

Product Development & Design
Marketing 464 A
Section 81

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Northwestern University
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MKTNG 464-A

Product Development and Design

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COURSE DESCRIPTION

New product design drives healthy companies. That's why they're healthy. They allow organizations to differentiate from their competition, they stimulate growth, they are sensitive to changing consumer needs and they assure an enterprise a strategic competitive advantage. But if everyone understands that basic concept and need for successful new products, why is that some companies consistently get it right, while others fall on their face? Why is it that with-in your own organization you can find some great historical successes, but it is even easier to find many more failures?

There is a methodology that is driven by a structured process to allow surety and greater success in the development of new products. This course teaches that process.

Areas of study include a high level overview of design and development including distinguishing factors for successful products, organizational structure for success, organizing the project into the appropriate phases and gates with go/no-go criteria, identifying customer needs, concept generation, selection and testing, managing projects, and developing a structured proposal format. The format will be both from a consulting and corporate point of view and will be presented to assure the manager a structure whether you are working within your own organization or with and/or acting as a consultant.

We will also learn (and/or review) a basic knowledge of manufacturing techniques in order to more clearly delineate issues of capitol costs vs. piece part costs relative to volume production. The manufacturing overview is critical to anyone involved with product development as it allows you to deal with the daily issues and trade offs that are part of the process when dealing with discrete projects.

This mini course is not intended to assure the manager proficiency as a designer, but rather to allow the manager to understand and manage the process of design and development in an efficient and professional manner.

PREPARATION FOR OUR FIRST CLASS

Before our first session I want you to start thinking holistically about *DESIGN*. What is it? What's *good* design? What's *bad* design? Is there a metric? If so, what is it?

My opening question will ask you to talk about those items on your list of five products you consider to be good design as well as five products you consider bad design. Develop your list with 5 examples of each, and describe why they're on your list. Describe the commonality of "good" design as well as the commonality of "bad" design for those items you have noted. I want to see if there is some kind of metric, or constant in your descriptions, recognizing that no two of you will have identical lists. At the end of the first session be prepared to turn them in. There is no correct answer and your papers will not be graded for any component other than turn-in.

Additionally I want you to be prepared for cold calling on any articles related to design that you have come across in the popular press recently.

"Design" covers lots of areas and on a weekly basis we'll begin class by discussing items in the press.

I also want to note that many of the articles under "table of contents" are only available on Blackboard, under "Course Documents". We do this to save printing costs, and ultimately save you from paying those marked up costs.

COURSE OBJECTIVES

Upon completion of this course the student will be able to:

1. Demonstrate an understanding of the process for product design and development to effectively manage such programs.
2. Understand characteristics that will assure you of a greater chance of a successful product
3. Develop a product design and development plan (proposal)
4. Understand methods for concurrent development in order to reduce time to market requirements.
5. Appreciate the need for a total team approach to assure time to market demands will be met by adhering to basic concepts within the development process.
6. Possess a basic understanding of common manufacturing techniques.
7. Possess a basic knowledge of various modeling and prototype techniques to support concurrent research prior to commitment of major capital funding for manufacture.
8. Have a basic knowledge of research techniques to assure a high level of success for product launch.
9. Have a basic understanding of the language spoken in product development.

GRADING

Shown below are your major deliverables and the weighting of each.

Individual class participation including response to questions	10%
Team Presentation on Materials	15%
1 st Team Assignment	10%
2 nd Team Assignment	15%
Individual Assignment	15%
Final Exam (Individual take home / 1 page, 2 sides of notes)	35%
Total	100%

PARTICIPATION

The general class format will include approximately 15% general discussion of current issues, 55% review of weekly text-book assignments in a lecture format, 10% casebook readings Q&A, 20% student team presentations or class exercises, review of current corporate issues.

You will be expected to prepare for and contribute to each class. This is a very important part of the course, as I look forward to your bringing your experiences into the classroom. These are good learning's for all of us.

The book we will use is: Product Design and Development , 4th Edition
Ulrich & Eppinger

In addition to the formal reading all students are required to look at the popular press on a weekly basis and bring to class for discussion articles that reflect "design" and/or "development". They are always there and since I always find them, I'm expecting you to do so as well. The reviews start every class and bring reality to the subject.

Note: The final exam will be solely based on the book, Product Design and Development and lectures.

While I require you to keep up with the readings, do not expect, on a weekly basis that we will absolutely be referencing those particular readings. By the end of the 5 weeks session we will have touched on most of the subjects read. This course covers a lot of material and includes a lot of reading. I think all of the readings are interesting and informative and have to be read to appreciate the nuances of product development.

You can start preparing for your final at the completion of Class 1. The final is "Open Notes" in of format of a "notes" page limited to 1 sheet of 8 1/2 x 11 and 2 sided. You can start thinking about critical slides and concept presented. Your final will be self timed and limited to 2 hours following your development of your "notes" page. Note's page must be turned in with your final. Lack of a notes pages will result in a failing grade. The notes page will not be returned but the final will be if accompanied by a self addressed stamped envelope.

Assignments

Class	DATE	TOPIC	ASSIGNMENT
1	Sept. 21	▪ Instructors goals ▪ Syllabus and schedule review ▪ Review of Assignment (Good Design / Bad Design) ▪ Mental Locks to Creativity ▪ Creativity / Creative Model / Strategies / Brainstorming (idea generation) ▪ In class exercise (brainstorming) ▪ Introduction to Product Development: characteristics; team; challenges; realities ▪ Process; phases; front end ▪ Planning; types; opportunities; mission	▪ Read PD&D Chapters 1-3 ▪ Review: The Geography of..... An Incomplete... The Truth About.. Expand your .. Get Creative What P&G Knows..... CEO Mark Parker upgrades.... Homework due: Good design / bad design Bring in articles on “Design” from popular press (see notes above under “Preparation”)
2	Sept. 28	▪ Identifying needs; techniques ▪ Specifications ▪ Concept Generation ▪ In class exercise (scenario planning)	▪ Read PD&D Chapters 4 (p. 53 – 68) ▪ Chapter 5 (p.71-85; Summary p.91-92) ▪ Review: The Consumer is How Failure ... Baby maybe The Complexity of ... One Ford for the Whole Wide World Built for Innovation Homework due (team): Using the readings through class 2, and the lectures through class 1 create the following: As a team review some program that really went wrong for one of your companies Create a new <u>mission statement</u> for project in question <u>Outline</u> a procedure that would have assured a greater opportunity of success. I'm looking for the process that will get you there...not the absolute solution

3	Oct. 5	▪ Market Time Reduction Techniques ▪ Team Structure ▪ Phase Gate / Process ▪ Team Presentation – Target Groups, Persona's, Thumbnail concepts	▪ Chapter 6 (p.97 – 110;119 - 120) ▪ Chapter 7 ▪ Chapter 8 (p. 145 – 155) ▪ Review: For Motorola Scientists... Insights from a Sustainability... The Dish on Green Disposables Not So Smart The Science of Desire Next Sketchpad Homework due (team): Yakama, a major mfg. of engines and powered sport machines, want to explore the next generation of products. They do believe the new product should stay on “land”, not snow or water and are open to any land based product opportunities. They really do not know what the new direction might be, but first want to better understand the segmentation (tribes) of their potential customers. Think about the characteristics of the vast array of end users they might want to address. This would obviously include seniors, gen Y, etc. Support your positions with visuals (clip type art) of who and what the users are and/or aspire to be and create 1 persona for a member of each of 3 user tribes. Support the descriptions of those 3 target end users with visuals in the form of “life style boards” with “benefits” and “barriers” (I love spending time w/ my family and vacationing at the beach...I’m scared to death w/ my little ones around water) Next, visualize the products for each of the sub-sets you have chosen, with “roughs” or “thumbnails” of the potential solutions. ~ 3 thumbnails / tribe POWER POINT: 10 minutes/group
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4	Oct 12	▪ Mfg. Techniques for the Mgr. Team presentations on assigned manufacturing Processes ▪ Phase Gate Criteria ▪ Converting Consumer Needs to Product Specifications	▪ Team presentations on Mfg. Process ▪ Read PD&D Chapter 10 ▪ Review: Creativity Under the Gun Who is Jonathan Ive? Lessons On Designing Innovation Lessons from Apple iPhone ignites Apple's quarterly Homework Due (team): Each team has a number of manufacturing process's to support. Those will be given out in class. Prepare both a power point as well as a write up (no more than 2 pages/process) with illustrations that allow someone not skilled in the art to understand the process Develop both a tooling as well as a piece part quotation using your process, for a "stadium seat" (see illustration supplied in lecture). Piece part quotes should range from 5,000 units to 50,000. Include this in your report and presentation I (and you will) recognize some processes can not match the layout given of the stadium seat. You may modify the design to assure a quote of the same approximate size using the process assigned. Your team presentation should take no more than 10 minutes :
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5	Oct. 17	▪ Proposal Steps ▪ Customer Needs ▪ Flexibility within Phase Gate ▪ Tips to Stay on Course ▪ Best Practices	▪ Read PD&D Chapter 12 ▪ Review: Mistakes Made On The Road Putting a Halt on Innovation Creativity Pays Champions of Innovation Next...As the World Turns Homework due (individual) Develop a process solution (a plan) for the following problem for Atlas Mfg. All competitive floor cleaning units are almost identical (see slide from lecture) Clean water reservoir Dirty water reservoir Fairly large Difficult to maneuver Small production quantities do not allow for efficient manufacturing techniques in the manner they are currently produced The Markets are highly competitive Market opportunities appear to be international How would you <u>plan the program development</u> to assure success? <i>This is a 1 – 2 page assignment</i>