

Syllabus
COMPSCI-320: Software Engineering, section 2
Fall 2023

Course Description

In this course, students learn and gain practical, hands-on experience with software engineering principles and techniques. The practical experience centers on a semester-long team project in which a software development project is carried through all the stages of the software life cycle. Topics in this course will include: ethics in software development, the software lifecycle, use case scenarios, requirements analysis, specifications, system architectures, UML diagrams, sequence diagrams, an introduction to user interface design, software version control, testing, communication, teamwork, and software project management. Particular emphasis is placed on communication and negotiation skills and on designing and developing maintainable software. The use of a computer will be required. Several written assignments, in-class presentations, and a term project. This course satisfies the Integrative Experience requirement for BS and BA CS majors. Students should expect this course to require between 10-12 hours of work a week.

Prerequisites: COMPSCI-220 with a grade of C or better.

Course goals:

By the end of this course, successful students will be able to:

- Use key software design techniques, such as user case narratives, software architecture diagrams, class diagrams, sequence diagrams, and testing.
- Complete the development of a software project requiring a semester-long effort.
- Maintain a software repository with separate ongoing versions of their software as it is developed.
- Effectively work in a software development group.

Instructor:

Jaime Dávila

Office: LGRC A137, and <https://umass-amherst.zoom.us/j/2581898802>

Office hours: Listed at <https://people.cs.umass.edu/~jaimedavila/contact.htm>

UCAs:

Listed on Moodle Site

Text books:

This course will not use a textbook.

Grades

Your final grade for this course will be based on a number of activities spread across the semester. This will require you to be engaged with the course all throughout the semester. Said in a different way, this is not a course where you can complete a high percentage of the work in a limited number of days or even weeks. Instead, you will need to maintain engagement throughout the semester. Please pay close attention to the week-by-week schedule included at the end of this document. In it, you can see when we will cover each topic, and when assignments will be due. Assignments will always be due by Sunday at 11:59 PM of the week where they are listed. Notice that there will be a very quick turnaround from when topics are discussed in class to when you will need to turn and assignment

engaging with that topic. When we discuss topic X one week (on Tuesday, Wednesday, and Thursday), you will need to turn in an assignment on that topic the following Sunday. The typical weekly work flow will be that we will have topic presentations early in the week, followed by you all working individually and/or in groups, followed by work submission on Sundays.

There are two major components to this course, both of them very important: one is your work as a member of a team; the other is your individual work. Documents describing each of the things you will need to turn in during the semester will clearly describe what you will need to do as a group member, and what you will need to do individually.

This course satisfies the Integrative Experience requirement. As such, we will place attention to communication skills, reflection, and meta-cognition (learning about learning). We will do this through your evaluation and reflection of your own work and the work of your team members.

Below you can see an outline of how grades will be computed.

Document generation	40%	
<ul style="list-style-type: none"> • Requirement analysis <ul style="list-style-type: none"> ◦ group work • System architecture <ul style="list-style-type: none"> ◦ group work ◦ individual • Objects/classes/software and sequence diagrams <ul style="list-style-type: none"> ◦ group work ◦ individual • Timeline development <ul style="list-style-type: none"> ◦ group work ◦ individual • Testing protocols <ul style="list-style-type: none"> ◦ group work ◦ individual 		<ul style="list-style-type: none"> • 10% • 2.5% <ul style="list-style-type: none"> ◦ 2% ◦ .5% • 12.5% <ul style="list-style-type: none"> ◦ 6.5% ◦ 6% • 10% <ul style="list-style-type: none"> ◦ 7% ◦ 3% • 5% <ul style="list-style-type: none"> ◦ 3% ◦ 2%
Working in groups	20%	
<ul style="list-style-type: none"> • Task assignments <ul style="list-style-type: none"> ◦ group work • Timeline execution/modification <ul style="list-style-type: none"> ◦ group work ◦ individual • Task integrations <ul style="list-style-type: none"> ◦ group work 		<ul style="list-style-type: none"> • 5% • 10% <ul style="list-style-type: none"> ◦ 6% ◦ 4% • 5%
Reflections	5%	
<ul style="list-style-type: none"> ◦ individual 		
Class Presentations	10%	
<ul style="list-style-type: none"> ◦ group work 		
Final project deliverable	25%	
<ul style="list-style-type: none"> ◦ group work ◦ individual 		<ul style="list-style-type: none"> • 15% • 10%

The final letter grade will be as follows, after rounding the numeric grade to the closest integer:

- 93 or higher: A
- 90 to 92 -> A-
- 87-89: B+
- 83-86: B
- 80 to 82: B-
- 77-79: C+
- 73-76: C
- 70 to 72: C-
- 60 to 69: D

Class philosophy:

I strive to create a learning community among all of us. We are not in competition with each other. You are not in competition with each other. I measure success by how many of you do great in the course. I commit to coming to class prepared, to putting my best effort towards your learning, and to develop an environment where all of us can achieve their maximum. I hope you do the same. For all of us, this means coming to class prepared, being ready to work, being respectful of everyone, and working hard in order to do our best work. If there is something you think I can do that would create a better learning environment, let's talk about it.

Classroom Norms

We celebrate the diversity in our community and actively seek to include and listen to voices that are often silenced in the computing world. We welcome all individuals regardless of age, background, citizenship, disability, sex, education, ethnicity, family status, gender, gender identity, geographical origin, language, military experience, political views, race, religion, sexual orientation, socioeconomic status, and work experience.

Everyone has the right to be addressed by the name and pronouns that they use for themselves. You can indicate your preferred/chosen first name and pronouns on SPIRE, which appear on class rosters. I am committed to ensuring that I address you with your chosen name and pronouns. Please let me know what name and pronouns I should use for you if they are not on the roster. Please remember: A student's chosen name and pronouns are to be respected at all times in the classroom.

This course is geared towards you working in groups. As such, we expect that you will observe social decorum at all times when interacting with peers. Please consult the UMass Guidelines for Classroom Civility and Respect: http://www.umass.edu/dean_students/campus-policies/classroom

Title IX

UMass is committed to fostering a safe learning environment by responding promptly and effectively to complaints of all kinds of sexual misconduct. If you have been the victim of sexual violence, gender discrimination, or sexual harassment, the university can provide you with a variety of support resources and accommodations. If you experience or witness sexual misconduct and wish to report the incident, please contact the UMass Amherst Equal Opportunity (EO) Office (413-545-3464 | equalopportunity@admin.umass.edu) to request an intake meeting with EO staff. Members of the CICS community can also contact Erika Lynn Dawson Head, director of diversity and inclusive community development (erikahead@cics.umass.edu | 860-770-4770).

Piazza

Our course will make use of Piazza for class discussions. I encourage you to post your questions on Piazza. This will allow other students to benefit from your questions, your answers, and other people answers. Seeing questions on Piazza also allows me know what material I might need to go over again. To find the Piazza page for our course, please follow the link you can find in our course's Moodle page. You can expect your questions to be answered in 48 hours or less.

HOMEWORK

- **Homework submissions will be via the course Moodle site**
 - We will be using Moodle to upload homework and provide feedback.
- **Late Homework Policy**
 - Turning homework in late helps no one. When students turn homework in late, they fall behind. In addition, in this course, where so much of the work will take place among in groups, your being late will greatly impact the work that your teammates can produce. Late homework also keeps me from being able to give you feedback on time, from detecting which material I need to re-emphasize, etc. Because of this, the general rule is that late homework will not be accepted. The only exception to this is justified medical or personal situations that fall outside the ordinary. If you have a medical situation that keeps you from turning an assignment in, please ask for and provide documentation from a medical professional. If you have a personal life situation that keeps you from submitting an assignment on time, let me know as quickly as humanly possible. I might ask you for documentation in those cases too. I'm not trying to be stricter than I need to be, I just want to avoid assignment submissions from turning into a free-for-all.
 - If you have an accommodation need officially documented with UMass, please provide me with an official letter, and I will, of course, provide whatever accommodations are needed, in terms of assignments, exams, or anything else.
 - I have designed assignments to be a central part of your learning. As such:
 - you should expect a great amount of learning to come from your homework. This is a very hands-on course, and the topics will become clearer only once you engage with them through the work you have to submit for grading.

Academic Honesty and Collaboration Policy:

Since this is a course centered around group work, you might have doubts about what level and what type of collaboration with others you will be allowed. Obviously, those aspects of the course where that are identified as group work are to be completed via collaboration by all group members. Once your group determines how you are distributing work among yourselves, you should not let your teammates carry your load. Equally important is the fact that those parts of the course work that has been assigned specifically and exclusively to you (either by me or by your group) you should do on your own, without assistance from others. So, for example, it is perfectly fine for you to submit code developed by your group for those pieces of code that your group is working on collectively. At the same time, for those parts of the course where you are the only person that has been assigned to them (for example: code for you to write on your own; documentation to prepare on your own), the code, documentation, and other course deliverables that you submit should be completely your own. If you have questions about this matter, please ask.

Please, please observe this academic honesty policy. Having to handle academic dishonesty cases is an unpleasant experience for everyone involved. If you feel like you are falling behind with material, are concerned by your grade, or there's anything else that keeps you from engaging as might be needed

with material, I'm here to help. I am successful if you are all successful. Let's get to our learning goals, together, and honestly.

We follow the university's Academic Honesty Policy and Procedures. You can find those at <https://www.umass.edu/honesty/> .

Attendance Policy

Attendance to Wednesday meetings is always required, as we will be engaging in much group work during those sessions. Attendance will be kept for those sessions. If you cannot make it to a Wednesday meeting because of an important unavoidable reason (medical or personal/family emergency, official UMass Amherst trip, etc.), you need to let both me and your work group know as soon and as early as you can.

While attendance to every single class on Tuesdays and Thursdays is not mandatory, missing those sessions will put both you and your group/team at a disadvantage, and is bound to affect your performance in the course. In addition, depending on how things move along during the semester, while student presentations will normally begin on our Wednesday meetings, if we run short on time those presentations will be continued in Thursday meetings, for which you will need to be present. Finally, during weeks 9, 12, and 14, when release presentations will be taking place, you will need to be in class on Tuesday, Wednesday, and Thursday. You are strongly encouraged to attend all Tuesday and Thursday meetings. When you do not, you should quickly check with your teammates in order to find out what you might have missed.

Accommodation statement

It is my firm commitment to provide each student, to the best of my abilities, with equitable access to educational opportunities. In addition, The University of Massachusetts Amherst is committed to providing an equal educational opportunity for all students. If you have a documented accommodation on file with Disability Services (DS), you will be provided with reasonable deadline extensions that might be needed for you to succeed in this course. If you have a documented disability that requires an accommodation, please notify me during the first week of the course so that we may make appropriate arrangements.

Course Topics

Week	Topics	Work due	Notes
1	<ul style="list-style-type: none"> • Introduction to the course. • The software life cycle • Project selection 		
2	<ul style="list-style-type: none"> • Requirement Extraction • UML diagrams • Use Case Diagrams & User Stories 	Team creation and project descriptions	
3	<ul style="list-style-type: none"> • Working in groups <ul style="list-style-type: none"> ◦ the Scrum model 	Use case diagrams & user stories	No Wednesday class. Wednesday will follow a Monday schedule
4	<ul style="list-style-type: none"> • Software Architecture • Skills inventory • Risk analysis 		
5	<ul style="list-style-type: none"> • First design presentations 	Software architecture	
6	<ul style="list-style-type: none"> • Class diagrams • Sequence diagrams 		
7	<ul style="list-style-type: none"> • Software metrics • Timelines 	Class Diagrams & sequence diagrams	
8	<ul style="list-style-type: none"> • Version control 	Software metrics and timelines	
9	<ul style="list-style-type: none"> • First releases due 	<ul style="list-style-type: none"> • First releases due • Initial reflections due 	
10	<ul style="list-style-type: none"> • User interface design 		
11	<ul style="list-style-type: none"> • Testing 	User interface design	No Tuesday class.
12	<ul style="list-style-type: none"> • Ethics in Software Engineering • Second releases due 	<ul style="list-style-type: none"> • Second releases due • Testing protocols due 	
13	<ul style="list-style-type: none"> • Working week 		
14	<ul style="list-style-type: none"> • Final releases due 	Final presentations	
15	<ul style="list-style-type: none"> • Post-mortem analysis 	Final reflections due	Last day of classes is Wednesday May 17.