EGRMGMT 590 - Managing Product Development

Course Syllabus

Fridays 11:45 am - 2:30 pm Room: Teer 115

Instructor	Contact Information & Office Hours
Dina Requena, Ph.D., P.M.P. Duke University - Adjunct Professor Master of Engineering Management Program https://www.linkedin.com/in/dinarequena/	E-mail: dina.requena@duke.edu Phone: 919-986-2637 Instant messaging: Skype (dina.requena) – When messenger is on green "available" Group chat: https://app.slack.com/client/TV0H4Q0GJ/C01016WEK55 Office Hours: Right before/after class via zoom or by appointment https://duke.zoom.us/j/4971531928

Course Overview:

Irrespective of their size, location, number of employees, revenue margin, or industry segment, all companies transform their innovative strategies into real world products or services. Some companies have well defined transformation steps that they call product/service development process; others simply just do whatever it takes without organized planning. But in general, they all go through iterative phases such as: discovery, definition, development, demonstration, qualification, deployment, and life cycle management. Furthermore, there are factors that impact all these phases such as: source of funding, people relations, market dynamics, supply chain, design/development tools, time constraints, internal/external regulations, etc. Adequate management of these factors enables the development process to be executed on time and on budget in order to meet customer needs and stakeholders' expectations.

This course will prepare students to understand the management constructs of Waterfall, Agile or Hybrid Product Development approaches as well as approaches with focus on delivering a product or service on time within budget and effective utilization of resources towards meeting or exceeding customer requirements.

Class Structure:

Each class module lasts 2 hours and 45 minutes. The module is usually divided into two periods:

- Period 1 – lecture and class discussion
- Period 2 - group discussion on a specific case study/learning lab or project status for that wee

Grading:

20 % *Class participation (includes in attendance and in class exercises)*

15 % *Pop Quiz*

20 % *Case Studies*

5% *Simulations*

40 % Course project

Class Participation:

Participation will be based on both frequency and quality. Frequency is important so that the class can benefit from your own unique experience. Quality is important for comments that are directly relevant and will help advance the class' thinking on a topic. It is critical that you make your thinking clear to the class. With clarity the class can productively debate your logic and reasoning. Finally, spontaneity in a discussion is important. You should come to class well prepared with all the readings as well as be prepared to change your thinking based on how the class proceeds.

Class Attendance:

Class attendance is MANDATORY. Distance learning students need to notify professor that they reviewed the lectures no later than 2 days after class. If you miss more than 2 classes, your attendance grade will be a B. If you miss more than 4 classes, your attendance grade will be a C.

Pop Quiz

These are multiple choice quizzes given 3 times during the semester. Each quiz will have 11 questions, 10 right answers counts towards quiz grade. If all answers in a given quiz are correct, the extra 10% will be used towards another quiz. Quizzes will cover the last 3 or 4 modules discussed in class.

Case Studies:

- Case studies are assignments completed by teams. All teams are expected to analyze a case and turn in an assessment of the problem presented and the recommended course of action.
- One team will present their assessment and recommendations to the class. Team will draw their presentation date soon after teams are assigned on January 17.
- All case study question assignments will be sent to class via e-mail.
- SUBMISSION GUIDELINES: Cases should be uploaded to sakai drop box no later than 10:00 am on the due date. Late submissions will be penalized.
- Students are expected to read all case studies and engage in class discussions.
- The course case grade is breakdown is:
    - Oral case presentation: 50% (1 or 2 times per semester only)
    - Written case submissions: 50% (all cases)

Course Project:

Teams will be assigned a project that they must complete during the semester. This project will prepare the students to execute the management of product or services development by allowing them to analyze data, make decisions, recommend solutions, and to apply the product development process concepts learned in class.

Students will be assigned into 5-people teams to work on preparing a New Product Development (NPD) Plan. The project must be worked on weekly basis during the semester and must be completed and presented during the last week of class. All lectures throughout the semester include product development concepts that need to be applied for this project.

Each week there will be a project status assignment where the student applies what they learned in the previous lecture. For example, during the "concept" status week, the student will need to have the product concept assignment completed. During the final project presentation, the team presenting the project will be evaluated by their peers in class including Audit students and the professor. The final project presentation should be no

longer than 15 minutes per team with 5 minutes of Q&A. Standard evaluation sheets will be provided. The project evaluators will play the role of the high-level management within the company.

This project will prepare the students to execute the management of product development by allowing them to make decisions, recommend solutions, and apply the product development concepts learned in class. A separate project hand out will be given at the beginning of class.

The overall course project grade breakdown is:

- Weekly Project Status: 50%
- Final Oral Presentation: 30%
- Final Written Report: 20%

Simulations:

Simulations are to be handed by teams and are done in class.

Instructions for each simulation will be provided a week before the simulation is scheduled

Grading Scale:

S = satisfactory (C or above 70)

U = Unsatisfactory (below C or 69)

Course Pack & Textbook:

- The course pack has the case studies and articles to be assigned.
- Download from for Harvard Business Review URL to be sent to all registered students before the first day of class.
- The Lean Product Playbook: How to Innovate with Minimum Viable Products and Rapid Customer Feedback – Dan Olsen, 2015

Articles:

Review articles are to be read by each student individually. Review articles are necessary to complement what will be taught in the lectures. Reading them counts towards your class participation grade in the event a question is asked from the material read. Professor will assign review articles at beginning of each class.

Recommended Reading Books:

- Contemporary Product Development: A Focus on Innovation – K. E. Ferguson, J. Sztykiel and M. Ingram - 2020,

- David L. Rainey, Product Innovation: Leading Change through Integrated Product Development, Cambridge University Press, 2008Carter, John and Bradford, Jeanne - Innovate Products Faster: Graphical Tools for Product Development, 2012.
- Executing Your Strategy: How to break it down and get it done – Mark Morgan; William A. Malek; Raymond E. Levitt, 2008.
- PDMA Handbook for Product Development – 4th Edition.
- Marc A. Annachino, New Product Development: From Idea to Product Management, Elsevier.
- Stephen Armstrong, "Engineering and Product Development Management: The Holistic Approach", Cambridge University Press.
- Stefan H. Thomke, Managing Product and Service Development: Text and Cases.
- Robert G. Cooper, Winning at New Products: Accelerating the Process from Idea to Launch, Third Edition.

Team Assignments:

Students will be assigned to teams and will not get to choose who their team members are. This is to reflect the just "real world" project team experience. We will do our best to make sure that each team is composed of a mix of personal / cultural backgrounds, undergraduate degrees, and experiences as reflective of the marketplace. Each team must have a at least one native English speaker.

Sakai:

- All course materials (lectures, case solutions, project guidelines, and others) will be posted on Sakai in the "Resources" tab a day before the class takes place.
- Students place their submissions individual or team submissions in dropbox. For team submissions, students submit in their respective team folder.

Academic Integrity:

Students are expected to abide by the Duke University Community Standard with respect to the honor pledge in completion of homework, project and tests. Specifically make sure you are also familiar with the Duke definition of academic dishonesty. Duke Community Standard:

- I will not lie, cheat, or steal in my academic endeavors.
- I will conduct myself honorably in all my endeavors.
- I will act if the Standard is compromised.

Class Schedule:

Date	Topic	Assignment/Readings	Project Status
01/10	Product Innovation and Product Development		Project Assignment
01/17	Product Development Processes and the Organization	Article: New Product Development Imperative Article: Product Policy	Team formation
01/24	Ideation	MVP Book: Chapters 1-2 Case #1: Applied Research Technologies, Inc.: Global Innovation Challenges	Team finalized
01/31	Concept	MVP Book: Chapters 3-6 Article: The Elements of Value	Idea selection
02/07	Design (Prototype – MVP)	MVP Book: Chapters 7-8	Review NPD template
02/14	Integrated Product Planning		Market Segmentation, Persona, Product Attributes
02/21	Agile Development Basics	MVP Book: Chapter 10-11 Case #2: Microsoft Office 2000	
02/28	Product Design/Development for Manufacturing	MVP Book: Chapter 13 Case #3: Pearson's Success maker: Putting Customer First in Transforming Product Development Processes.	
03/06	Business Process Management with focus on Supply Chain Management	Case #4: A Profile of Toyota's Production System Article: Lean as Universal Model of Excellence: It is not just a manufacturing tool	Development Schedule Product Concept
03/13	Spring Break		
03/20	~~Validation~~	~~Simulation #1: BPM Innov8~~	~~Test Plan~~
03/27	Validation & Financial considerations	Simulation #1: BPM Innov8 Simulation #2: Project Management	~~Financial Plan~~ Development Schedule Product Concept
04/03	Launch	Case #4: Modu: Optimizing the Product Line	Financial Plan Test Plan
04/10	Life Cycle Management		Launch Plan Project presentation/final report draft

04/17	Final Project Presentation	Guest industry judges for project presentation	