

SYLLABUS

EGR 507: Life Cycle Product Management

Spring 2024

Course Overview

This course covers the management of complex technical products during all phases of the product life cycle, but primarily after the product has been launched into the market (EGR 506 covers the product launch). It is a broad survey of all the tools needed by the technical product manager throughout the life cycle of a complex product. The course is taught with a systems approach and from the engineering manager's viewpoint.

The product life cycle includes all aspects of managing products from launch through maturity. The course covers understanding customer needs, product design and packaging, market segmentation, pricing, sales and distribution, technical sales support, training, technical services and support, product evolution and upgrades, and management of disruption. A particular emphasis is placed on the needs of complex high technology products and related engineering services. Business topics are covered as necessary to meet the needs of the engineering manager. Case studies are used extensively throughout this course. Students are expected to learn good communication skills.

This course is part of a three-course series (EGR 590-608 Managing new Product Creation, EGR 506 Managing New High Tech Product Launches, and EGR 507 Product Lifecycle Management). The courses may be taken singly, in any order, or just as one course. Students who take all three courses can use the same product for the course project in each, resulting in a design and development plan, business plan, and product management plan for the product. Each course is self-contained, however.

This course is offered in two formats: 1) In-class/hybrid, and 2) fully online/asynchronous. Both formats cover the same content but in a slightly different manner. In-class sections hear lectures live and work in small groups on the case studies. Fully online sections will view the lectures online and will complete case studies in the forum with others. Case studies result in a 5-slide deck for each team. Both in-class and online students will be asked to engage in conversation in the forum on current topics. Grading will be identical in both in-class and online sections.

Course Prerequisite

Graduate standing with a prior degree in engineering or science.

Course Topics Include:

- The Product Lifecycle Model
- Product Planning
- Understanding the Customer
- Product Teams
- Agile Development
- System Integration
- Manufacturing
- Outsourcing and Managing Suppliers
- Supply Chain Analysis
- Product Field Testing
- Regulatory Environment
- Companion Services and Training
- Sales, Distribution and Presales Support
- Market Segmentation, Positioning and Pricing
- Providing Customer Service and CRM
- Product Safety, Recalls and Warranties
- Managing Product Upgrades
- Managing and Responding to Disruption
- Life Cycle Cost, P&L Management and ROI

Course Requirements and Grading Criteria

The course requires lectures, readings, discussion, and case studies. In addition, students will complete paper describing a product management plan as a final course project. There will be three online quizzes based on the readings. The course grade will be determined from the following formula:

REQUIREMENT	WEIGHT	CRITERIA
Participation	10%	Based on forum posts, quantity and quality
4 Group Case Studies	30%	Based on 4 case summaries, graded on presentation
Online Quizzes (5)	20%	5 multiple choice quizzes (open book, timed)
Project Proposal	10%	Business case for your product must be covered
Project Report	25%	Product Management Plan – 10-page paper
Class Attendance	5%	Class Attendance is Required

Grading of each category is determined as follows.

Participation – Each student will submit a participation report at the end of the term showing statistics on how many posts were made, as well as providing samples. The evaluation is based both on quantity and quality. Participation is weighted at 10% of the course grade.

Quizzes – there are 5 online quizzes, which are multiple choice questions on the course readings. These are open book and timed and must be taken in a single seating. The instructions give the time limits. They are 5-10 questions each, and each is worth 4% of your total grade.

Case Studies – students will work in small teams to examine 4 case studies about high-tech product management in some depth, and present conclusions. This makes up 30% of the course grade. Each case is an in depth look at a product in the context of the topics covered in class resulting in a 5-7 slide PowerPoint pitch. Teams will present in class or record a 5–10-minute video presentation for online sections. Follow the detailed instructions of each case study.

Project – a separate document under Course Documents called Course Project details the requirements and grading criteria for the proposal/business case, the report, the presentation, and the evaluation exercise. A total of 5% of the course grade is allocated to the project proposal and business case, and 25% for the final Product Management Plan.

Class Attendance – In class students must attend class. Credit is based on attending at least 12 class sessions. Online students must participate in the case study forums online with other students. Students of either section must complete all the checkboxes in Moodle demonstrating they have completed each line item of the course. Attendance is based on percentage attended.

Course and assignment grades, whether machine graded or graded by the instructor, are final and not subject to negotiation. Students may not email at the end of the term and ask for one more point to get a higher grade, as this creates an unfairness to other students. Grades are based on the university grading scale.

Textbooks

The following book is required reading in the course as assigned by the course syllabus. The Product Manager's Desk Reference, 3rd Edition, by Steven Haines, McGraw Hill.

Students will be expected to purchase a Business plan Financial Model, “Business Plan Financials” from <https://planningshop.com/shop/>

Course Format

Weekly coursework requires three parts, regardless of whether you are an online student, or an in-class student: 1) a 75-minute lecture, 2) approximately 50 pages of reading, and 3) in-person or forum discussions leading up to case study presentations every 3 weeks. In addition, there are 5 short online quizzes covering the reading material. In addition, progress toward your final project must be completed incrementally over time.

Course Project

Each student individually will complete a course project which is a detailed Product Management Plan (also known as a Product Masterplan) for a product selected by the student and related to the student's job or graduate program. The Product Management Plan must address all aspects of the product life cycle including development, supply chain management, sales and marketing, customer service, product upgrades, contingency planning, and product replacement. A detailed document describing this project is under Course Documents in Moodle. This project required the preparation of a "business case" as the project proposal, and the completion of a 10 page paper describing all the elements of the "PMP".

Instructor

Ed Addison

Adjunct Lecturer, Systems and Industrial Engineering
eraddiso@ncsu.edu (preferred method of communication)

Cell: 910-398-1200

LinkedIn: /edaddison/

Bio can be found on LinkedIn

Student Learning Outcomes

Upon completion of this course, students will:

- Understand the principal issues involved in technical product management throughout all phases of the product life cycle.
- Be able to develop a convincing business case for the development or continuation of a technical product.
- Appreciate and understand the relationship between marketing and product management and become effective at communicating with marketing managers.
- Be able to develop, plan and manage with a product management plan that covers design, development, test, marketing and sales, and customer support.

- Be skilled at participating in the development of a strategic plan that relates to organizational objectives for a product or product area including its phase out and replacement at the end of the product life cycle.
- Understand the relationship of supply chain issues and performance as it relates to the product manager's job.
- Understanding manufacturing issues as it relates to product management.
- Be aware of product liability issues, product warranties and their management and product recalls and their impact and management.
- Acquire and learn to use basic financial management tools needed by product managers for planning products, projects, and ventures. (This extends concepts from EGR 505, although EGR 505 is not required as a prerequisite).
- Learn about the role of regulatory agencies and administrative law as it affects the provision of products to the marketplace.
- Become exposed to several markets through case studies including pharmaceutical, medical device, software, alternative energy products, electronics, telecommunications, aerospace, and entertainment products. Case studies will be used extensively so that students can learn the similarities and differences impacting product management in different markets.

Course Policies

Academic Integrity – Students must do their own work except where assignments are stated as group assignments. The University policy on academic integrity can be found in the [Code of Student Conduct\(POL11.35.01\)](#), The Honor Pledge will be used upon submission of each assignment. It is expected that students will tests and assignments with honesty.

Late Assignments – Assignments must be submitted by the due date. Late assignments are reduced 2% per day for up to 10 days. After 10 days, assignments are not accepted. No assignment may be submitted after the last day of class.

Quizzes – Quizzes in this course are open book and notes. Neither the Internet (i.e., Google, nor other people, may be consulted during an exam. Quizzes must be completed during the specific time in one single sitting subject to a time limit. Quizzes may cover anything from the readings or lectures. Quizzes are machine graded.

Contacting the Instructor, Assignment Submission and Office Hours. Students may make an appointment with the instructor for a meeting by Skype by emailing the instructor at eaddiso@ncsu.edu. Students may call the instructor between 4:30 and 8:30pm on Mondays (office hours), however it is best to email first. Assignments must always be submitted via the Moodle assignment link and not by email. Late assignments are penalized 10% up to a week late, except final project assignments may not be submitted late at all.

Course Weekly Module Plan

WEEK DATES	TOPIC	READING	ACTIVE CASE STUDY	ASSIGNMENT DUE
Week 0 1/8-1/15	Course Introduction	1, 14	N/A	Post Your Bio
Week 1 1/15-1/22	PM Overview (Reading Only) MLK Holiday 1/15	3, 5 PDF #1	N/A	Quiz-1 DQ-1
Week 2 1/22-1/29	Product Market Fit	7, 8 PDF #2	Case 1: Tesla	DQ-2
Week 3 1/29-2/5	The Business Case for a Product	10, 11 PDF #3	Case 1: cont. Tesla	Quiz-2 DQ-3
Week 4 2/5-2/12	Product Strategy	13,15 PDF #4	Case 1: cont. Tesla	Case Report -1
Week 5 2/12-2/19	Product Management Plan	2, 9 PDF #5	Case 2: Amazon AWS	Product Proposal DQ-4
Week 6 2/19-2/26	The Product Cross Functional Team	4, 15 PDF #6	Case 2: cont. Amazon AWS	Quiz-3 DQ-5
Week 7 3/04-3/11	Supply Chains Management for PMs	PDF #7 External References	Case 2: cont. Amazon AWS	Case Report-2
3/11-3/18	SPRING BREAK			--
Week 8 3/18-3/25	Product Manufacturing	PDF #8 External References	Case 3: Boeing 787	Quiz-4 DQ-6
Week 9 3/25-4/1	Customer Service, Maintenance, Warranties	PDF #9 External References	Case 3: cont. Boeing 787	Case Report-3
Week 10 4/1-4/8	PLM Software & Product Performance	6 Tool Guide PDF #10	Case 4: F-16 Radar	Quiz-5 DQ-7
Week 11 4/8-4/15	Budgeting for Product Managers	16, 17 PDF #11	Case 4: cont. F-16 Radar	Case Report 4
Week 12 4/15-4/22	Lifecycle Product Management	18, 19 PDF #12	Project Period	Participation Report DQ-8
Week 13 4/22-4/29	Course Completion	---	Project Period	Project Final Report