17-622: Agile Development

T, 1:30PM-2:50PM, Th., 8:00-9:20AM. All times and dates are Eastern Standard Time

A2, Fall 2020, 6 Units

Instructor   Email   Office Location & Hours

Prof. Eduardo Miranda   mirandae @ andrew.cmu.edu   Remote, by appointment

Prof. Sujata Telang   stelang @ andrew.cmu.edu   Remote, by appointment

Course Description. Agile development methods refer to a number of software development approaches that adopt self-organization, adaptive planning, evolutionary development, frequent deliveries and working closely with and incorporating feedback from customers throughout the development process as their principles of operation to achieve responsiveness. This course will introduce students to two well-known agile methods: Scrum and Kanban, connecting their practices to established group dynamics and knowledge management theories to explain why they work and under what circumstances.

The course has been designed for students seeking to acquire a working knowledge of agile project management methodologies, tools, and techniques with a focus on:

- Understanding, validating and defining the work to be done
- Estimating the effort required
- Planning the work
- Tracking and controlling progress
- Reflecting

The course is organized around Scrum, the most popular agile development method, and follows a learn by doing paradigm so students taking it must be prepared to work in groups during class. Each lecture is typically followed by a class activity in which the concepts learned are put into practice.

Prior Knowledge. Exposure to group software development, undergraduate course in Software Engineering

Learning Objectives. After completing this course, you will be able to:

- Apply the Scrum framework
- Describe the scope of work by means of user stories and story maps
- Estimate the amount of work to be done using the planning poker technique
- Conduct design based planning
- Plan releases using the MoSCoW method
- Use a milestone plan to guide execution
- Make recommendations for improvement
- Understand key ways to measure the success of the processes selected

Learning Resources. Reading material is provided.

User Stories Primer, Leffingwell, 2009

Priming Kanban, Boerg, 2012

Improving task breakdown comprehensiveness in agile projects with an Interaction Room, Grapenthin, 2015

Time boxing planning: Buffered Moscow rules, Miranda, 2011

Essential Scrum – Chapters, Rubin, 2013

Team Formation and Roles, Partridge, 2007

Challenges of Traditional and Agile Software Processes, Sanchez, 2018

The Scrum Guide, Schwaber, 2017

Planning Poker, Trendowics, 2018

Introduction to Disciplined Agile Delivery, Ambler, 2018

Use of Zoom in the Class. In our class, we will be using Zoom. The link is available on Canvas. Please make sure that your Internet connection and equipment are set up to use Zoom and able to share audio and video during class meetings. (See this page for Computing Resources for information on the technology you are likely to need.) Let me know if there is a gap in your technology set-up as soon as possible, and we can see about finding solutions.

Sharing video: In this course, being able to see one another helps to facilitate a better learning environment and promote more engaging discussions. Therefore, our default will be to expect student to have their cameras on during lectures and discussions. However, I also completely understand there may be reasons students would not want to have their camera son. If you have any concerns about sharing your video, please email me as soon as possible and we can discuss possible adjustments. Note: You may use a background image in your video if you wish; just check in advance that this works with your device(s) and internet bandwidth.

During our class meetings, please keep your mic muted unless you are sharing with the class or your breakout group.

If you have a question or want to answer a question, please use the chat or the "raise hand" feature (available when the participant list is pulled up).

Course and Grading Policies

The course features two parallel tracks. A traditional lecture track, where the topics are presented and discussed, an a learn by doing track, the class activities, in which the concepts presented are put into practice through a running assignment performed in groups. See Figure 1. The grading philosophy is explained on Figure 2.
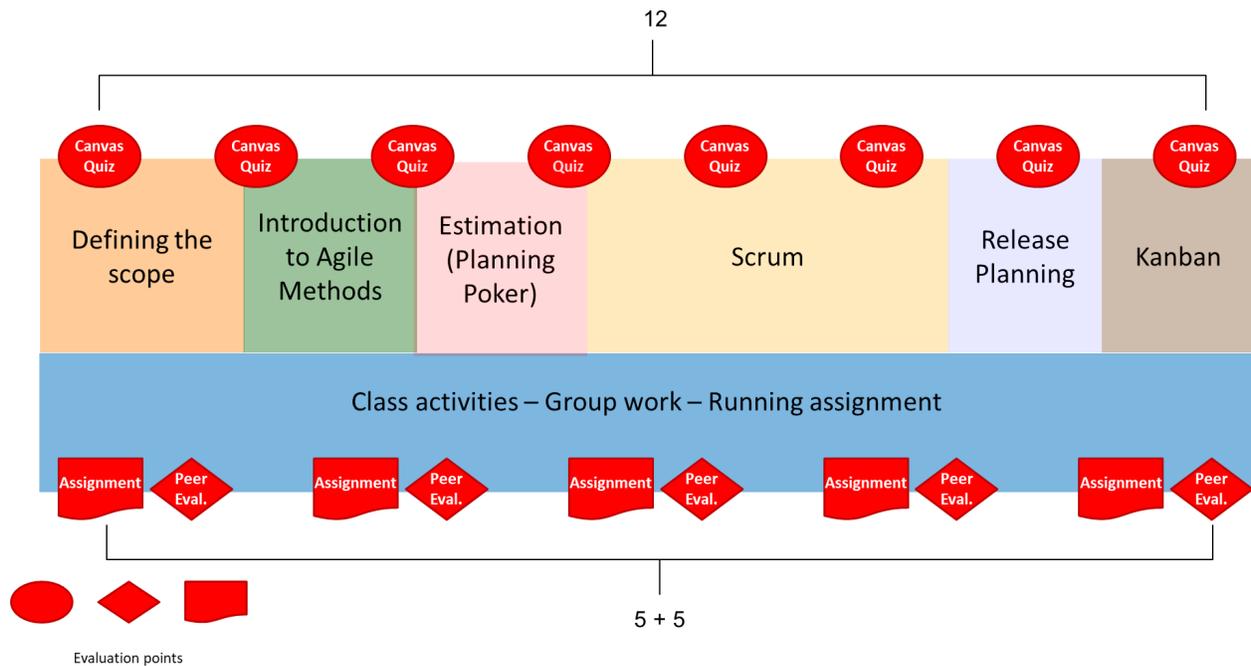
- Low stakes, incremental, self regulated   ➡   Many small evaluations

- Allows for less than perfect
- Tolerates a few mishaps. There are no excuses accepted, except for major cause   ➡   The total of the points adds to more than 100%, so you can get a few bad grades or miss an assignment, and still get an "A"

- <u>Penalizes consistent failure to perform</u>   ➡   If you consistently miss deliveries, skip classes and get bad grades you will fail the course

Figure 2 Grading philosophy

Final grades in the course will be assigned according to the following scale:

- Maximum number of points = 119
- 110+ points, "A+"
- 100+ points, "A"
- 90+ points, "A-"
- 75+ points, "B+"
- 70+ points, "B"
- 65+ points, "B-"
- 55+, "C"
- "D"

Attendance, quizzes, and assignments

- 6 mandatory class activities and quizzes: 0 – 6 points each, 36 points maximum
- 6 lecture quizzes: 0 – 3 points each, 18 points maximum
- 2 Individual assignments, 0 – 10 points each, 20 points maximum
- 3 group assignments, 0 – 10 points, 30 points maximum
- Peer review, 10 points
- Instructor discretion, 5 points

CANVAS Quizzes
- These quizzes serve a double purpose:
    – To track class attendance

- To make sure the students look back at the material presented in class and the readings
- Quiz
  - Duration 10 minutes, at any point during the class
  - Typically, 3 to 4 multiple choice questions referring to what was presented in the slides in the previous lecture and the indicated readings
  - Two types of questions:
    - Due to the ambiguity or lack of definitive definition for many of the concepts taught, answers will be evaluated with regards to what was taught in class
    - Questions testing knowledge of terminology, categories and classifications
    - Questions testing principles and generalizations. These questions can have more than one correct response, but there are some better than others
  - Class activity quiz grading: 3 points for taking the quiz, up to 3 points for correctly answering questions. This quizzes have to be taken by the end of the corresponding class
  - Lecture quiz grading: 1 point for taking the quiz, up to 3 points for correctly answering questions. This quizzes can be completed up to 24 hours of the lecture being taught

Assignments
- This corresponds to things students need to do before the class activities
- Material submission
  - Individual assignments, one file consolidating all the student material in a single file
  - Group assignment, one file per group consolidating all the material produced by the group
- Submissions must be:
  - In PDF format
  - Self-descriptive
  - Self-contained
  - Include all elements required by the preparation instructions
  - "Professional grade", you should not submit anything you would not submit or present in a business setting. Readability, presentation and grammar will be graded
- Due date: 11:59PM/23:59 of the day before the class in which the material is to be used

Peer evaluations
- Group members will evaluate each other's contribution to the group project. Things to consider include: timely responses to mails and other forms of communication, meeting attendance and punctuality, behavior towards others, and timeliness and quality of work. It is expected that most students will do their fair share. Peer evaluations amount to small percentage of your grade but 100% of your reputation

- Procedure
  - There will be 5 peer evaluations, one for each class activity
  - Students will mark whether a team member was a good citizen of the group for that particular assignment or not. The opportunities in which a student was deemed a good citizen, will be added up and normalize to 10 at the end of course
  - Students must only mark students on their group and <u>THEMSELVES</u>. Failing to mark yourself or to fill the evaluation will result in lost points for the said student
  - Evaluations accounting for more people than there is in the group will be discarded on they entirety and in consequence the student doing it, will also lose some points
- Due no later than 11:59PM/23:59 of the day in which the class took place

Instructor discretionary grading

Points granted by the instructor to reward excellent performance which is not captured by the instruments above as it is serendipitous and personal, such as
- Making an appropriate observation
- Volunteering a response to a question
- Asking a pertinent question
- Helping other students

Do not expect to gain these points for doing what a good student should do. These points will be given to those going above and beyond.

Recording of Class Sessions. All synchronous classes will be recorded via Zoom so that students in this course (and only students in the course) can watch or re-watch past class sessions. Please not that breakout rooms will not be recorded. I will make recordings available on Canvas as soon as possible after each class session (usually within 3 hours of the class meeting). Recordings will live in our Canvas website. Please note that you are not allowed to share these recordings. This is to protect your FERPA rights and those of your fellow students.

Course Schedule. The following schedule provides a general overview of topics and assignments and <u>will be not updated during the course</u>. For actual dates and changes, please refer to the online syllabus in Canvas.

No.	Date	Lecture topic
1	Tuesday, October 27, 2020	Course Introduction Context diagrams & storyboards
2	Thursday, October 29, 2020 (Mandatory class activity)	User stories and story maps Introduction to MURAL
3	Tuesday, November 3, 2020	Working in teams - Agile methods Introduction - Scrum
4	Thursday, November 5, 2020 (Mandatory class activity)	Concept of operation
5	Tuesday, November 10, 2020	Estimation
6	Thursday, November 12, 2020 (Mandatory class activity)	User stories and story map
7	Tuesday, November 17, 2020	Scrum ceremonies
8	Thursday, November 19, 2020 (Mandatory class activity)	Planning poker
9	Tuesday, November 24, 2020	Burn down charts & project tracking
10	Thursday, November 26, 2020	Thanksgiving - No classes
11	Tuesday, December 1, 2020	Release planning
12	Thursday, December 3, 2020 (Mandatory class activity)	Backlog refinement and Sprint planning
13	Tuesday, December 8, 2020	Kanban
14	Thursday, December 10, 2020 (Mandatory class activity)	Sprint execution

Accommodations for Students Disabilities. If you have a disability and have an accommodations letter form the Disability Resources office, I encourage you to discuss your accommodations and needs with me as early in the semester as possible. I will work with you to ensure that accommodations are provided as appropriate. If you suspect that you may have a disability and would benefit from accommodations but are not yet registered with the Office of Disability Resources, I encourage you to contact them at access@andrew.cmu.edu.

Academic Integrity. Honesty and transparency are important to good scholarship. Plagiarism and cheating, however, are serious academic offenses with serious consequences. If you are discovered engaging in either behavior in this course, you will earn a failing grade on the assignment in question, and further disciplinary action may be taken.

For each major assessment, you will be asked to sign a statement affirming that you will not cheat, plagiarize, or receive unpermitted assistance on the work that you turn in. For a clear

description of what counts as plagiarism, cheating, and/or the use of unauthorized sources, please see the [University's Policy on Academic Integrity](#).

If you have any questions regarding plagiarism or cheating, please ask me as soon as possible to avoid any misunderstandings. For more information about Carnegie Mellon's standards with respect to academic integrity, you can also check out the [Office of Community Standards & Integrity](#) website.

Student Wellness. As a student, you may experience a range of challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may diminish your academic performance and/or reduce your ability to participate in daily activities. CMU services are available, and treatment does work. You can learn more about confidential mental health services available on campus at the [Counseling and Psychological Services](#) website. Support is always available (24/7) from Counseling and Psychological Services: 412-268-2922.

This semester is unlike any other. We are all under a lot of stress and uncertainty at this time. Attending Zoom classes all day can take its toll on our mental health. Make sure to move regularly, eat well, and reach out to your support system or me if you need to. We can all benefit from support in times of stress, and this is semester is no exception.

Respect for Diversity. It is my intent that students from all diverse backgrounds and perspective be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength, and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know if any of our class meetings conflict with your religious observations so that I can make alternate arrangements for you.