



Carnegie Mellon University  
Master of  
Software Engineering

17-332/17-632: Software Project Management

M, 8:20 - 9:40AM, W., 8:20 - 9:40AM. All times and dates are Eastern Standard Time

Recitations – only for students in the on-line program, Tr. 6:00PM - 6:50PM

A3, Spring 2021, 6 Units

Instructor      Email      Office Location & Hours

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

Prof. Scott Pavetti      spavetti @ andrew.cmu.edu      Remote, by appointment

**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 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 will be provided.

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

MoSCoW Prioritization, Agile Business Consortium, 2019

Fundamentals of Function Points Analysis, Longstreet,

Time Boxing Planning: Buffered MoSCoW Rules, Miranda, 2011

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

**Use of Zoom in the Class.** In our class, we will be using Zoom. The links will be made 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. 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 on. 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, and 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 1.

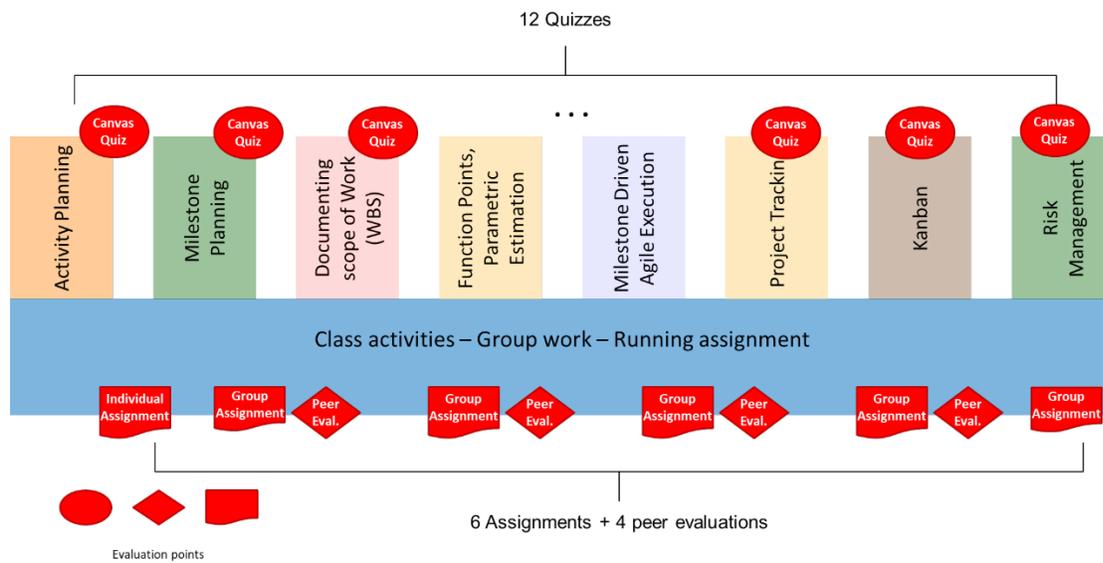


Figure 1 Course architecture

- Low stakes, incremental, self regulated  Many small evaluations
- Allows for less than perfect  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”
- Tolerates a few mishaps. There are no excuses accepted, except for major cause
- 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 = 121
- 110+ points, “A+”
- 100+ points, “A”
- 90+ points, “A-”
- 80+ points, “B+”
- 70+ points, “B”
- 65+ points, “B-”
- 55+, “C”
- “D”

Attendance, quizzes, and assignments

- 12 quizzes: 0 – 4 points each, 48 points maximum
- 1 Individual assignment, 0 – 10 points
- 5 group assignments,
  - 0 – 10 points, 50 points maximum
    - Preparation submissions, 0 – 2 points
    - After activity submission, 0 – 8 or 0 - 10
- 4 peer reviews, each 0 – 2, points, 8 points maximum
- 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
- 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 must be taken when indicated, 10 minutes window, distance students have to take it within 24 hours of the class being posted
- “Open book”
- Typically, 2 to 3 multiple choice questions referring to what was presented in the slides in the previous lecture and the indicated readings
- Two types of questions:
  - 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
- Grading
  - 1 point for taking the quiz
  - Up to 3 points for correctly answering questions

## 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
  - First page must include name or names of the students and group number as applicable
  - 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:
  - Preparation submissions: Sometimes individual, sometimes group submissions: 11:59PM/23:59 of the day before the class in which the material is to be used
  - After activity, always group submissions: 11:59PM/23:59 two days after the activity took place

#### Peer evaluations

- Group members will evaluate each others 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
- There will be 4 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 8 at the end of course
  - 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 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 note 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 will be not updated during the course. For actual dates and changes, please refer to the online syllabus in Canvas.

Monday, February 1	Course Introduction (Projects vs Products). The need for planning	
Wednesday, February 3	Activity planning	
Monday, February 8	Milestone planning	Activity 1. ACTIVITY PLANNING
Wednesday, February 10	Work Breakdown Structures	
Monday, February 15	Class activity	Activity 2. MILESTONE IDENTIFICATION AND SEQUENCING
Wednesday, February 17	Function Point/Parametric Estimation	
Monday, February 22	Class activity	Activity 3. WORK BREAKDOWN STRUCTURE
Wednesday, February 24	Hybrid approaches: Milestone Driven Agile Execution	
Monday, March 1	Class activity	Activity 4. ESTIMATION
Wednesday, March 3	Project tracking	
Monday, March 8	Class activity	Activity 5. MILESTONE PLANNING
Wednesday, March 10	Kanban	
Monday, March 15	Risk Management	
Wednesday, March 17	Class activity	ACTIVITY 6. 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](mailto: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.