



Carnegie Mellon University
Master of
Software Engineering

17-692: Product Management Essentials for Engineers

Spring 2023, A3, 6 Units

Instructors

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Office and Office Hours

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

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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 6-unit 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, 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, product metrics and product narratives.

The 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. It is beneficial, but not required, for students to have taken an introductory course or have experience in one of the following: 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 product ideas, create a product concept design and identify product requirements.
- Use value-centric concepts to construct a compelling value proposition for customers.

- Use the customer perspective to analyze competition for positioning opportunities.
- Apply product strategy and planning concepts to make product decisions.
- Make target market and market strategy decisions
- Develop product success metrics and measurements
- 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 including several that have been purchased for your use. 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.
- Slack – Our course's slack channel will be used to communicate and answer questions about the course.
- OLI platform – Specific learning activities have been prepared using CMU's Open Learning Initiative (OLI) software 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.

Assignments and Assessments.

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

- **Product Assignments (65%).** There are 6 Product Assignments that students will complete during the course. Each one builds upon the student's work in the previous Product Assignment and culminates in an innovative product idea that offers compelling value to customers. It's an opportunity to apply the product management concepts explained in the course to a student's chosen and approved customer problem space.

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.

Exception: The first time you submit a Product Assignment late, we will not start the penalty until 48 hours has passed the deadline.

- **Learning Activities (25%.)** Each week, students are to complete the assigned readings and/or video lessons. Most Learning Activities have exercises to further develop their understanding of the concepts. The exercises are organized by module on the OLI platform. They are in the form of multiple choice, short answer, true/false, and matching questions.
 - Each module has multiple exercises.
 - Students will receive
 - full credit (2 points) for completing all exercises in a module correctly by the due date
 - no credit (0 points) for not completing all exercises in a module correctly by the due date
 - Students may make multiple attempts to complete an exercise correctly.

Exception: Students may miss completing one module of exercises without penalty (in other words, full-credit will be given for the one module that wasn't completed.)

- **Peer Learning Activities (10%.)** Each student is asked to engage in learning from a group of their peers. They'll post parts of their work 2 times and respond to 2 posts of the other students in their group. The post topics, instructions and groups will be assigned. The groups will stay the same for each assigned activity. Students earn credit for completing each of these.

Attending each class session is expected but not required.

Grading System.

Activity	Final Grade (Points = %)
Learning Activities (OLI exercises)	25
Peer Learning Activities	10
Product Assignment 1	5
Product Assignment 2	10
Product Assignment 3	10
Product Assignment 4	10
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

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 reside on [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 at a Glance. The following schedule provides a general overview of topics and schedule of the product assignments. Please refer to the syllabus online in Canvas for all assignments and the specifics about each class topic.

Week	Date	Class	Topic	Product Assignments
1	January 17	1	Course Overview. Introduction to Product Management and the Customer Problem Space.	Product Assignment 1 (5 points): Identify 2 problem spaces
	January 19	2	Customer Problem Space – Part 1: Actors, Personas, Job To Be Done.	
2	January 24	3	Customer Problem Space – Part 2: Use Cases, Outcomes, Problems	Product Assignment 2 (10 points): Problem selection and definition
	January 26	4	Customer Problem Space – Part 3: Problem Analysis and Communication.	
3	January 31	5	Solution Space – part 1:	Product Assignment 3 (10 points): Solution Concept Design
	February 2	6	Solution Space – part 2:	
4	February 7	7	Solution Space – part 3:	Product Assignment 4 (10 points): Product requirements and product positioning
	February 9	8	Customer Value Space – part 1: Competition and Positioning	
5	February 14	9	Customer Value Space – part 2: Customer Value and Value Proposition Design	Product Assignment 5 (10 points): Customer Value Proposition and Pricing
	February 16	10	Customer Value Space – part 3: Pricing and Customer Justification	
6	February 21	11	Strategy Space – Part 1: Market Segmentation and Sizing - part 1: Marketing Segmentation and Sizing	

Week	Date	Class	Topic	Product Assignments
	February 23	12	Strategy Space – Part 2: Market Entry, Coverage and Growth Strategies	Product Assignment 6 (20 points): Product-Market Strategies and Product Narrative
7	February 28	13	Strategy Space – Part 3: Product Vision, Strategy Roadmap	
	March 2	14	Product Success Metrics and Product Narrative	
	March 4	No class		

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.

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.