

Arizona State University

C Spring 2024 , revised January 12, 2024

SER316: Software Enterprise I: Construction & Transition

Catalog Description

Best practices in software construction in the context of a team project, including refactoring, defensive programming, unit testing, and configuration and release management.

General Information:

Instructor	Alexandra Mehlhase, a.mehlhase@asu.edu, (480) 727-4671(email preferred)
Office Hours	Mon/Wen 1-2:pm Peralta 230A, or request appointments via email at least 24 hours in advance.
Class Meeting Time	Mo/Wed 10:30-11:45 pm SANTN 331
Schedule Line Number	16602
Class Website	Canvas
Communication	Slack (Synchronous hours same as office hours.)
Final Exam Date	Wednesday May 1, 9:50 - 11:40 AM

Course Coordinator	Alexandra Mehlhase, a.mehlhase@asu.edu, (480) 727-4671(email preferred)
Office Hours	Mon/Wen 12:30-1:pm, or request appointments via email at least 24 hours in advance.

Prerequisites

- SER222, or permission of the instructor.
- A desire to learn and participate in class.

It is your responsibility to know the background material defined by the outcomes of these courses. If you did not take these courses recently (as defined by the SE major map), or you did not do well when you took them, you will need to spend time to review the material.

Please review ASU's Academic Calendar (<https://students.asu.edu/academic-calendar>) for details on important Registrar dates such as: adding/dropping/withdrawing from courses, etc.

You are required to complete the Academic Integrity Agreement quiz on Canvas by the due date or you may be dropped from the course at the instructor's discretion.

Course Structure:

The material in this course is separated into modules. Each module is comprised of instruction (lectures or videos), often followed by an in-class exercise or quiz, followed by an individual assignment (to cement the basics), and applying the concept in a group project (to really practice). **You are expected to engage using the following flow: Instruction → Assignment → Project.**

Detailed Course Description

Welcome (back) to the Software Enterprise! Students in this course will be exposed to software development best practices in the context of a scalable software project. Students learn these concepts through traditional lectures, inquiry-based learning, and in-class discussions based on assigned readings, and then apply these concepts in the context of a multi-semester project and problem-centered learning activities. The Software Enterprise focuses on the application of software processes and best practices to software development. This course focuses on constructing, building, testing, and deploying a software application in a project setting. Content will focus on best practices for implementing software, performing unit, integration, and scalability tests, and deploying software releases. Students in this course collaborate to construct software artifacts according to an agreed upon process.

Topic

This course covers topics in the area of Quality Software Development Practices via the Software Enterprise pedagogical model. Students will be expected to learn, understand and apply these practices through reading, discussion, reflection, practice, and applying in context. These best practices include:

- Scrum as Agile Development method
- Software change management and source code control (Git/GitHub)
- Continuous Integration and Testing
- Unit Testing
- Code Reviews
- Design Patterns
- Refactoring
- Static and Dynamic Analysis
- Metrics and Measurements

Course Materials:

Readings: The required textbook for the Software Enterprise sequence of courses is Ian Sommerville's Software Engineering 9th edition. This should already be in your possession. Given the nature of the class however, we will also rely on outside readings (I will post links to the documents on Canvas - you won't need to buy anything for this).

Recommended: Code Complete 2, Steve McConnell, Microsoft Press; 2nd edition June 2004. ISBN: 0735619670

Slides: Lecture slides and videos if available will be made available on Canvas. It is expected that you take notes during the lectures.

Sample solutions: Sample solutions and additional material might be provided on Canvas or Slack for discussion.

Additional Readings: Required or optional reading material might be added on Canvas and it will be clearly marked.

Instructor specific rules – these might still change

Communication

This class uses a communication tool called Slack to manage course communications. Please make Slack the first place you look for new information regarding the course. It is expected you will check Slack at least once every 3 days, as will the instructional staff. Do not expect that we will be on Slack outside of office hours, though we may occasionally pop-in to provide help and see how you are doing. Staff will be accessible synchronously on Slack as stated on the Contact Information page on Canvas. In general, office hours will be offered simultaneously face to face, and on Slack/Zoom. During office hours, students across all communication platforms will be assisted in FIFO order. For email and Slack messages outside of office hours, please allow 24 business hours for a response. If you do not get an answer in 24h please send another ping.

Canvas Note: do not use the comment feature on any submission, we do not use it because Canvas does not have a way to track what has been answered. Use Slack or email if you have questions.

Late Policy

All assignments and project submissions are due at 11:59:00pm (Arizona Time).

Assignment due dates follow Arizona Standard time. Click the following link to access the Time Converter (<http://www.thetimezoneconverter.com/>) to ensure you account for the difference in Time Zones. Note: Arizona does not observe daylight savings time.

In Class Exercises and Quizzes are due during class .

***Project:* Late submissions are not accepted for project submissions and quizzes (midnight is considered late).**

***Assignments:* Submissions later than 24 hours after the official due date will not be accepted (0 points) not even with the late pass (see later). Submissions after the due date but in the 24hours late range will lead to a 10% point reduction for the assignment. There is one late pass available, which will waive the 10% deduction for a 24h late submission.**

Students choosing to submit on the final day of the deadline are fully responsible for any technical issues (including but not limited to: computer, internet, Canvas) that occur.

Late submissions are not given for technical issues. Students are encouraged to submit assignments several days in advance of any deadline. It is also highly suggested that students double check that they have submitted the correct files - students who submit incorrect files will receive a grade based on what they submitted, which is likely to be a zero. Extensions are not permitted only when there is a significant, and documented, event (e.g., illness or personal emergency) that prevents the student from completing the assignment. A notice must be submitted to the instructor before the due date or as soon as circumstances allow and should also show that the student did not start too late on the assignment and would not have been able to finish it anyway.

No late submissions at all for the last assignment of the course!

Late Pass: Waives the 10% penalty you get when you submit 24 hours late. It does not extend the due date even further. You have ONE (1) late pass that you may use during the semester. To use a late pass you simply write that you want to use the late pass into the comment box on Canvas. We will not apply it without you mentioning it. **Submissions later than 24 hours after the initial due date will still not be accepted and will lead to 0 points.**

The late pass may NOT be applied to the last assignment in this course.

Grading:

Performance will be assessed by assignments, exercises, semester project, and one exam. Their weights are:

Assessment	Percentage of final grade
Assignments (in class activities)	40%
Project	30%
Exam	30%

The final letter grade will be determined according to the points obtained as follows:

E	D	C	C+	B-	B	B+	A-	A	A+
<65%	≥ 65%	≥ 70%	≥ 77%	≥ 80%	≥ 84%	≥ 87%	≥ 90%	≥ 94%	≥ 97%

I will not round percentages, you get the grade with the percentages as calculated by Canvas.

Extra Credit

Assignments, Projects, Quizzes etc. might include extra credit points but there is no guarantee for it.

Homework Drops

No homework will be dropped.

In Class Exercises and Quizzes Policies:

Exercises should be completed as you finish the instruction in the course. They have a relatively low weight and are graded more leniently so they can be used to develop your skills without worrying too much about your final grade. Do not treat them as simply "more homework", but as an opportunity to try applying concepts before doing a heavily weighted homework, and receive quick feedback in class and a sample solution after class. Assuming you paid attention during lecture/video, exercises will **not** take more than 20 minutes to complete (even though I might give you more time). You should figure out things on your own, or by asking us questions to steer you in the right direction.

Exercises must be completed in class. Solutions will usually be available after class on Canvas or Slack. Exercises not submitted in class will be given 0 points.

Assignment Policies

All assignments are individual assignments unless explicitly specified by the instructor.

Read the PDF file on the Assignment page on Canvas for specifics on what your submissions should look like. In addition:

- Double check your submissions to ensure they contain all needed source files (e.g. .java) and that every file requested is attached. It is your responsibility to make sure you submit all the necessary files. If I have to ask you to resubmit something, since it was missing, you automatically lose 10% of the assignment grade and you need to prove that the work was completed before the due date and I reserve the right to not accept the missing files at all.
- We can only grade what we see and what compiles and runs, if it does not then that is on you.
- Additional comments about your submission and mentioning your late pass in case you want to use it, should be added into the comment box during your submission.
- You are allowed unlimited submissions, **only the newest submission will be graded. Make sure ALL files are always included in this submission.** If you try to view the assignment after submitting it from the assignment page rather than Grades, you may cause a new submission to be made. This will override your proper submission!
- You will receive 0 points if your submission does not compile and run (you will receive partial points if parts of the assignments compile). They need to run as specified in the assignment.

Late submissions: For assignments (not project or in class exercises) there is a grace period of 24 hours after the due date in which you can still submit but receive a 10% deduction on the assignment. ONE late pass is available, which allows you to submit up to 24 hours after the due date without penalty. You need to mention that you want to use your late pass in your Canvas submission comment, we will not apply it if you do not mention it. With or without late pass: if you submit later than 24 hours after the due date you receive 0 points (unless there is an emergency which needs to be proven with documentation to the instructor)!

Standard deductions:

- If your program fails to compile out-of-the-box, you will receive 0 points for the programming part. We will not debug your code. You might be allowed to re-submit your code with a bug fix on a case by case bases with a 10% standard deduction.
- If part of the program does not run you will not receive points for the part that does not run, we will not debug and try to make it run. We will only follow our process based on the requirements stated in the assignments.
- If you do not follow the file submission standards/requirement (e.g., the submission contains project files, lacks a proper header, wrong file types, wrong file naming, files submitted in a different format or anything specifically mentioned in the assignment or class), we will deduct 10% off of the project/assignment total.
- If you are not including all the files required we will deduct for this part of the assignment.

Submission through GitHub: You have the option to submit your assignment via GitHub. Your GitHub repository needs to be **private** and you need to invite the grading team (ser316asu). Your repository needs to be called as specified in the assignment with the correct structure. If your repository does not fulfill the above criteria our scripts will not pull it and you will not receive points on it.

It is your responsibility to check that all files that are needed to run the program are on GitHub even if not specified in the assignment. When I clone the repository it needs to compile and run as is.

The collaborator ser316asu needs to be kept as collaborator on this repository and the repository is not to be deleted. In case of appeals or Academic Integrity cases it is required that we have access to the original repository even after classes have ended.

Project Policies

All students shall participate in a semester team project. A project kickoff document will be distributed at the beginning of the session it will specify details about the project. The kickoff document might change during the semester and it will be announced on Slack in case this happens.

Project grades will be assigned based on 1) quality of the project deliverables, 2) preparation and quality of intermediate (per deliverable) software/design deliverables and presentations, 3) evidence of faithful execution of the project management practices, and 4) evidence of consistent effort throughout the semester in support of the team (being a good and professional team member).

The project kickoff document will describe project grading and rubrics in detail.

If team members inform me that you did not participate you will receive a 0 on the project deliverable, you need to participate.

Student Expectations and Responsibilities

A separate Course Policy document will be posted at the beginning of the course which will state some additional expectations and your responsibilities in detail. Please read it carefully. In general I expect:

- students to spend approximately 10 hours a week on this course. This is if you understand the material and have the Java skills required at this level
- students to be able to debug, problem solve and understand their own computer
- students to ask if they need clarifications or help – we cannot help if we do not know you are struggling
- students to submit on time and put in the work
- students to be good team players and be polite helpful during discussions

I expect students to be in class and pay attention. If something is mentioned in class and/or on the whiteboard but not in writing on the slides or Canvas then I still expect you to take note of it. It is your responsibility to make sure you go through all the content, pay attention and take notes. I advise you to remind each other of important things as well.

Grade Appeals

Students may appeal a scored assessment within **one week** of the grade's posting online, or by the deadline specified by the grade release announcement, whichever is sooner. Appeals are in written form only via the Slack bot `/sparky_appeal` feature or via email to the instructor. Grade appeals via direct message on Slack might be discarded by the instructor. Appeals must point to specific evidence of why the grade should be revised. Arbitrary "please regrade because I want a higher score" queries will be discarded without a response. The instructor reserves the right to assign a lower score on appeal. For additional information on ASU's grade appeal policy, see <https://catalog.asu.edu/appeal>.

Appeals will only be accepted via the Slack bot `/sparky_appeal` feature or via email to the instructor (do not contact the TA or Grader).

ASU and Course specific rules

Absence & Make-Up Policies

Students unable to attend class, take exams, or complete assignments due to a medical condition must present a doctor's signed excuse and notify the instructor as soon as the condition affects the student's work.

I expect students to attend live lectures in-person or via Zoom. There will be in-class exercises (designed to do live on your computer) which you will be graded on. If you are not attending classes (via Zoom or in-person) you will not receive points on these. Excused absences for classes will be given without penalty to the grade in the case of (1) a university-sanctioned event[ACD 304-02]; (2) religious holidays[ACD 304-04]; a list of religious holidays can be found here [<https://eoss.asu.edu/cora/holidays>]; (3) work performed in the line-of-duty according[SSM 201-18]. Students who request an excused absences must follow the policy/procedure guidelines. Excused absences do not relieve students of responsibility for any part of the course work required during the period of absence.

Per SSM 201-02, an instructor may drop a face to face student for nonattendance during the first week of the semester. For an online course, a drop may be initiated for students who do not log into the course shell during the first week.

It is expected that students inform the instructor before due dates/absences unless the student was absolutely not able to do so.

Classroom Behavior

Cell phones and pagers must be turned off during class to avoid causing distractions. Exceptions may be accommodated for personal reasons with advance approval of the instructor. The use of recording devices is NOT permitted during class.

Students are expected to participate in the educational process and not be a disruptive element with regard to the learning of others. Safety, self-discipline and respect for others are necessary elements in the educational processes employed in this course. All students should be familiar with the Student Code of Conduct, which can be found at <http://www.asu.edu/studentlife/judicial/>.

Students in this class are expected to acknowledge and embrace the FSE student professionalism expectation located at: <https://engineering.asu.edu/professionalism>

Until further notified, per ASU policy, faculty, staff, students and visitors, are required to wear face coverings in classrooms, labs, offices and community spaces.

Please keep 6 feet apart from instructor and from your peers.

Academic Integrity and Copyright Laws

Students in this class must adhere to ASU's academic integrity policy, which can be found at Policy. Students are responsible for reviewing this policy and understanding each of the areas in which academic dishonesty can occur. All engineering students are expected to adhere to the ASU Academic Integrity Honor Code.

All work submitted for the course cannot have been submitted for any other course or any previous section of this same course. Student academic integrity violations are reported to the Fulton Schools of Engineering Academic Integrity Office (AIO). Withdrawing from this course will not absolve you of responsibility for an academic integrity violation and any sanctions that are applied. The AIO maintains a record of all violations and has access to academic integrity violations committed in all other ASU college/schools.

Unless explicitly allowed by your instructor, the use of generative AI tools on any course assignment or exam will be considered academic dishonesty and a violation of the ASU Academic Integrity Policy. Students confirmed to be engaging in non-allowable use of generative AI will be sanctioned according to the academic integrity policy and FSE sanctioning guidelines.

Specific academic integrity announcements for this class are: The Student Academic Integrity Policy of Arizona State University requires each student to act with honesty and integrity and to respect the rights of others in carrying out all academic assignments. There are a number of actions that constitute a violation of the policy. These actions in this course include, but are not limited to:

1. practicing any form of academic deceit;

2. referring to materials or sources or employing devices (e.g., audio recorders, crib sheets, calculators, solution manuals, or commercial research services) not specifically authorized by the instructor for use during tests, quizzes, homework, and class activities;
3. acting as a substitute for another person in any academic evaluation or using a substitute in any academic evaluation;
4. possessing, buying, selling, or otherwise obtaining or using, without appropriate authorization, a copy of any materials intended to be used for academic evaluation in advance of its administration;
5. depending on the aid of others to the extent that the work is not representative of the student's abilities, knowing or having good reason to believe that this aid is not authorized by the instructor;
6. providing inappropriate aid to another person, knowing or having good reason to believe the aid is not authorized by the instructor;
7. submitting the ideas or work of another person or persons without customary and proper acknowledgment of sources (i.e., engaging in plagiarism);
8. permitting one's own ideas or work to be submitted by another person without the instructor's authorization; or attempting to influence or change any academic evaluation or record for reasons having no relevance to class achievement.
9. exchanging solutions with peers
10. turning in work/code done by someone else or another pair/group
11. copying work/code done by someone else or another pair/group
12. writing code/text together with someone else or with another pair/group (unless expressly allowed by the instructor)
13. submitting work you have done for a previous course (same or different course)
14. using solutions/partial solutions that you find on GitHub or other sources is not allowed unless specified by the assignment
15. making assessment solutions publicly available and/or trying to sell/distribute solutions
16. making solutions available through public repositories

A common question in programming courses is the use of code that is "googled" or found on popular sites such as StackOverflow or generated by an AI. The items above detail what is not allowed. Most programmers use reference examples, found in print or online. This is fine as a practice but is not acceptable in situations where you are using code to proxy your understanding of the coding concepts applied in that assessment (i.e. lab or in-class activity). First, if you are uncertain if it is allowable or not, verify directly with the instructor before submitting the assignment. Second, if it is allowable, you are still required to a) adhere to all originating author's constraints on the use and licensing of the code, and b) provide proper attribution (full URL to the code snippet or bibliographic reference to a print item). Failure to do so constitutes a violation of this Academic Integrity Policy.

For all assignments it is important that it is your intellectual property that you created yourself, the ideas and code needs to be your own.

Students may be allowed to work in small teams on assignment and in-class assessments this will be communicated clearly. Students will also work on a semester long group project. You are to work with your partners and only your partners as directed by the instructor; receiving assistance from anyone else other than your partners, the graders, teaching assistants, approved tutors or the instructor is considered a violation of this Academic Integrity Policy. Further, on any paired/group assessments you remain individually responsible for the entire solution. From an ethics standpoint, you have a professional responsibility to your partner(s) to give your best effort on each assignment/project deliverable. Failure to do so will be considered an ethics violation. Students are expected to communicate to their team and to their instructor if they cannot participate in the team due to an illness (or similar). Not informing your group and just not being available, not contacting them is also seen as ethical violation.

The penalty for an Academic Integrity Violation (cheating) on an in-class assessment or lab/assignment will be a reduction of a course letter grade for the first offense, and failure of the course for a second

offense. The penalty for an Academic Integrity Violation (cheating) on an exam is immediate failure of the course. The penalty for an ethics violation will be a zero for the assessment. All violations will be referred to the Dean's Office of the Ira A. Fulton Schools of Engineering.

Students should not release (to GitHub, friends, etc.) any of their completed assignments, in order to ensure that they do not cause an AIP violation during a future semester. If a student in a later class submits your work, you and they will be held accountable.

Student Copyright Responsibilities

The contents of this course, including lectures and other instructional materials are copyrighted materials. Students may not share outside the class, including uploading, selling or distributing course content or notes taken during the conduct of the course. Any recording of class sessions by students is prohibited, except as part of an accommodation approved by the Disability Resource Center. (see ACD 304-06, "Commercial Note Taking Services" and ABOR Policy 5-308F.14 for more information) You may not post any course material (including but not limited to slides, exercises, and assignments), even excerpts, to an external site without the instructor's written permission. If this occurs, you may be penalized for Academic Dishonesty or IP infringement.

You must refrain from uploading to any course shell, discussion board, or website used by the course instructor or other course forum, material that is not the student's original work, unless the student first complies with all applicable copyright laws; faculty members reserve the right to delete materials on the grounds of suspected copyright infringement.

Policy against threatening behavior, per the Student Services Manual, SSM 104–02

Students, faculty, staff, and other individuals do not have an unqualified right of access to university grounds, property, or services. Interfering with the peaceful conduct of university-related business or activities or remaining on campus grounds after a request to leave may be considered a crime. All incidents and allegations of violent or threatening conduct by an ASU student (whether on- or off-campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students.

Disability Accommodations

Suitable accommodations are made for students having disabilities. Students needing accommodations must register with the ASU Student Accessibility and Inclusive Learning Services office and provide documentation of that registration to the instructor. Students should communicate the need for an accommodation in enough time for it to be properly arranged. See ACD 304-08 Classroom and Testing Accommodations for Students with Disabilities. 17

Harassment and Sexual Discrimination:

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you

know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at .

As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, is available if you wish to discuss any concerns confidentially and privately. ASU online students may access 360 Life Services, .

Photo Requirement

Arizona State University requires each enrolled student and university employee to have on file with ASU a current photo that meets ASU's requirements (your "Photo"). ASU uses your Photo to identify you, as necessary, to provide you educational and related services as an enrolled student at ASU. If you do not have an acceptable Photo on file with ASU, or if you do not consent to the use of your Photo, your access to ASU resources, including access to classes (online or in person) may be negatively affected or denied

Change Notice:

Syllabus changes: Any information in this syllabus (other than grading and absence policies) may be subject to change with reasonable advance notice.

How Long Students Should Wait for an Absent Instructor

In the event the instructor fails to indicate a time obligation, the time obligation will be 15 minutes for class sessions lasting 90 minutes or less, and 30 minutes for class sessions lasting more than 90 minutes. Students may be directed to wait longer by someone from the academic unit if they know the instructor will arrive shortly.