



Carnegie Mellon University
Master of
Software Engineering

17-692: Product Management Essentials for Engineers

Spring 2022, A4, 6 Units

Monday and Wednesday, 4:40pm - 6:00pm

Room 265, 300 South Craig Street

Zoom classroom (for MSE Online degree students – see the course site on Canvas.)

Instructor

Prof. Jim Berardone

Email

jberardone@cmu.edu

Office and Office Hours

300 S. Craig St. #275 or Zoom
by appointment

Teaching Assistant

Aditi Mittal

Email

aditimit@andrew.cmu.edu

Course Description. In today's technology-driven world, organizations want engineers to help shape great product innovations and customer experiences from the very beginning. Engineers offer a depth of knowledge of what's possible now. When engineers clearly understand the opportunity and goals, they can stimulate differentiating innovation ideas, contribute to the bigger picture, and influence product decision-making.

This course prepares technically minded students to understand and use the essential product management concepts and practices in product innovation. These concepts include the product management rationale, product teams, customer problem analysis, product (solution) idea generation, concept design, customer value, competitive positioning and differentiation, customer value proposition design, product vision, product strategy and roadmaps, prioritization, product requirements, market strategies and the business of the product.

This 6-unit course emphasizes learning-by-doing. Students will work on a hands-on, real-world, course-long project applying these concepts to identify a problem to solve, conceive of an innovative solution, design a compelling value proposition, and make strategic decisions.

Prior Knowledge. Students should have taken an introductory course or have experience in one of the following, but they this is not a hard requirement: business, strategy, marketing, product design, product development, innovation, or entrepreneurship. Most important is a desire to learn about product management and to use critical thinking.

Learning Objectives. By the end of this course, students will be able to:

- Identify and recognize essential concepts used in conceiving, describing, and planning new product ideas
- Use the whole problem framework to compose a well-defined customer problem.
- Apply solutioning techniques to generate and describe a product concept and requirements.

- Use value-centric concepts to construct a compelling, differentiated product offering for customers.
- Apply product strategy and planning concepts to choose a direction for a product.
- Know how to use business strategies and metrics in making product decisions.
- Distinguish between related concepts including projects and products, features and benefits, and value and value proposition.

Learning Resources. You'll be provided with the class slides, recorded video lectures, papers written by the instructor, and other articles. In addition, there are several assigned published papers which have been purchased for you. Each of these published items are accessible within the course assignments on Canvas.

Technology Resources. In this course, we will use several technologies:

- Canvas – Our course Canvas site will be the central place for your assignments, learning materials, and the class slides. Make sure you are setup to receive notifications of announcements and of new and changed assignments.
- OLI platform – Specific learning activities have been prepared using CMU's Open Learning Initiative (OLI) platform. These activities feature low-stake exercises in the form of multiple choice, true/false, multiple answers, and other similar types.
- Google Suite – We'll use Google Docs and Forms for you to complete various tasks during some class sessions.
- Zoom – for participating in class remotely (See Course Policy section of this syllabus.) The URL for our Zoom room is available on Canvas.

Assessments.

Student's knowledge, comprehension and application skills will be assessed in the following ways:

- **Participation.** In this mini course, there are 14 class sessions where the instructor will introduce the concepts and share examples. Students will be given opportunities to begin applying the concepts in class and to get early feedback. Attendance is expected and it accounts for a small portion of a student's grade.
- **Learning Activities.** Each week, after the class sessions, students are assigned readings, video lessons and/or exercises to further develop their understanding of the concepts. Completion of the exercises will account for a small portion of a student's grade.
- **Product Assignments.** Over the course of 6 Product Assignments, students will apply the product management concepts on an approved customer problem space, culminating in a compelling product innovation idea. Collectively, these assignments will account for a large portion of a student's grade.

Grading System.

Activity	Final Grade (Points = %)
Participation	13
Learning Activities	12
Product Assignment 1	5
Product Assignment 2	10
Product Assignment 3	10
Product Assignment 4	20
Product Assignment 5	10
Product Assignment 6	20
TOTAL	100 points

Grade	Percentage Interval
A+, A, A-	97-100%, 93-96%, 90-92%
B+, B, B-	87-89%, 83-86%, 80-82%
C	70-79%
D	60-69%
R (F)	59% or below

Learning Activity Grading. Each Learning Activity assignment is set of readings, videos and/or exercises. These are intended to help students better understand a concept taught in class and in the materials. When there are exercises, they will be completed on the OLI site. Each exercise is in the form of multiple choice, matching, true/false, and other types of questions. There is no limit to the number of attempts a student can complete an exercise correctly.

When a Learning Activity has exercises on OLI, it is important that all exercises are completed correctly to learn the concepts effectively. For these OLI exercises, you will receive full credit (2 points) for completing the entire set correctly by the due date and no credit (0 points) for not completing the entire set correctly.

Product Assignment Grading. Each Product Assignment is an opportunity to apply the product management concepts taught in the classes and Learning Activity to your specific project. There are 6 Product Assignments, each one builds upon the work you've done in the previous Product Assignment.

You need to submit your work on-time to receive full credit. Students will lose 1 point for each day that a Product Assignment is submitted late. The only exception is the first time you a submit a Product Assignment late, the penalty will not start until one day later.

Participation Grading. It's important to attend each class as new product management concepts are introduced in each class session. You will need to use these lessons to complete the subsequent Learning Activity and Product assignments.

You will earn 1 point of credit for each class you attend fully, and 0.5 points for each class that you arrive late or leave early. Since there are 14 class sessions and 13 points available, you can miss one class without impact on your grade.

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 [Canvas](#). 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. Please refer to the syllabus online in Canvas for specific lecture topics, assignments, and due dates.

Week	Date	Class	Topic	Product Assignments
1	March 14	1	Course Overview and Product Management Introduction	Product Assignment 1: Identify 2 problem spaces
	March 16	2	Customer Problem Space – Part 1	
2	March 21	3	Customer Problem Space – Part 2	Product Assignment 2: Problem selection and definition
	March 23	4	Customer Problem Space – Part 3	
3	March 28	5	Solution Space – part 1	Product Assignment 3: Solution Concept Design
	March 30	6	Solution Space – part 2	
4	April 4	7	Solution Space – part 3	<i>SPRING CARNIVAL Weekend (No assignments are due this week.)</i>
	April 6	8	Market Space (market, segments, select/target, coverage)	
5	April 11	9	Market Space – part 1	Product Assignment 4: Product Strategies, Market and Competition, Market Strategies
	April 13	10	Market Space – part 2	
6	April 18	11	Customer Value Space - part 1	Product Assignment 5: Value Proposition
	April 20	12	Customer Value Space – part 2	
7	April 25	13	Business Value Space – part 1	
	April 27	14	Business Value Space – part 2	
8	May 9	No class		Product Assignment 6 Final Composition of Product Decisions

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 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 spavetti@cmu.edu if you need to. We can all benefit from support in times of stress, and this semester is no exception.

Respect for Diversity. [Please refer to the [Eberly Center's page on Diversity Statements](#) for other examples, if this one does suit your needs.] 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.