



CSS 360A WIN 18: Software Engineering

Lecture room: Mon/Wed 5:45-7:45PM, UWBB-205

Instructor: Dr. Arnold (Arnie) Lund

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Office hours: Mon 3:30-4:30PM or by appointment | UW1 271R

Course Description

Surveys the software engineering processes, tools, and techniques used in software development and quality assurance. Topics include life-cycle models, process modeling, requirements analysis and specification techniques, quality assurance techniques, verification and validation, testing, project planning, and management.

Learning Outcomes:

- Be able to define and describe: a) software industry and its practices, processes and projects; b) lifecycle development methods; c) software developer roles, responsibilities and ethics.
- Be able to compare and contrast plan-driven and agile development processes.
- Be able to use knowledge about the software development process and software engineering practices to select and justify approaches to use given a project, its teams, and its constraints.
- Be able to examine trade-offs between software engineering techniques and methods.
- Be able to work with a team on creating software artifacts or work products.

Course Prerequisites:

CSS 301, which may be taken concurrently; either CSS 341 or CSS 342 which may be taken concurrently; may not be repeated.

Readings:

Required. *Software Engineering*, 10th ed., Ian Sommerville, Pearson, 2016

Additional Readings. Required electronic reserve readings will be assigned. These will be posted on the course website.

Lectures. A subset of the lecture slides will be posted.

Evaluation and Grading:

The student's final grade will be based on the following

- Quizzes: 5%
- Midterm and Final: 45%
- Group Project: 20%
- Individual Research: 15%
- Class Activities: 10%
- Class Participation: 5%

Extra credit points, if announced in class, will count toward the class activities or participation.

If you miss taking the midterm and/or the final, you will not pass the class.

The overall course grade will be based on a 100-pt scale. The official decimal class grades (0.0 - 4.0) will be determined from a weighted average of your individual grades. This scale represents a minimum decimal grade.

The following table represents the official UW conversion of standard letter grades to the UW decimal grade scale and the conversion to the 100-pt scale used in this class:

	A Range		B Range			C Range			D Range		
Letter	A	A-	B+	B	B-	C+	C	C-	D+	D	D-
Min Decimal	3.9	3.5	3.2	2.9	2.5	2.2	1.9	1.5	1.2	0.9	0.7
Min 100-pt	95	90	85	82	78	75	72	68	65	62	60

Expectations:

Readings

Please be sure to do the assigned reading **before you come to class**. Some of these assigned readings are required for the class activities. The exams will also include the assigned readings.

Group Work

A multi-part group project will give you an opportunity to apply the concepts covered in class. Each group member will be given an opportunity to provide feedback to me regarding the relative contributions of each of the group members. I will use this collective feedback when assigning term project grades to individual group members.

“Equal Contribution” will be assumed by default. If this is not the case for your group, you may let me know / fill out an evaluation form after each assignment is submitted.

Keeping in Touch

Check the course website often. Assignment descriptions and lecture notes will be posted on the site. When you send a canvas message, make sure to include “CSS360A” in the Subject field. Otherwise, I may not respond to your email.

Please submit your questions to the class Discussion board, because other students may have the same question and because others in the class may be able to answer your question before I can.

Late Policy

Deliverables must be completed on the specified due date unless you make **prior arrangements** with me. The late penalty for all deliverables is 10% per day. If you hand in your deliverable at any time between the due date and the next 24 hours, you will receive a maximum grade of 90 (out of 100). Since most of your deliverables will be in terms of your term project with your team, there should be no reason for submitting a late assignment.

Missed Exams

No make-ups, except in exceptional situations (and be prepared to offer any supporting documentation I ask for). If you know ahead of time that you have scheduling conflicts, e.g. work-related, see me ahead of time so that you can take the exam prior to the scheduled date.
No make-ups for the quiz.

Electronic Devices

No electronic devices during quizzes and exams. Laptops may be used for taking notes or in-class exercises.

Student Conduct; Plagiarism and Cheating

You are expected to provide original work based on your own effort for this course. You will receive a zero for any coursework for which you are discovered cheating or plagiarizing. You will be referred to the University for further action. It is your responsibility to know and uphold the *Student Conduct Code for the University of Washington*, available at <http://www.uwb.edu/students/policies/>

Special Needs

Access and Accommodations. Your experience in this class is important to me. If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course.

If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 425-352-5307 or uwbdrs@uw.edu. DRS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, your instructor(s), and DRS. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law.

For Our Veterans. If you are a student who has served in our nation's military forces, *welcome home*, and thank you for your service. I hope that you feel comfortable enough to confidentially self-identify yourself to me so I can help you make a successful transition from the military to higher education.

Inclement Weather

Use the UW Bothell Alert System at <http://www.bothell.washington.edu/alert/> to see if classes are cancelled because of inclement weather.

Course Outline (subject to change)

See Canvas Assignments for more details

Week of	Topic	Readings and Deliverables
1/3	Introductions Introduction to the course Affinity exercise Introduction to Software Engineering Team formation	

1/8	<p>Software Engineering as a profession Software Engineering challenges Introduction to the Software Development Lifecycle (incl. models)</p>	<ul style="list-style-type: none"> • Sommerville Ch. 1 (Jan 8) • Brooks Tar Pit (Jan 8) <ul style="list-style-type: none"> ○ Find an article similar to https://spectrum.ieee.org/riskfactor/transportation/safety/nissan-recalls-nearly-1-million-cars-for-airbag-software-fix (Jan 8) • Sommerville Ch. 2 (Jan 10) • Brooks No Silver Bullet; and Brooks Silver Bullet Reloaded (Jan 10) • Due: <ul style="list-style-type: none"> ○ FoR1 – Introduction (Jan 8) ○ Post Error Article on Discussion Board ○ Group Selection (Jan 9) ○ Class Customization Survey (Jan 9) ○ FoR 2 – Software Processes (Jan 10) ○ Industry Comparisons and Company Adoption (Jan 12)
1/15	<p>1/15 – Martin Luther King Day 1/17 - Plan-driven and Agile processes In Class: Finalize Company, SDLC Interests and Brainstorm Product Ideas</p>	<ul style="list-style-type: none"> • Sommerville Ch. 3 (Jan 17) • Due: <ul style="list-style-type: none"> ○ FoR 3 (Jan 17) - Agile ○ System Comparison (Sect. 1.3.4) and SDLC Interests (Jan 19)
1/22	<p>Requirements Introduction In Class: Requirements Practice Exercise Pt. 1 In Class: Finalize Product Description, Outline Persona and Exchange</p> <p>Functional and Non-functional requirements Elicitation methods In Class: Requirements Exercise Pt. II In-Class: Flesh Out Persona persona with Product Description</p>	<ul style="list-style-type: none"> • Sommerville Ch. 4 (Jan 22) • Due: <ul style="list-style-type: none"> ○ FoR 4 (Jan 22) – Requirements Engineering ○ Quiz (Jan 22) ○ Requirements Practice Exercise (Jan 26) ○ Individual Research Project Proposal (Jan 26)

1/29	<p>Work on Requirements Software architecture Design and software patterns Systems modeling In-Class: SDLC Choice Exercise In-Class: Test-prep Study Group</p>	<ul style="list-style-type: none"> • Sommerville Ch. 5 (Jan 29) • Sommerville Ch. 6 (Jan 31) • Due: <ul style="list-style-type: none"> ○ Group Project Selection and Description (Jan 29) ○ FoR 5 (Jan 29) – System Modeling ○ FoR 6 (Jan 31) – Architectural Design
2/5	<p>2/5 - Midterm</p> <p>Monty Hammontree – MS DevDiv Guest Speaker on SE Trends, Tools and Processes; and Career Topics</p>	
2/12	<p>Follow-up on Architecture, Models and Diagrams Modules and Components (detailed design) Team Presentations</p>	<ul style="list-style-type: none"> • Sommerville Ch. 7 (Feb 12) – Design and Implementation • Due: <ul style="list-style-type: none"> ○ FoR 7 (Feb 12) ○ Team Project Status PPT (Feb 13) and Presentation (Feb 14) ○ Requirements Specification (Feb 16)
2/19	<p>2/19 – President’s Day 2/21 – Implementation Introduction to Test Work on Product or Service Design* Send Your Requirements Specification document to your “User Team”*</p>	<ul style="list-style-type: none"> • Sommerville Ch. 8 (Feb 21) – Software Testing • Due: <ul style="list-style-type: none"> ○ FoR 8 (Feb 21) ○ Product or Service Design (Feb 23)
2/26	<p>2/26 – Software Characteristics, Implementation, and Test Review your “Developer Team’s specifications for understanding, and come up with 1 major new constraint or requirement”* 2/28 - Guest Speaker Work on Implementation and Test Plans* 3/2 – Special Session (RSVP)*</p>	<ul style="list-style-type: none"> • Sommerville Ch. 9, 10 (Mar 7) – Software Evolution, Dependable Systems • Sommerville Ch. 13 (Mar 5) - Security • Due: <ul style="list-style-type: none"> ○ FoR 9 (Feb 26) ○ FoR 10 (Feb 26) ○ Final Research Essay Paper (Feb 28) ○ FoR 13 (Feb 28) ○ Implementation Plan (Mar 3)
3/5	<p>Poster Presentations* Project Management Risk Management Sharing Research Paper Insights*</p>	<ul style="list-style-type: none"> • Sommerville 14 (Mar 5) – Resilience Engineering

	Final Prep	<ul style="list-style-type: none"> • View Videos (links in FoV 1, Mar 5) – Story Estimation Techniques • Due: <ul style="list-style-type: none"> ○ FoV 1 (Mar 5) ○ FoR 14 (Mar 5) ○ Group Project Poster and Presentation (Mar 5) ○ Test Plan(Mar 7) ○ Peer Evaluations (Mar 10) ○ Final Group Paper (Mar 10)
3/12	Final Exam	