

Midwestern State University
Department of Computer Science
Spring 2026

Course Information

Course syllabus: Advanced Software Engineering

Course number: CMPS 5153.

Course Sections: 201

Class Days: Monday and Wednesdays.

Class hours: 2:00 pm to 3:20 pm

Classroom: Bolin 324.

Instructor Information

Instructor's Name: Doctor Eduardo Colmenares.

Instructor's office: Bolin Hall, office 124B.

Instructor's email: eduardo.colmenares@msutexas.edu

Office Hours

Monday: 3:30 pm to 4:30 pm

Tuesday: 8:30 am to 9:30 am

Wednesday: 10:00 am to 11:00 am

Thursday: 8:30 am to 9:30 am, and noon to 1:00 pm.

Friday: **No office hours**

ZOOM information

[Zoom Link](#)

Course Description

Introduces theory and practice for software engineering. Topics include software life cycle, requirements, specification and analysis, software architecture and detailed design, and testing. (Writing intensive, Theory Intensive and Coding Intensive)

Textbook

Is the textbook required? The answer is No, however access to the book is strongly recommended since reading assignments can occur and material from the book can also be included on exams.

Textbook name: Object-Oriented Software Engineering, An Agile Unified Methodology.

Textbook Author: David C. Kung.

Textbook edition: Most recent edition

Publisher and ISBN: McGraw-Hill, 2014, ISBN: 978-0-07-3376257.

Additional References

- draw.io
- [UML diagrams](#)
- [More UML diagrams](#)

Course Objectives

The purpose of this course is to introduce theories, methods, and tools in software engineering for developing software systems. Students who succeed in this course will:

- Understand basic principles of Software Engineering
- Will be able to use the correct lexicon
- Be able to practice software engineering techniques
- Be able to model with the Unified Modeling Language (UML)
- Enforce the use and adoption of a Multi User Task Management Tool
- Enforce the use and adoption of a Software Version Control tool
- Learn about team work and conflict resolution.

Key Topics

- Software Development Lifecycle
- Requirements Elicitation
- Requirements Analysis
- Architectural Design
- Design Patterns
- Detailed Design
- Introduction to Verification and Validation

Course Prerequisites

Object-Oriented Programming or Data Structures, Mathematical Statistics for Engineers and Scientists, or equivalent, and others as determined by the degree plan.

Expected prior knowledge and skills

The successful student should have competent skills in procedural and object-oriented programming, knowledge of data structures and algorithm analysis, and knowledge of statistical and probabilistic mathematics.

Learning Outcomes & Assessment Methods

Objective	Assessment Methods
Ability to elicit and analyze customer requirements	Exams and Project
Ability to design software systems using modeling techniques	Exams and Project
Understanding of verification and validation techniques	Exams and Project
Professionalism and ethics	Exams and Project
Understanding the use of software engineering tools, templates, and references	Exams and Project

Evaluation Process

The final grade for this course will be based on participation, projects and exams. A description is provided below:

- You will have two tests (T1 and T2), plus one final exam (FE). T1 and T2 are worth 17 percent each, the final exam is worth 18 percent.
- You will have a semester long project which will be completed in four major iterations. Each one of the iterations is worth 8.5 percent, this means that your project is worth 34 percent.
- The next category is participation. This will count for 9 percent of your final grade. Please be aware that this category includes in-class-activities (ICAs) and quizzes. Below you will find additional information about this category.

- Assignments given in class, also known as in-class-activities (ICAs) will be unannounced in nature.
- Quizzes will be non-pop-up quizzes.
- No makeup participation assignments are given.
- Arriving late, leaving early to class voids the right to take a quiz or in class activity if it already started or it is about to start. This will be enforced.
- Attendance will be a component of your grade, more details below.

Evaluation Process Summary Table

Category	Percentage
Test 1	17%
Test 2	17%
Final Exam	18%
Participation (Quizzes)	9%
Attendance	5%
Project (4 iterations)	34%

Grading Policy

At least one exam must be passed with a grade of C or better. Additionally, the average score across Test 1, Test 2, and the final exam must reach at least 65 points. Failure to meet either condition results in a final grade of F, regardless of performance in other areas of the course.

90 to 100 points is an A.

80 to 89.99 points is a B.

70 to 79.99 points is a C.

60 to 69.99 points is a D.

0 to 59.99 points is an F.

Attendance

- Attendance is a component of the course grade (five percent). Each student will begin with 100 points for their attendance grade. For each additional unexcused absence 33.33 points will be subtracted from the attendance grade.
- Your instructor will go over the class roster at the beginning of class and will call the students by name, if the student is not present at that time, an absence will be given and not removed after arrival. Arriving late will be considered unexcused absence. The Attendance grade is 100% under the student's control.
- After five (5) unexcused absences, the student will be dropped from the class (To be enforced).
- In the case of international students, in addition to an absence, an email will be send to you and Miss Rhiannon Barnett (International Services Specialist) dso@msutexas.edu. Your faculty members are not responsible for your immigration status. It is in your best interest to maintain a correct and good immigration status.
- Traveling during the semester to attend a family related manners such as weddings, vacations, etc, will not exclude you from an absence and will waive the right to any exam, quizzes, presentations, projects due during the time that were absent.
- Additional class attendance related MSU Policies apply.

Required Hardware

- Regular traditional PC/Mac.

Tests

Tests are comprehensive in nature. No make-up exams will be given, except for the following cases:

- Properly documented Surgery, Medical Emergency, Death in the family, Presentation at a Conference, some others as determined by the instructor.
- If you miss an exam, the make-up exam you need to notify the instructor and demonstrate with the proper official documentation (signatures, seals, contact information) that an emergency that you could not circumvent existed. This documentation must be presented not later than 24 hours after the test.
 - a. Students who miss an exam due to University business should notify the instructor in advance, and present the sponsoring university member's written justification.
 - b. If your instructor cannot verify or validate the given documentation, then it will consider invalid and no make-up exam will be given.

If you do miss an exam and your case fall in one of the categories above this means that you have a properly documented case. Your instructor will proceed to assign a temporary grade of zero, which will be substituted for your excused test grade (Final Exam). However, this substitution can only be performed once during the semester. Exams are uniquely composed for each term.

Laptop Policy

For this class, you are not required to buy a laptop. However, if the instructor announces an ICH (In Class Homework) or ICA (In Class Activity), you are responsible for:

- a. Bringing a laptop with all necessary programs properly installed, configured a tested.
- b. Bringing the laptop's charger: If you do not bring your charger and cannot complete the assignment(s) because your battery died, then your grade will not be a good one.
- c. Make sure that you have a fully working and in-classroom tested Wi-Fi capabilities. If you cannot submit your homework because your Wi-Fi does not work, then your grade will not be a good one.

No Procrastination Policy

Students are strongly encouraged to contact the instructor during office hours to clarify questions associated with lectures, exams, assignments, presentations, quizzes, homework, etc. Questions are more than welcome from the moment the assignments, projects, quizzes, exams are either released or announced, however, all questions stop the day before the assignment, exam, quiz, presentation is due. This rule is designed to promote responsible time management and personal organization.

Late Policy & Deadlines

- Submitted work is due when specified, as specified (format) by the instructor. It is in the student's best interest to keep track of all deadlines.
- The instructor is not required to remind students of ANY date and/or deadline associated with tests, homework, reports, project assignment, etc.
- **Late assignments WILL NOT BE ACCEPTED. This rule will be enforced**
 - **What does it mean to be late?** Answer: for example, if your assignment is due today at 8:00 am and you attempt to deliver your report by 8:00:01 am (1 second late) then it will be considered late. There will not be exemptions of any kind.
 - **Assignments MUST be submitted to the corresponding Dropbox via D2L before it closes (deadline).** If the Dropbox has closed and you cannot upload your assignment to it, then you are late and your assignment will not be accepted.
 - Students will have more than enough time to complete their assignment on time.

- Internet outage, computer problems, car problems, work, and several others are NOT a valid excuse for a late delivery.
- Very Important: Before you submit any file, take your time and double OR triple check that
 - a. You are uploading the correct and ALL necessary files
 - b. Your work is correct at the best of your abilities
 - c. Failure to fulfill (a) and (b) ON TIME, WILL NOT excuse you from a bad grade.

Please let your instructor know if you are going to miss a class for academically related extracurricular activities. If this is the case you must present the sponsoring university member's written justification before your absence occurs.

Additional Grade Policy

Once the grades, have been either returned to the students, or published via D2L, the student will have one week to examine them and check for inconsistencies, errors, etc. After the one week window of opportunity all grades will become PERMANENT and WILL NOT change. It is not only the student's responsibility to check the accuracy of his/her grades, but also in his/her best interest to do it. This rule DOES NOT apply to the final exam because the final is exam triple checked by the instructor before publishing the grade.

Academic Misconduct Policy & Procedures

Cheating, collusion, and plagiarism (the act of using source material of other persons, devices, AI Generators, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual's to whom credit is given). The Department of Computer Science has adopted the following policy related to cheating (academic misconduct). The policy will be applied to all instances of cheating on assignments and exams as determined by the instructor of the course. (See below for link to MSU definitions.)

- 1st instance of cheating in a course: The student will be assigned a non-replaceable grade of zero for the assignment, project or exam. *If the final grade in the course, does not result in a one letter grade reduction, the student will receive a one letter grade reduction in course.*
- 2nd instance of cheating in a course: The student will receive a grade of F in course & immediately be removed from course.
- All instances of cheating will be reported to the Department Chair and, in the case of graduate students, to the Department Graduate Coordinator.

Note: Letting a student look at your work is collusion and is academic misconduct!

Can I use AI to solve my homework and/or project: The answer is NO, this is also an academic misconduct!

See Also: [MSU Student Handbook](#): Appendix E: Academic Misconduct Policy & Procedures.

Policy on Testing Process

The Department of Computer Science has adopted the following policy related to testing.

- a) All bags, purses, electronics (turned off), books, etc. will be placed in the front of the room during exams, or in an area designated by the instructor.
- b) Unless otherwise announced by the instructor, nothing is allowed on the desk but pen/pencil/eraser and test papers.

- c) You are not allowed to leave the classroom. Please take this seriously and into consideration before any test and the final. Prepare yourself to be in the classroom during the entire exam.
- d) If you decide to leave the classroom during a test and/or the final exam, your exam will be collected, and you will not be allowed to continue.

Classroom Civility

All violations of classroom civility will be reported to the Dean of Students.

Students are expected to assist in maintaining a classroom environment that is conducive to learning. In order to ensure that all students gain from time spent in class, students are prohibited from engaging in any form of distraction, e.g. leaving the room for extended periods of time, reading newspapers (or other articles), working on other courses, and using cell-phones or laptops for calls or messages. If you indulge in any such inappropriate behavior (without explicit consent of the instructor), you will (at the very least) be asked to leave the classroom. [MSU Dean of Students Website](#).

Student with Disabilities

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from disability support office during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Disability Support Office has been provided. For additional information you may contact the [Disability Support Services](#).

Dean of Students

The Dean of Students can assist in notifying the campus community of student illnesses, immediate family deaths and/or student death. Generally, in cases of student illness or immediate family deaths, the notification to the appropriate campus community members occur when a student is absent from class for four consecutive days with appropriate verification. It is the student's responsibility for missed class assignments and/or course work during their absence. [MSU Dean of Students Website](#).

RECORDING OF CLASS LECTURES

Permission must be requested in writing & obtained from the instructor before recording of class lectures. If permission is granted, the recording may only be used by the student making the recording. Recordings may NOT be posted on any internet source without written permission of the instructor. Failure to adhere to the policy may result in removal from the course with a grade of F or other appropriate punishment.

University's Campus Carry

Senate Bill 11 passed by the 84th Texas Legislature allows licensed handgun holders to carry concealed handguns on campus, effective August 1, 2016. Areas excluded from concealed carry are appropriately marked, in accordance with state law. For more information regarding campus carry, please refer to the University's webpage at [Campus Carry](#).

Additional Office Hours & Meeting Policies

In order to protect your wellbeing and the one of those that you care about, the following preventive measurements will take place:

- a) Office hours may be conducted virtually via Zoom. To request a virtual meeting, students must email the instructor in advance and include their first and last name, course name, and several possible meeting times. Requested times must fall within the office hours listed at the beginning of this syllabus. Virtual office hours are not additional office hours; they are held during the instructor's scheduled office hours. After receiving the request, the instructor will send a Zoom invitation. Please refer to this syllabus for detailed office hour information.
- b) Your instructor will not touch any computer or USB Drive. NO Exemptions.
- c) If at some point you need/want me to look at your programming assignment or class project, you can do it by sharing your desk via ZOOM (Virtually) during office hours.
- d) Questions associated with ADVISING, degree plans, etc., will be addressed (Virtually-ZOOM) during office hours.
- e) The faculty member is open and available to face-to-face meetings if the student is in good health condition and not showing symptoms of running nose, sneezing, coughing.

Pregnant and Parenting Students

To support the academic success of pregnant and parenting students and students with pregnancy related conditions, the University offers reasonable modifications based on the student's particular needs. Any student who is pregnant or parenting a child up to age 18 or has conditions related to pregnancy, may contact MSU's designated Pregnancy and Parenting Liaison to discuss support available through the University. The Liaison can be reached by emailing ruby.garrett@msutexas.edu or calling 940-397-4500. Should a student communicate with me that they are pregnant or have a pregnancy related condition or may need additional resources related to pregnancy or parenting, I will communicate that student's information to the Title IX Coordinator, who will work with the student and others, as needed, to ensure equal access to the University's education program or activity.

A pregnant student, a parenting student, or a student with pregnancy related conditions may be provided with supportive measures, based on the student's individualized needs, analogous to those provided to a student with a temporary medical condition, and provided such supportive measures do not fundamentally alter the nature of an education program or activity.

Precautions for Covid, Flu, Streptococcus, or any respiratory disease.

You are not obligated to wear a mask; however, if you wish to show courtesy and help protect the well-being of your classmates, please feel free to wear one. This would be greatly appreciated.

Final Exam

- There is no make-up final exam. The final exam will take place in our regular classroom (unless decided otherwise by the University). It is the student's responsibility to keep track of the designated date, time. A complete list of all MSU exams (by time) can be found at [Final Exam Schedule](#).
- The date of our final exam is Wednesday, May 13 from 5:45 pm to 7:45 pm.
- There is no make up for the final exam.

Tentative Agenda

The instructor reserves the right to add, remove, reorder topics as he considered convenient towards the benefit of the class. By the end of the semester you will have a very good understanding of the following categories and multiple non mentioned subcategories.

- OOP (C++) Review and reinforcement
- Chapter 1 (Introduction)

- Chapter 4 (Software Requirements Elicitation)
- Chapter 5 (Domain Modeling)
- Chapter 6 (Architectural Design)
- Chapter 7 (Deriving use cases from requirements)
- Chapter 8 (Actor-Systems Interaction Modeling)
- Chapter 9 (Object Oriented Modeling)
- Chapter 10 (Applying Responsibility-Assignment Patterns)
- Chapter 20 (Software Testing)
- Chapter 11(Deriving a Design Class Diagram)
- Chapter 12(User Interface Design)
- Chapter 2 (Software Processing and Methodology)
- A Multi User Task Management Tool
- A Software Version Control tool