

University at Buffalo

Department of Computer Science & Engineering

338 Davis Hall – (716) 645-4736

Syllabus*Please read this sheet carefully, and save it for future reference.***Instructor**

Name	Email	Office Hours (held in Davis 352)
Matthew Hertz, Ph.D.	mhertz@buffalo.edu	Drop-in hours in Davis 352: Mondays 1:30 PM – 2:30 PM Tuesdays 2:00 PM – 3:30 PM Wednesdays 12:00 PM – 1:30 PM Or by arrangement

Course Information

Credit hours:

CSE 442 Software Engineering – 4 credits

Lectures:

Section A: MWF at 4:00 – 4:50PM in NSC 225

Section C: MWF at 4:00 – 4:50PM in NSC 225

Recitations:

These are scheduled throughout the week; check HUB for specific times.

Recitation meet every week EXCEPT first week of the term and the final day of the term; all meetings are in Baldy 19

Course Website:

www.cse.buffalo.edu/~mhertz/courses/cse442**Course Description**

Examines in detail the software development process. Topics include software life-cycle models; architectural and design approaches; various techniques for systematic software testing; coding and documentation strategies; project management; customer relations; the social, ethical, and legal aspects of computing; and the impact of economic, environmental, safety, manufacturability, and sustainability factors on design. Students in this course participate in a real-world project from conception to implementation.

Using a semester-long team-project of the students' choosing, the class provides a first-hand experience using proper agile processes. Students must stay up-to-date with both the course and the project and do their best to put these topics into practice. While many mistakes are expected, the intent is that students **appreciate the important of their software engineering choices** and can **avoid duplicating these mistakes later in the term and** (more important) **in their future careers**.

The course website contains a detailed, day-by-day schedule of topics to be covered.

Prerequisites

You must have passed CSE250 and have a declared a major offered by the computer science and engineering department. Given the intensity of work in this course, no exceptions to these requirements can occur.

Textbook and Materials

All readings and tools used this term are online and available for free. Links to the required readings are available on the course website and must be completed BEFORE the lecture in which they are listed.

Student Learning Outcomes

This course serves as a capstone course for the computer science major. It covers all 6 student learning outcomes from the ABET Computer accreditation standards. A mapping of the student learning outcomes and instruments used to assess these outcomes are:

Upon successful completion of this course a student will be able to...	Assessment Instruments
1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.	Activities, Course Project
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	Activities, Course Project
3. Communicate effectively in a variety of professional contexts.	Project Presentation
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.	Activities
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.	Course Project
6. Apply computer science theory and software development fundamentals to produce computing-based solutions.	Activities

Course support of learning outcomes: 0 – not supported, 1 – introduce, 2 – practice, 3—display mastery

CS ABET Outcome	1	2	3	4	5	6
Support	3	3	3	3	3	3

Computing Resources

You will be provided with a CSE undergraduate computing account. You may use the undergraduate lab facilities in Baldy 19 and Baldy 21. These facilities are available for use as listed on the course website. They are on card-access - use your UB card to open the door. For your own safety, and to protect the equipment in the lab, do not open or hold the door open in order to allow other people to gain entry to the lab. All students authorized to use the lab have card access.

As this is an upper-level course, you are expected to be proficient at using the machines in the lab and the Linux operating system. While each team may design a project of their choice, your entire team will need to do whatever learning is required to gain expertise in that environment. A lack of familiarity with your chosen tools is NOT an acceptable excuse for a lack of work. Information about the CSE computing environment can be found at <https://wiki.cse.buffalo.edu/services/>

You are expected to use your UB e-mail account for all communications with course staff. Always include an informative subject line for your e-mail.

Course Requirements

Lectures

Many days include readings or videos that are to be completed BEFORE lecture. Links to these materials are listed on the course webpage besides the lecture where they are due. The lectures assume students understand those materials and will expand upon and reinforce that material. Any PowerPoint slide decks presented in class will be posted to the course website after the lecture.

Lectures focus on practical applications of the concepts with the expectation that students then incorporate these ideas into their project workflow. The class also includes many activities in which students will be asked to a chance to reflect and review these concepts. It is important that students remain up-to-date with this material and seek additional help whenever they struggle.

Class attendance is mandatory and expected. ***If you miss a class, you are responsible for talking to your classmate or the instructor to find out what happened.*** If must miss class for an extended period of time, notify your instructor as soon as possible, and see your instructor immediately upon your return in order to determine how to catch up. If you have missed a significant portion of the semester, it may be recommended that you resign from the course.

Project Meetings

Recitation times will be used for teams and their project manager to meet face-to-face. These meetings mirror daily standups used in industry. Teams will also have a second (synchronous) weekly meeting in which progress is shared and assignments updated. On every other day, students are expected to post a status update in their team's chat. The purpose of this communication is to ensure the entire team remains focused, productive, and cohesive. This also ensures that people remain productive and any issues that get encountered are solved quickly.

For most students, this class will be their first experience using common software engineering practices and everyone gets confused and makes mistakes while they learn. With this expectation, students will have many opportunities to ask questions and get answers about best practices. Project managers can also provide constructive feedback on the team's work and communications.

As in industry, ***attending meetings on time and prepared is mandatory.*** Arriving 5 – 15 minutes late will be counted as ½ of an absent or unprepared meeting; arriving over 15 minutes late will be recorded as being absent from that meeting. Having 1 day marked either absent or unprepared will not be penalized. But ***your course grade will be decreased by 1 step per meeting you were absent and/or unprepared beyond that.*** This means if you earn the points for an A, but have 2 meetings for which you were absent or unprepared, your course grade would be an A-. If you earn the points for a B, but have 3 meetings for which you were absent or unprepared, your course grade would be a C+ (this is calculated from the two reductions: B → B- → C+).

This attendance policy is not intended to be punitive, but to make certain teams make progress at an even, consistent pace through the term. But it is also understood that you might have important life events and are preparing for life after the term is over. The course's Meeting Guide includes policies for what must be considered "prepared" for a meeting. ***If you cannot attend a meeting due to illness or absence you think should be excused, make certain you posted your daily status updates, have all your work completed, let your group & Project Manager know as soon as you could, and provide the instructor with documentation.*** Your manager must mark you as "absent", but your instructor can go in afterward to excuse this.

Time outside of class

Office hours are another chance for you to get individualized answers to your questions about the course. The instructor has scheduled office hours posted on the course website. Office hours are held on a first-come first-served drop-in basis. ***No appointment is necessary***, but be aware that office hours become increasingly busy as deadlines or exams approach. Plan your use of office hours accordingly. Meetings outside of planned office hours are possible, but if you want to meet outside of planned office hours, you will need to talk to the instructor and see if their schedule allows.

New York State Board of Regents regulations specify for every hour of time spent in lecture or recitation, students are expected to spend 2–3 hours on work outside of class. This means that ***you should expect to spend at least 8 hours each week on readings, meetings, working on your project, and studying.***

Grading Policy

Each student's grade is computed from a weighted average of the following items:

Project Signup & Writeup	2%
Sprint 1 Grade	8%
Sprint 2 Grade	20%
Sprint 3 Grade	20%
Sprint 4 Grade	20%
Project Presentation	10%
Lecture & Final Exam Attendance	10%
Lecture Activities	10%

If necessary, the instructor may revise how the final grade will be calculated. In this situation, changes will be announced during lecture and an announcement will be sent via e-mail to each student's UB e-mail account. Each item within the course grade is described below.

The final letter grade is based upon the following cutoffs:

93+	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
60-66	D
0-59	F

If necessary, the instructor may revise these cutoffs downward.

***Sprint 1 (8% of total course grade), Sprint 2 (20% of total course grade),
Sprint 3 (20% of total course grade), Sprint 4 (20% of total course grade)***

Each team will complete their project over a series of 4 sprints. The work in each sprint will be presented and graded during each group's usual project manager meeting time. For Sprints 2 – 4, the project must be running on actual hardware and not on an emulator or localhost. These end-of-sprint grading sessions will occur:

- Sprint 1 – "Interactive wireframe" – **Work frozen on Sept. 24th**
- Sprint 2 – "Incorporating users, accounts, or levels" -- **Work frozen on Oct. 15th**
- Sprint 3 – "Build out functionality" -- **Work frozen on Nov. 5th**
- Sprint 4 – "Filling in features and polishing work" -- **Work frozen on Dec. 3rd**

Links to the detailed grading rubrics used for sprint 1 and sprints 2 – 4 are available on the course website. The grading sessions will be led by students from the Project Management course. During this presentation, it is the team's responsibility to demonstrate that they met each of the criteria from the grading rubric. They will also need to answer questions the graders have.

The end-of-sprint grading is NOT be done by the group's project manager. Their project manager will **NOT have any input into the team's sprint grade**. This ensures open and honest communication during those meetings AND reflects the separation of development and testing found in larger organizations.

Multiplying the number of team members by the team's score on the sprint calculates the total number of individual points available for that sprint. At the end of the sprint, students will have about 1 week to complete a peer- and self-evaluation. These evaluations provide feedback on how well each team member contributed to the team during that sprint. The group's program manager also evaluates the members of the team. Each student's individual sprint score is calculated by multiplying the total number of team points available to the average percentage of points they received on those evaluations. This means your grade depends not only on excellence in software engineering, but also on being a good teammate.

Final Project Presentation (10% of total course grade)

Every group will present their project in class. The presentation will need to have content and be in a style that is appropriate for a commercial demo. Each group's presentation should take **5 – 7 minutes**. Every member is required to participate in the presentation, but the speaking does not need to be evenly distributed among the group members. Following the presentation, the class will be a question-and-answer session with the class. **Presentation time sign-ups will occur in class on Nov. 4th**. The grading rubric that will be used to score these presentations is available on the course website.

Lecture & Final Exam Attendance (10% of final course grade)

During each lecture and in each hour of the final exam, the instructor will provide a keyword. Students will need to enter that keyword in that day's AutoLab target to earn credit for attending the lecture. To make certain students are actually in attendance, **all members of the group in attendance will need to submit the code during the lecture and from the same IP address**. These **questions will begin with the Sept. 4th lecture** and continue through the end of class **INCLUDING ALL project presentation sections AND the final exam**.

Lecture Activities (10% of final course grade)

Throughout the term, there will be activities related to the course material. These activities will require that students discuss how they would apply the software engineering concepts presented in lectures to real-world situations. In most cases, these activities will be submitted as a PDF file via AutoLab though some will be submitted on paper.

All person(s) contributing to a document will need to submit this work. Allowing a student who did not contribute to the document is an academic integrity policy violation by both the student submitting others' work as their own AND the students who allowed their material be copied.

Incomplete (I) grades

We will follow the UB Undergraduate Catalog Statement on Incomplete Grades, found in the Undergraduate Catalog. Generally, incomplete ("I") grades are not given. However, very rarely, circumstances truly beyond a student's control prevents him or her from completing work in the course. In such cases the instructor can give a grade of "I". The student will be given instructions and a deadline for completing the work, usually no more than 30 days past the end of the semester. University and department policy dictate that "I" grades can be given only if the following conditions are met:

- An Incomplete will only be given for missing a small part of the course.
- An Incomplete will only be given when the student misses work due to circumstances beyond his/her control.
- An Incomplete will only be given when the student is passing the course except for the missed material.
- An Incomplete is to be made up with the original course instructor within the time specified by the appropriate University regulation (see appropriate document above), and usually within the following semester.
- An Incomplete will not be given to allow the student to informally retake the entire course, and have that grade count as the grade of the original course.

Incompletes cannot be given as a shelter from poor grades. **It is your responsibility to make a timely resignation from the course if you are doing poorly for any reason.** The last day to resign the course is **Friday, April 16, 2021**.

Diversity

The UB School of Engineering and Applied Sciences considers the diversity of its students, faculty, and staff to be a strength, critical to our success. We are committed to providing a safe space and a culture of mutual respect and inclusiveness for all. We believe a community of faculty, students, and staff who bring diverse life experiences and perspectives leads to a superior working environment, and we welcome differences in race, ethnicity, gender, age, religion, language, intellectual and physical ability, sexual orientation, gender identity, socioeconomic status, and veteran status.

Accessibility Resources

If you have any disability which requires reasonable accommodations to enable you to participate in this course, please contact the Office of Accessibility Resources in 60 Capen Hall, 716-645-2608 and also the instructor of this course during the first week of class. The office will provide you with information and review appropriate arrangements for reasonable accommodations, which can be found on the web at: <http://www.buffalo.edu/studentlife/who-we-are/departments/accessibility.html>.

Critical Campus Resources

Sexual Violence

UB is committed to providing a safe learning environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic and dating violence and stalking. If you have experienced gender-based violence (intimate partner violence, attempted or completed sexual assault, harassment, coercion, stalking, etc.), UB has resources to help. This includes academic accommodations, health and counseling services, housing accommodations, helping with legal protective orders, and assistance with reporting the incident to police or other UB officials if you so choose. Please contact UB's Title IX Coordinator at 716-645-2266 for more information. For confidential assistance, you may also contact a Crisis Services Campus Advocate at 716-796-4399.

Mental Health

As a student you may experience a range of issues that can cause barriers to learning or reduce your ability to participate in daily activities. These might include strained relationships, anxiety, high levels of stress, alcohol/drug problems, feeling down, health concerns, or unwanted sexual experiences. Counseling, Health Services, and Health Promotion are here to help with these or other issues you may experience. You can learn more about these programs and services by contacting:

Counseling Services:

- 120 Richmond Quad (North Campus), 716-645-2720
- 202 Michael Hall (South Campus), 716-829-5800

Health Services:

- Michael Hall (South Campus), 716-829-3316

Health Promotion:

- 114 Student Union (North Campus), 716-645-2837

Classroom Decorum

To prevent and respond to distracting behavior faculty should clarify standards for the conduct of class, either in the syllabus, or by referencing the expectations cited in the Student Conduct Regulations. Classroom "etiquette" expectations should include:

- Attending classes and paying attention. Do not ask an instructor in class to go over material you missed.
- Not coming to class late or leaving early. If you must enter a class late, do so quietly and do not disrupt the class. Basically, do not distract anyone if you need to enter or leave while class is in session.
- If you have a question or a comment, please raise your hand and ask. If the question can wait, consider posting it in Piazza. I want to address any points of confusion, but also need to get through the material.

Academic Integrity

Academic integrity is a fundamental university value. Through the honest completion of academic work, students sustain the integrity of the university while facilitating the university's imperative for the transmission of knowledge and culture based upon the generation of new and innovative ideas. Please refer to the university Undergraduate Academic Integrity Policy (<https://catalog.buffalo.edu/policies/integrity.html>) for additional information.

As an engineer or computer scientist, you have special ethical obligations. As per the NSPE Code of Ethics, "engineers shall avoid deceptive acts" and "shall conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession (<https://www.nspe.org/resources/ethics/code-ethics>). Similar sentiments of honesty, integrity, fairness, and responsibility are fundamental to the ACM Code of Ethics (<https://www.acm.org/code-of-ethics>).

A violation in this class generally results in an F for the entire course. The Computer Science and Engineering department's policy on academic integrity can be found here:

<https://engineering.buffalo.edu/computer-science-engineering/information-for-students/policies/academic-integrity.html>

The syllabus is subject to change based on the needs of the course and will be communicated with you as appropriate.