# Course Syllabus



# SSW555/CS555 Agile Methods for Software Development

School of Systems and Enterprises

2024 Spring

Instructor: Dr. Zhongyuan Yu

Course Schedule: **Tuesday, 3:30-6 pm (Location: Peirce 120)**

Contact Info: zyu7@stevens.edu

Office Hours: Tuesday 2-3 pm Babbio 537 or Zoom**: https://stevens.zoom.us/j/93013447309** ⬀ **(https://stevens.zoom.us/j/93013447309)** ⬀ **(https://stevens.zoom.us/j/93013447309)** , additional office hours upon request

TA: Gengwu Zhao (gzhao9@stevens.edu)

Prerequisite(s): No, but it would be desirable that students are comfortable with scripting languages such as *Python and Javascript*.

Cross-listed with: CS555, SSW555

I will be available via email and respond as soon as possible (generally within 24-48 hours). When emailing me, please place the **course number/section** and the topic of the email in the subject line (i.e., SSW555**D** – Assignment 2 Question). This will help me tremendously in locating your emails, and Canvas results more quickly.

# COURSE DESCRIPTION

In software problem areas that require exploratory development efforts, those with complex requirements and high levels of change, agile software development practices are highly effective when deployed in a collaborative, people-centered organizational culture. This course examines agile methods, including Extreme Programming (XP), Scrum, Lean, Crystal, and Feature-Driven Development, to understand how rapid software realization occurs most effectively. The ability of agile development teams to rapidly develop high-quality, customer-valued software is examined and contrasted with teams following more traditional methodologies that emphasize planning and documentation. Students will learn agile development principles and techniques covering the entire software development process from problem conception through development, testing, and deployment, and will be able to effectively participate in and manage agile software developments as a result of completing this course. Case studies and software development projects are used throughout.

After successful completion of this course, students will be able to:

- describe several agile methods for software development
- describe the origins and motivations of the Agile Manifesto
- practice pair programming
- perform test-first development with a unit-testing framework
- create and critique user stories for system requirements
- refactor code and tests to meet changing needs
- develop and monitor project backlogs
- measure and monitor the velocity of development
- compare plan-driven versus agile methods
- construct tailored agile processes that best fit the technical and market demands of a modern software project

# STUDENT LEARNING OUTCOMES

Upon completion of this course, you should be able to:

- Understand the principles and motivations of the Agile Manifesto, compare and contrast plan-driven versus several Agile Methods.
- You can work in a team with members of different roles and backgrounds, and implement a project with team members following scrum practices.
- You can make decisions to improve your agile process using sprint reivew and retrospective meetings.

- You can learn new emerging agile methods and use test-driven design for specific project requirements.

# COURSE REQUIREMENTS and GRADING PROCEDURES

Weekly lectures, quizzes/assignments, and a team project form the core of the course. Students will be expected to participate in weekly lectures and complete weekly reading, quizzes/assignments, along with a group development project. A final examination is administered to ensure student mastery of the subject matter. No mid-term exam.

The evaluation will be based on the following criteria & weights:

- **Quizzes and assignments (45%):** There will be after-class quizzes OR assignments as needed. Homework should be finished individually, and discussions with peers or instructors are allowed, but copying or any other type of cheating is strictly prohibited.
- **Project and Presentation (40%):** The course project is to give the students hands-on experience on solving real-world problems. The course projects will be developed over the course of the semester. Group work is required, 5-7 team members are expected.
- **Final Exam (15%):** Students will work independently on the take-home ONLINE final exam (a longer quiz version).
- There are additional bonus points!

If you are straddling two grades, your class participation and occasional bonus points (or lack of it) will determine which way your grade will go. Even if you answer questions incorrectly (hopefully not TOO often), your participation is noted and counts as engagement.

## Late Policy

- Partial credit will be assigned for late submission **(<1 day: 5% deduction; <3 days: 10% deduction; < a week, 30% deduction)**. The students are advised to get in touch with the instructor with any doubts/clarification regarding any assignment well before the submission deadline. **The lowest quiz/assignment grade will be dropped for the final homework calculation.** All assigned problems are to be done individually. However, you may **reference** someone else on the assignment if you went to him or her for assistance or use online sources. PLEASE DO NOT SHARE your solutions directly. Solutions will be gone over in class.
- Late Homework and Make-up Exams: Late homework and project submission will be provided to the student if there is a situation of unavoidable emergency. This requires a written excuse. If you **do not submit** homework/quiz/exam **or submit late with no explanation in advance**, you will receive zero after ONE week for the corresponding submission.

# TENTATIVE COURSE SCHEDULE

 **(subject to change)**

| Week | Date | Additional Comments | Homework Due | Topic | Project plan | Level |
|---|---|---|---|---|---|---|
| 0 | Tuesday, January 16, 2024 | | | Optional Orientation/Q&A | | |
| 1 | Tuesday, January 23, 2024 | | | Course Overview | | very easy |
| 2 | Tuesday, January 30, 2024 | | 2/5/24 | RUP and XP | | easy |
| 3 | Tuesday, February 6, 2024 | | | Project Release | Group formation Due | easy but imformative |
| 4 | Tuesday, February 13, 2024 | | 2/19/24 | User Story | Preparation for project | easy-median but important |
| 5 | Tuesday, February 20, 2024 | | 2/26/24 | Scrum | Start of Sprint 1 | easy but important |
| 6 | Tuesday, February 27, 2024 | | 3/4/24 | Testing | | hard!! |
| 7 | Tuesday, March 5, 2024 | | 3/11/24 | Pair Programming | Start of Sprint 2 | easy |
| 8 | Tuesday, March 12, 2024 | Spring Recess; No Classes | | | | |
| 9 | Tuesday, March 19, 2024 | | | Tentative Guest Talk on Agile industry practices | | very easy but imformative |
| 10 | Tuesday, March 26, | | 4/1/24 | Refactoring | Start of Sprint 3 | median-hard |

| | | | | | |
|---|---|---|---|---|---|
| | 2024 | | | | |
| 11 | Tuesday, April 2, 2024 | | 4/8/24 | Lean | | easy-median |
| 12 | Tuesday, April 9, 2024 | | 4/15/24 | Crystal | Start of Sprint 4 | easy |
| 13 | Tuesday, April 16, 2024 | | 4/22/24 | Feature-Driven Development (FDD) | | easy |
| 14 | Tuesday, April 23, 2024 | | 4/29/24 | Scaled Agile Framework (SAF) | End of Project | easy |
| 15 | Tuesday, April 30, 2024 | | Online Final exam begins on May 1st | Zoom Project Presentation | | |
| | Tuesday, May 7, 2024 | | Final exam due | | | easy-median |

# COURSE MATERIALS

Textbook(s):          There is no official textbook for this course. Weekly lecture notes will be published throughout the semester.

Other Readings:      Check Course Modules

# ACADEMIC INTEGRITY

## Generative AI Technologies

You may use AI programs e.g. ChatGPT, to help generate ideas and brainstorm.  However, you should note that the material generated by these programs may be inaccurate, incomplete, or otherwise problematic.  You **should not** submit any work generated by an AI program as your own.  If you include material generated by an AI program, **it should be cited like any other reference material. Read through, add your own independent thinking and creativity, and use your own words.**

Any plagiarism or other form of cheating will be dealt with under relevant Stevens policies.

# Undergraduate Honor System

Enrollment into the undergraduate class of Stevens Institute of Technology signifies a student's commitment to the Honor System. Accordingly, the provisions of the Stevens Honor System apply to all undergraduate students in coursework and Honor Board proceedings. It is the responsibility of each student to become acquainted with and to uphold the ideals set forth in the Honor System Constitution. More information about the Honor System including the constitution, bylaws, investigative procedures, and the penalty matrix can be found online at **http://web.stevens.edu/honor/** ⤷ **(http://web.stevens.edu/honor/)**

The following pledge shall be written in full and signed by every student on all submitted work (including, but not limited to, homework, projects, lab reports, code, quizzes and exams) that is assigned by the course instructor. No work shall be graded unless the pledge is written in full and signed.

*"I pledge my honor that I have abided by the Stevens Honor System."*

<u>Reporting Honor System Violations</u>

Students who believe a violation of the Honor System has been committed should report it within ten business days of the suspected violation. Students have the option to remain anonymous and can report violations online at **www.stevens.edu/honor** ⤷ **(http://www.stevens.edu/honor)** .

## Graduate Student Code of Academic Integrity

All Stevens graduate students promise to be fully truthful and avoid dishonesty, fraud, misrepresentation, and deceit of any type in relation to their academic work. A student's submission of work for academic credit indicates that the work is the student's own. All outside assistance must be acknowledged. Any student who violates this code or who knowingly assists another student in violating this code shall be subject to discipline.

All graduate students are bound to the Graduate Student Code of Academic Integrity by enrollment in graduate coursework at Stevens. It is the responsibility of each graduate student to understand and adhere to the Graduate Student Code of Academic Integrity. More information including types of violations, the process for handling perceived violations, and types of sanctions can be found at **https://my.stevens.edu/provost/grad-academics-and-student-success** ⤷ **(https://my.stevens.edu/provost/grad-academics-and-student-success)** .

# EXAM CONDITIONS

The following procedures apply to quizzes and exams for this course. As the instructor, I reserve the right to modify any conditions set forth below by printing revised Exam Conditions on the quiz or exam. Students may use the following materials during quizzes and/or exams. Students are/are not allowed to work with or talk to other students during quizzes and/or exams.

| Material | Permitted? | |
|---|---|---|
| | Yes | No |
| Handwritten Notes<br><br>Conditions: i.e. size of note sheet | Yes | |
| Typed Notes<br><br>Conditions: i.e. size of note sheet | Yes | |
| Textbooks<br><br>Conditions: i.e. specific books | Yes | |
| Readings<br><br>Conditions: i.e. specific documents | Yes | |
| Online resources **with references** | Yes | |

# LEARNING ACCOMMODATIONS

Stevens Institute of Technology is dedicated to providing appropriate accommodations to students with documented disabilities. The Office of Disability Services (ODS) works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical disabilities, sensory impairments, psychiatric disorders, and other such disabilities to help students

achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from the ODS staff. The ODS staff will facilitate the provision of accommodations on a case-by-case basis.

For more information about Disability Services and the process to receive accommodations, visit **https://www.stevens.edu/student-diversity-and-inclusion/disability-services** ⏍ **(https://www.stevens.edu/student-diversity-and-inclusion/disability-services)** . If you have any questions please contact the Office of Disability Services at **disabilityservices@stevens.edu (mailto:disabilityservices@stevens.edu)** or by phone: 201.216.3748.

## Disability Services Confidentiality Policy

Student Disability Files are kept separate from academic files and are stored in a secure location within the Office of Disability Services. The Family Educational Rights Privacy Act (FERPA, 20 U.S.C. 1232g; 34CFR, Part 99) regulates disclosure of disability documentation and records maintained by Stevens Disability Services. According to this act, prior written consent by the student is required before our Disability Services office may release disability documentation or records to anyone. An exception is made in unusual circumstances, such as the case of health and safety emergencies.

# INCLUSIVITY

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## Name and Pronoun Usage

As this course includes group work and class discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect. This includes the ability for all students to have their chosen gender pronoun(s) and chosen name affirmed. If the class roster does not align with your pronouns and/or name, please inform the instructor of the necessary changes.

## Religious Holidays

Stevens is a diverse community that is committed to providing equitable educational opportunities and supporting students of all ethnicities and belief systems. Religious observance is an essential

reflection of that rich diversity. Students will not be subject to any grade penalties for missing a class, examination, or any other course requirement due to religious observance. In addition, students will not be asked to choose between religious observance and academic work. Therefore, students should inform the instructor at the beginning of the semester if a requirement for this course conflicts with religious observance so that accommodations can be made for students to observe religious practices and complete the requirements for the course.

# MENTAL HEALTH RESOURCES

Part of being successful in the classroom involves a focus on your whole self, including your mental health.  While you are at Stevens, there are many resources to promote and support mental health. The Office of Counseling and Psychological Services (CAPS) offers free and confidential services to all enrolled students who are struggling to cope with personal issues (e.g., difficulty adjusting to college or trouble managing stress) or psychological difficulties (e.g., anxiety and depression). Appointments can be made by phone (201-216-5177), online at **https://stevensportal.pointnclick.com/confirm.aspx** ⮒ **(https://stevensportal.pointnclick.com/confirm.aspx)** , or in person on the 2$^{nd}$ Floor of the Student Wellness Center.

# EMERGENCY INFORMATION

In the event of an urgent or emergent concern about your own safety or the safety of someone else in the Stevens community, please immediately call the Stevens Campus Police at 201-216-5105 or on their emergency line at 201-216-3911.  These phone lines are staffed 24/7, year-round.  For students who do not reside near the campus and require emergency support, please contact your local emergency response providers at 911 or via your local police precinct.  Other 24/7 national resources for students dealing with mental health crises include the National Suicide Prevention Lifeline (1-800-273-8255) and the Crisis Text Line (text "Home" to 741-741). If you are concerned about the wellbeing of another Stevens student, and the matter is *not* urgent or time sensitive, please email the CARE Team at **care@stevens.edu (mailto:care@stevens.edu)** . A member of the CARE Team will respond to your concern as soon as possible.