Carnegie Mellon University
Master of
Software Engineering

17-632: Software Project Management

T & Tr. 2:00 – 3:20 PM, All times and dates are Eastern Standard Time

A3, Spring 2023, 6 Units

Instructor	Email	Office Location & Hours
Prof. Eduardo Miranda	mirandae @ andrew.cmu.edu	By appointment
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Course Description. Projects are temporary organizations set up to achieve a one-time objective in an agreed time frame. They are characterized by requiring the execution of interrelated, normally non repeating activities, by multidisciplinary groups. Because of its temporary nature and the interrelatedness of its activities, projects require prescriptive planning, budgeting, staffing and risk management. This course will introduce student to fundamental project management techniques and tools such as activity planning, milestone planning, estimation, work breakdown structures, critical paths. The course will also look at hybrid methods such as Milestone Driven Agile Execution. The course has been designed for students seeking to acquire a working knowledge of project management methodologies, tools, and techniques with a focus on:

- Planning
- Project tracking

The course is organized around a running assignment that continues from activity to activity to provide a thorough understanding of how the planning artifacts relates to each other. The course 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 software development activities, undergraduate course in Software Engineering

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

- Create planning artifacts such as work breakdown structures, milestone plans, activity plans, estimates, risk registers and earned value charts
- Apply the Milestone Driven Agile eXecution method to software development projects

Learning Resources. Reading material is available through the course website

Network Scheduling, DSMC, 2001

Warning: activity planning is hazardous to your project's health!, Andersen, 1996

Milestone Planning: A Participatory and Visual Approach, Miranda, 2019

Work Breakdown Structure For Projects, Program And Enterprises, Haugan, 2008

Fundamentals of Function Points Analysis, Longstreet,

Bridging the Gap Between Agility and Planning, Miranda, 2020

Earned Value Analysis Why it Doesn't Work, Lukas, 2008

Managing Project Uncertainty: From Variation to Chaos, Meyer, 2002

Continuous Risk Management Guidebook SEI, 1996

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.

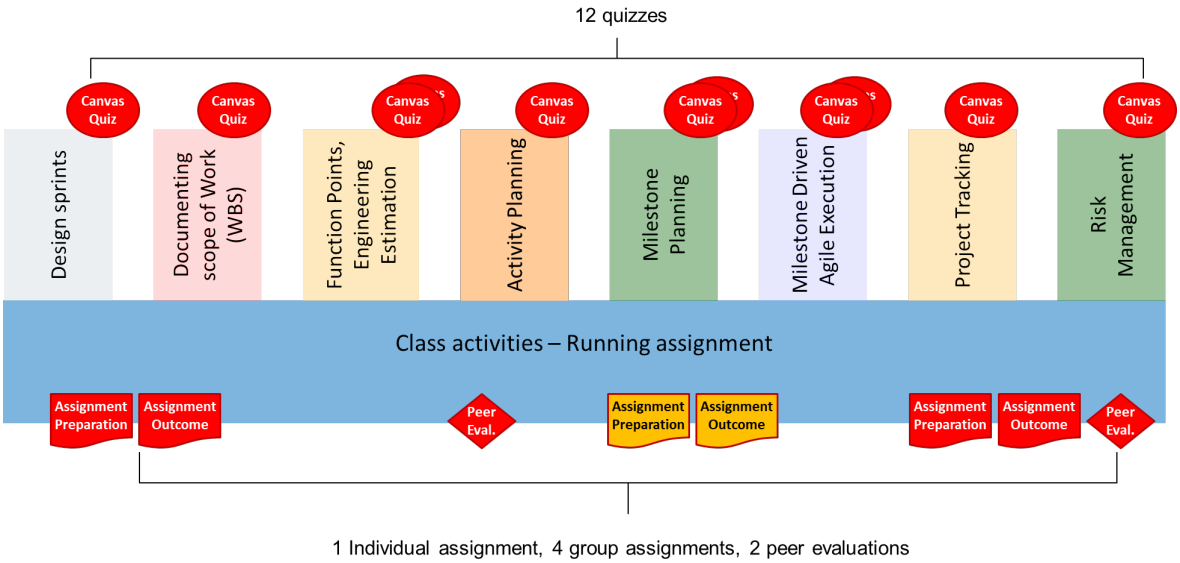

Figure 1 Course architecture

- Low stakes, incremental, self regulated. Students manage their own time
- Allows for less than perfect
- Tolerates a few mishaps. There are no excuses accepted, except for major cause.

→ Many small evaluations

→ The total of the points adds to more than 100%, so you can get a few bad grades or miss an assignment or quiz, and still get an "A"

- Penalizes consistent failure to perform

→ 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 = 108
- 103+ points, “A+”
- 98+ points, “A”
- 90+ points, “A-”
- 80+ points, “B+”
- 70+ points, “B”
- 65+ points, “B-”
- 55+, “C”
- 50+, “D”
- “R”

Attendance, quizzes, and assignments

- 12 quizzes: 0 – 4 points each, 48 points maximum
- 5 assignments, 0 – 10 points, 50 points maximum
  - Preparation submissions, 0 – 2 points
  - After activity submission, 0 – 8 or 0 – 10
- There are 3 mandatory class activities
  - Late arrival, 5 minutes after the start of the start of the activity, - 2 points
  - Absence without major cause, - 5 points
- 2 peer reviews, each 0 – 5, points, 10 points maximum
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CANVAS Quizzes

- These quizzes serve a double purpose:
  - To uncover general understanding problems
  - To grade individual efforts
- “Open book”
- Typically, 3 multiple choice like questions referring to what was presented in the slides in the previous lecture and the indicated readings. Might include material from the supplemental slides
  - 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
- Must be submitted by 11:59 PM of the date shown in the CANVAS website and completed within 10 minutes of the started
- Grading
  - 1 point for taking the quiz
  - Up to 3 points for correctly answering questions

Assignments

- Material submission

  - Individual submissions, one file consolidating per student with all the 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
  - First page must include name or names of the students and group number as applicable
  - Self-descriptive, by reading the material I understand it
  - Self-contained, makes no references to external websites or foreign files
  - Include all elements required by the activity 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:
  - Submissions are due by 11:59PM on the date shown in the CANVAS website, there are no excuses, except major cause

Sources of true for grading

- While all discussions and opinions are welcomed, due to the ambiguity or lack of definitive definitions for many of the concepts taught, answers will be evaluated with regards to the following hierarchy:
  - What was presented in the class slides
  - What it is written on the reading material
  - Everything else

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 2 peer evaluations
  - Students will assess whether a team member was a good citizen of the group for the assignments covered. To determine the number of points for each evaluation, the percentage of positive responses will be multiplied by 5. Example, Susie is a member of a 5-person group, if she receives 5 positive votes, she will get a 100% x 5 = 5, but if she gets only 4 positive votes she will get 4 / 5 = 80% x 5 = 4 points
  - Students must only mark students on their group and THEMSELVES. 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 are in the group will be discarded on they entirety and in consequence the student doing it, will also lose some points
- Peer evaluations are due by 11:59PM, EST on the date indicated on the CANVAS website

Recording of Class Sessions. Classes will not be recorded

Course Schedule. The following schedule provides a general overview of topics and assignments and will not be updated during the course. For actual dates and changes, please refer to the Lecture Plan in Canvas.

No.		Lecture topic
1	Tuesday, January 17, 2023	Course Introduction
2	Thursday, January 19, 2023	Design sprints
3	Tuesday, January 24, 2023	Documenting the scope of work
4	Thursday, January 26, 2023	Estimation 1 – Counting methods
5	Tuesday, January 31, 2023	Class activity - Work Breakdown Structures
6	Thursday, February 2, 2023	Estimation 2 - Engineering methods
Optional	Friday, February 3, 2023	Function points assignment
7	Tuesday, February 7, 2023	Activity Planning
8	Thursday, February 9, 2023	Milestone Planing
9	Tuesday, February 14, 2023	Hybrid approaches: Milestone Driven Agile Execution
10	Thursday, February 16, 2023	Class activity - Milestone identification
11	Tuesday, February 21, 2023	Project tracking & control
12	Thursday, February 23, 2023	Class activity – Milestone planning
13	Tuesday, February 28, 2023	Risk Management
14	Thursday, March 2, 2023	Risk Management

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.