CMPSC 203
Software Engineering
Spring 2021
Syllabus

Course Instructor
Dr. Janyl Jumadinova
Email: jjumadinova@allegheny.edu
Web Site: https://cs.allegheny.edu/sites/jjumadinova

Instructor’s Office Hours
- Tuesday: 10:00 am–11:30 am (15 minute time slots)
- Wednesday: 1:30 pm–2:30 pm (10 minute time slots)
- Thursday: 1:45 pm–2:45 pm (15 minute time slots)

To schedule a meeting with me during my office hours, please visit my web site and click the “Schedule” link in the top left-side corner. Now, you can browse my office hours or schedule an appointment by clicking the correct link and then reserving an open time slot. Students are also encouraged to post appropriate questions to a channel in Slack, which is available at https://cs203s2021.slack.com/, and monitored by the instructor and the student technical leaders.

Course Meeting Schedule
Class Session / Practical (in-person and online): Tuesday / Thursday 8:30 am–10:00 am
Laboratory Session (online): Wednesday 2:50 pm–4:40 pm

Detailed schedule of the course is located on its Web Site: https://www.cs.allegheny.edu/sites/jjumadinova/teaching/203

All course assignments are available in their respective repositories in the course’s GitHub Organization: https://github.com/allegheny-computer-science-203-s2021

Course Description
A human-centric study of the principles used during the engineering of high-quality software systems. In addition to examining the human behaviors and social processes undergirding software development methodologies, students participate in teams tasked with designing, developing, and delivering a significant software application for a customer. During a weekly laboratory session, students use state-of-the-art software engineering, management, and communication tools to complete projects, reporting on their results through both written documents and oral presentations. Prerequisite: CMPSC 101. Distribution Requirements: SB, SP.
Course Objectives
The process of developing software involves the application of a number of interesting techniques and tools. During this class, we will explore the phases of the software engineering lifecycle and examine the principles, challenges, and open questions associated with each phase. Throughout the semester, we will investigate the interplay between the theory and practice of software engineering. Specifically, we will delve into the details of requirements elicitation, design, implementation, testing, documentation, maintenance, and deployment through a discussion of book chapters and articles from the software engineering literature. Along with learning more about how to effectively work in a team of diverse software developers, students will enhance their ability to write and present ideas about software in a clear and compelling fashion. Students will develop an understanding of the fascinating connections between computer science and software engineering and other disciplines in the social and natural sciences and the humanities. Students also will gain software engineering experience when completing practical assignments and large-scale projects.

Performance Objectives
At the completion of this class, a student should be aware of the fundamental challenges associated with software engineering. Furthermore, students should be comfortable with a wide array of concepts, methodologies, techniques, and tools that they apply to the problem of developing large software systems. A successful student will emerge with more than an understanding of the tools (e.g., text editors, compilers, linters, debuggers, automated testing frameworks, integrated development environments, and version control systems) that a software engineer uses. A student should also have an understanding of the software engineering lifecycle and the activities that take place in each of its phases. Finally, a student should have an understanding of some of the current research and the open questions in the field of software engineering. After completing this class, a student should be equipped for further graduate study in the fields of computer science and software engineering. The student should also be able to participate in real-world software development projects by adeptly using cutting-edge software tools and working with a team of diverse developers.

Textbooks


The instructor will also reference and provide resources, when necessary, from these books:


Course Flow
The class members will be broken up into two groups, A and B. During each class session, each group will either attend a class session in-person or online OR the practical session either in-person
or online. All labs will be held online and students are expected to join the lab session via Zoom unless you have discussed your absence(s) with me.

Course Policies

Grading

The grade that a student receives in this class will be based on the following categories. All of these percentages are approximate and, if the need to do so presents itself, it is possible for the course instructor to change the assigned percentages during the academic semester.

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Class Participation</td>
<td>15%</td>
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<tr>
<td>Mastery Quizzes</td>
<td>10%</td>
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<tr>
<td>Midterm Examination</td>
<td>10%</td>
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<tr>
<td>Final Examination</td>
<td>10%</td>
</tr>
<tr>
<td>Practical Assignments</td>
<td>15%</td>
</tr>
<tr>
<td>Project Reports</td>
<td>10%</td>
</tr>
<tr>
<td>Software Projects</td>
<td>30%</td>
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</tbody>
</table>

The grading categories have the following definitions:

- **Class Participation**: All students are required to actively participate during all of the course sessions. Your participation will take forms such as answering questions about the reading assignments, asking constructive questions of group members, giving presentations, and leading a discussion. You also must regularly participate in the discussions in the course’s Slack workspace. A student may request feedback on and will receive a final grade for this category.

- **Mastery Quizzes**: Serving as a review of recently introduced technical concepts, these frequent short quizzes will cover the material in their associated module(s). Typically, a quiz will be released on Thursday and will be due by Tuesday of the following week. Unless prior arrangements are made with the course instructor, all students will be expected to complete these mastery quizzes within the specified time period.
• **Midterm and Final Examinations:** The midterm and final examinations will cover all of the material in their associated module(s), as will be outlined on a review sheet. While the second examination is not cumulative, it will assume that a student has a basic understanding of the material that was the focus of the first examination. Unless prior arrangements are made with the course instructor, all students will be expected to take these examinations on the scheduled date and complete the tests in the stated period of time.

• **Practical Assignments:** Graded on a credit/no-credit basis, these assignments allow students to enhance the technical skills that they learned in previous class and laboratory sessions. Practical submissions that do not receive a checkmark grade of 1 will be allowed to re-submit the assignment once. The submission for a re-grade should occur within two weeks of that practical grade being posted in GitHub.

• **Project Reports:** Graded on both a percentage and a credit/no-credit basis, these reports invite students to furnish evidence of their mastery of the technical and professional knowledge and skills in software engineering. Students will submit reports and receive feedback on ways in which they can improve their mastery of the aforementioned skills. At the completion of a project, students will submit a report documenting their overall knowledge and skills.

• **Software Projects:** Graded on a percentage and credit/no-credit basis, these team-based projects invite students to design, implement, test, document, deploy, and maintain a high-quality software system released under an open-source license through a publicly available GitHub repository. In addition to encouraging students to enhance their technical knowledge and skills, these projects will invite you to refine your ability to work effectively with a team.

**Assignment Submission and Evaluation**

All assignments will have a stated due date. Class activities must be submitted in the format specified by the instructor for each activity. Electronic versions of the practical assignments and project reports must be submitted to a student’s GitHub repository; students will learn how to use version control with GitHub during the first laboratory and practical sessions. Electronic versions of the software projects must also be submitted through a designated public GitHub repository. No credit will be awarded for any course work that is not submitted to your GitHub repository with the required name. Unless specified otherwise, all project reports must be turned in at the beginning of the session that is one week after the day the assignment was released. Practical assignments will be due at the start of the next class session, unless otherwise stated. The two software projects will have deadlines determined in consultation with the students in the course. Without making special arrangements with the instructor, no work will be accepted after the published deadline. Using a report that the instructor shares with you through the commit log in GitHub, you will privately receive a grade for and feedback on each assignment. Your grade will be a function of whether or you not completed correct work and submitted it by the deadline. Other factors (e.g., the quality of your source code, technical writing, and team work) will also influence your assignment’s grade.

**Illness and In-person Attendance**

It is mandatory for all students to attend all of the class, practical, and laboratory sessions either in-person or online. If, due to extenuating circumstances, you will not be able to attend a session, then, whenever possible, please see the course instructor at least one week in advance to describe your situation. Students who miss more than five unexcused sessions will have their final grade in
the course reduced by one letter grade. Students who miss more than ten of the aforementioned events will fail the course.

If you feel ill, please stay in your residence and complete the daily health screening, and err on the side of caution when deciding whether or not to come to class. Especially if you feel feverish or have a cough, please avoid contact with others; if you feel like you’d like to "power through" class rather than miss it and have to make it up, please do so remotely.

Remote Attendance

If you are participating entirely remotely this semester and relying on technology to attend class meetings, occasional technology problems that disrupt your participation will not harm your participation grade, but as with illnesses and family emergencies, chronic absences for this reason will require a more extensive discussion with me and may impact your grade. Unless the missed participation activity is explicitly said to be excused by the instructor, it will need to be made up as soon as possible following its deadline.

In-person Attendance

A mask covering both your mouth and your nose is required for all in-person activities, per College policy; you will not be permitted to enter or stay in a classroom or other learning space without a face covering, and class time missed for this reason may count against your participation grade. Physical distancing must be respected at all times in the classroom. Chairs will be positioned 6 feet apart, and should remain so.

Use of Computer Hardware and Software

You will need to ensure that your laptop is sufficiently charged so that you may participate in class(es). It won’t be possible for all in-person students to charge their devices at once in the classroom, so please make sure you bring the power cord(s) for your devices to class, pack a power strip if you have multiple devices, and pay attention to the power meter on your device.

Although the instructor and the student technical leaders will support you in the configuration of your own development workstation, it is the responsibility of each enrolled student to download and install the required software. Please schedule a meeting with the instructor if you are struggling with these tasks.

Recording Policy (prepared by Campus Life and Community Standards Committee)

In remote teaching and learning contexts, there is an understanding that instructors (including faculty, coaches, staff, and facilitators) have the right to record class and discussion proceedings. All other participants must request permission of the instructor in advance before making any additional recordings. An instructor’s pre-recorded material, including lectures and class notes, may not be shared with anyone outside of the course’s current enrollment without the consent of the instructor. Similarly, under no circumstances may a recording, still, screenshot, picture, or any other media of any sort be altered or circulated by anyone outside of its original intent. No content may be distributed outside the circle of participants without the consent of all who appear or are heard. The college community is reminded of Allegheny College’s Recording Policy, outlined in 9.8 of the Faculty Handbook, as well as Allegheny’s Statement of Community. Violations will be referred to the Student Conduct system. Classes may also be recorded if approved as an educational accommodation through the Office of Student Disability Services. Faculty are further reminded
that recordings of class activities are educational records protected under FERPA. While students do not have a right to be anonymous in a class in which they are enrolled, they have the legal right to be anonymous to third parties. Please direct questions about FERPA to the Registrar.

Class Preparation

In order to minimize confusion and maximize learning, students must invest time to prepare for the class discussions, lectures, and practical sessions. During the class periods, the course instructor will often pose challenging questions that could require group discussion, exploration of software, a vote on a thought-provoking issue, or a group presentation. Only students who have prepared for class by reading the assigned material and reviewing the current laboratory and practical assignments will be able to effectively participate in these discussions.

More importantly, only prepared students will be able to acquire the knowledge and skills that they need to be successful in this course, subsequent courses, and the field of computer science. In order to help students remain organized and to effectively prepare for classes, the course instructor will maintain a class schedule with reading assignments and presentation slides. During the class sessions students will also be required to download, use, and modify programs and data sets that are made available through means such as the course web site and a GitHub repository.

Seeking Assistance

Students who are struggling to understand the knowledge and skills developed in a class, laboratory, or practical session are encouraged to seek assistance from the course instructor or one of the student technical leaders. Throughout the semester, students should, within the bounds of the Honor Code, ask and answer questions on the course’s Slack workspace. To ensure a suitable response, please request assistance from the instructor or technical leaders first through Slack before sending an email. Students who need the course instructor’s assistance must schedule a meeting through his web site and attend the meeting with all of the details needed to discuss their question.

Academic Integrity

Allegheny College operates under an Honor Code, to which all students are subject. See The Compass: Student Handbook. You should educate yourself appropriately as to how this applies to you. Plagiarism and other forms of intellectual dishonesty will not be tolerated.

It is understood that an important part of the learning process in any course, and particularly one in computer science, derives from thoughtful discussions with teachers and fellow students. Such dialogue is encouraged. However, it is necessary to distinguish carefully between the student who discusses the principles underlying a problem with others and the student who produces assignments that are identical to, or merely variations on, someone else’s work. While it is acceptable for students in this class to discuss their programs, data sets, and reports with their classmates, deliverables that are nearly identical to the work of others will be taken as evidence of violating the Honor Code.

Religious Accommodations

If you need to miss class or reschedule a final examination due to a religious observance, please speak to the professor well in advance to make arrangements. See http://sites.allegheny.edu/religiouslife/religious-holy-days/.
Disability Services

Students with disabilities who believe they may need accommodations in this class are encouraged to contact the Office of Disability Services at (814) 332-2898. Disability Services is located in Pelletier Library. Please do this as soon as possible to ensure that such accommodations are implemented in a timely fashion.

Learning Commons

If you are not already, you should become familiar with the Learning Commons, located in Pelletier Library (http://sites.allegheny.edu/learningcommons/). Among other things, the staff at the Learning Commons can assist you with study and time management skills, writing, and critical reading. You should know that if you are having trouble in this class, or if I think you can specifically benefit from their services, I will refer you to the Learning Commons. Experienced peer writing and speech consultants in the Learning Commons help writers and speakers to determine strategies for effective communication and to make academically responsible choices at any stage in the writing or speaking process and on assignments in any discipline. Both appointments and drop-in sessions are available. To view the hours of operation, and to make an appointment, visit the Learning Commons website.

Statement of Community

Allegheny students and employees are committed to creating an inclusive, respectful and safe residential learning community that will actively confront and challenge racism, sexism, heterosexism, religious bigotry, and other forms of harassment and discrimination. We encourage individual growth by promoting a free exchange of ideas in a setting that values diversity, trust and equality. So that the right of all to participate in a shared learning experience is upheld, Allegheny affirms its commitment to the principles of freedom of speech and inquiry, while at the same time fostering responsibility and accountability in the exercise of these freedoms.