale software product.
- Have experience with working with an existing code base.

Course objectives will be addressed and accomplished in the 4 modules:

Module 1: SWE Introduction and Ethics

Module 2: Open Source

Module 3: Product Planning and Design

Module 4: Product Execution

Materials and Supply Fees

There is no supply fee for this course.

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	Medium
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	Medium
3. An ability to communicate effectively with a range of audiences	High
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	Medium
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	High
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	Medium
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Medium

Required Textbooks and Software

Required:

- **Engineering Software Products** An Introduction to Modern Software Engineering
- Ian Sommerville
- Pearson; 1st edition (May 19, 2019)
- ISBN 9780135211168

Recommended:

- Essential Scrum
- Mike Cohen and Ron Jeffries
- Addison-Wesley Professional; 1st edition (July 26, 2012)
- ISBN: 9780137043293

Course Schedule The following is a **TENTATIVE** overview of the course schedule **(subject to change):**

Module Week	Week	Play Posit Lecture Videos	Due Date	Perusall & Required Readings	Due Date	Assignments	Due Date
0	8/24 - 8/26	Instructor Introduction Video		Syllabus		Skills Survey	9/2
1	8/29 - 9/2	- Software Engineering Defined - Software Engineering Ethics	9/2	- What is Software Engineering? - ACM Code of Ethics and Professional Conduct -Research Project Document Perusall - Ariane 5: Who Dunnit?	9/2	ACM Ethics Case Analysis	9/13
2	9/5 - 9/9	- Software Process Activities and Models - Open Source -Why computing students should contribute to open source projects?	9/9	Perusall -Analyzing first contributions on GitHub: what do newcomers do.	9/9	- Open Source Project	9/27
3	9/12 - 9/16	- DevOps and Code Management Chpt. 10 - Project and Risk Management Chpt. 1	9/16	Perusall -Software Configuration Management Practices for eXtreme Programming Teams	9/16	Development Environment and Project Proposal Plan DEPP	9/20
4	9/19 - 9/23	- Agile Method and Scrum Framework Chpt. 2	9/23	Perusall Agile Scavenger Hunt	9/23		
5	9/26 - 9/30	- User Stories - Product Backlog Chpt. 3		Perusall Implementing Scrumban	9/30	- User stories - Product Backlog	10/4
6	10/3 – 10/7	- Software Architecture Models - System Architecture and Use Case Model Chpt. 4		Chapter 4 Software Architecture in the Engineering Software Products A Modern Introduction to Software Engineering textbook	10/7	Software Architecture Models	10/11
7	10/10 - 10/14			Project Assignment Description How to Present to Senior Executives		- Project Design and Plan Presentation - Sprint 0 Retrospective -Individual Contribution - Peer 1 Evaluation	Presentation 10/10 - 10/14 Retrospective 10/20 Individual Contribution 10/20 Peer Evaluation 10/20
8	10/17 - 10/21	- Software Quality Management Chpt. 8	10/21	Daily Scrum Fact Sheet Perusall The Challenge of Good Enough Software	10/21	Daily Scrum	10/21
9	10/24 - 10/28	- Software Testing Chpt. 9		Test Case Guide	10/28	Daily Scrum Software Tests	Daily Scrum 10/28 Software Test 11/1/2022
10	10/31 - 11/4	- Cloud Based Architecture -Use Case Model Chpt. 5	11/4	Perusall An Analysis Report on Green Cloud Computing Current Trends and Future Research Challenges	11/4	- Daily Scrum	11/4
11	11/7 – 11/11			Project Assignment Description Technical writing and presentation		- Sprint 1 Presentation - Sprint 1 Retrospective - Individual Contribution - Peer 2 Evaluation	Presentation 11/7 – 11/11 Retrospective 11/15 Individual Contribution 11/15 Peer Evaluation 11/15
12	11/14 - 11/18	-Security and Privacy Chpt. 7 -Static Code Testing		SonarCloud	11/18	- Daily Scrum	11/18
13	11/21 – 11/25	Software Evolution Use Case Model		On the evolution of Lehman's Laws	11/22		
14	11/28 - 12/2	- Microservices Architecture Chpt. 6	12/2	Perusall Understanding Migration from Monolithic to Microservice Architecture and its Challenges	12/2	- Daily Scrum	12/2
15	12/5 - 12/7			Project Assignment Description		- Final Presentation - Project Documentation - Project Submission	12/6
						- Individual Report - Research Project - Peer 3 Evaluation	12/7

Attendance Policy, Class Expectations, and Make-Up Policy

Students are strongly recommended to listen to all lectures.

Assignments are due by the time listed on Canvas. Assignments and project work can be turned in late with a cascading deduction: one (1) business day from the canvas date is 10% penalty; two (2) business days from the canvas date is 30% penalty; or three (3) business days from the canvas date is 60% penalty. Assignments submitted after 11:59pm on a due date of Friday is considered late if turned in at 12:00am on Saturday and will be considered 1 day late until Monday 11:59pm. Assignments will not be accepted after 3 business days.

Requirements for make up assignments, and other work in this course are consistent with university policies that can be found at Attendance Policies.

Grade reviews must be requested by email within one week of a grade being posted. After one week, grades will be revisited.

Extra Credit. Opportunities will be given throughout the course. Extra credit will not be given a at the end of the course. Additionally, the final grade at the end of the course is the grade earned grades will not be curved or bumped up.

Peer Evaluations. Each team member will score their team members and themselves. They are to provide a rating and justification of the rating. A team member who has an average peer evaluation score of 70-79.9 will receive a 15% penalty for the associated assignments. A team member who has an average peer evaluation score of less than 70 will receive a penalty determined by the professor of the course considering the evaluated contribution and justification provided by their team members. Peer evaluations must be completed to receive a peer evaluation score.

Students should arrange for project help and grade questions during office hours with the professor. Students should make plans to meet with the TA during scheduled office hours.

For matters directed to the professor, email the professor directly.

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/

Getting Help
Technical Difficulties

For all issues with technical difficulties for Canvas, please contact the UF Help Desk at:

- http://helpdesk.ufl.edu
- (352) 392-HELP (4357)
- Walk-in: HUB 132

**Any requests for make-ups due to technical issues should be accompanied by the ticket number received from the Help Desk. The ticket number will document the time and date of the problem. You should e-mail your instructor immediately of the technical difficulty if you wish to request a make-up.

Code Submissions
Functionality is key to success in software development and computer science, so it is **extremely important** that the guidelines are followed. Failure to follow these instructions will result in penalties.

- Github repository project are to be made public.
- Add the professor and your peer mentor to your github repository.

- Code must compile / run in debug and release mode. Debug information should never be released in the final version of a software project. **Projects that do not compile AND run will be graded accordingly**.
- Include only those files specified by the documents in your archive. Projects should have no directory structure except as explicitly mentioned in the documentation (i.e., relevant files and folders should be submitted in the root of the zip file.) It should be possible to open the archive, copy your files directly into the project, compile, and then run the project without further steps. **If the project has naming or organization error(s), its grade will be zero.**

Evaluation of Grades

Grade Category	Percentage
Participation	10%
Assignments	15%
Open Source Project	20%
Research Project	20%
Team Project	30%
Peer Evaluation	5%
Total	100%

Here are the items that go in each grading category:

Participation	Play Posit Lectures, Lab Discussions, Daily Scrum, Individual Participation Report
Assignments	Perusal Discussions, ACM Ethics, DEEP, User Stories, Product Backlog, Software Architecture Model, Retrospectives, Software Test
Open Source Project	Open Source Project
Research Project	Research Project
Team Project	Presentations, Project Documentation, Project Submission
Peer Evaluation	Peer Evaluations

Grading Policy

Range (%)
A 94 – 100
A- 90 – 93
B+ 87 – 89
B 84 – 86
B- 80 – 83
C+ 77 – 79
C 74 – 76
C- 70 – 73
D+ 67 – 69
D 64 – 66
D- 60 – 63

More information on UF grading policy may be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

NOTE: A C- will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: an average of C- is equivalent to a GPA of 1.67 and therefore does not satisfy this graduation requirement. For more information on grades and grading policies, please consult the catalog.

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/.

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.

**Academic Dishonesty will be dealt with strictly. Sharing / copying, "borrowing" of work that is not your own original work is considered academic dishonesty. code structure, discussing code structure, looking at code from another student or providing such code, and plagiarism, in addition to other dishonest behaviors, are all considered academic dishonesty. Absolutely no information regarding assignment solutions may be shared by students except at a conceptual level. If students implement algorithms from other sources, they must cite those sources.

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:

<u>Health and Wellness</u>

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/.

<u>Academic Resources</u>

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 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/state-authorization-status/#student-complaint.*

Tips for Success

Taking a course online can be a lot of fun! Here are some tips that will help you get the most of this course while taking full advantage of the online format:

- Schedule "class times" for yourself. It is important to do the coursework on time each week. You will receive a reduction in points for work that is turned in late!
- Read ALL of the material contained on this site. There is a lot of helpful information that can save you time and help you meet the objectives of the course.
- Print out the Course Schedule located in the Course Syllabus and check things off as you go.
- Take full advantage of the online discussion boards. Ask for help or clarification of the material if you need it.
- Do not wait to ask questions! Waiting to ask a question might cause you to miss a due date.
- Do your work well before the due dates. Sometimes things happen. If your computer goes down when you are trying to submit an assignment, you'll need time to troubleshoot the problem.
- To be extra safe, back up your work to an external hard drive, thumb drive, or through a cloud service.