

PRODUCT INNOVATION LAB FALL 2016 SYLLABUS

Time: Monday, 6:00pm – 9:00pm

Classroom: Centennial Campus, College of Textiles Building, Room #2207. See map on the course moodle site for specific classroom location and nearby parking.

Course Moodle Website: <https://wolfware.ncsu.edu>

FACULTY TEAM

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REQUIRED TEXT

Ulrich, K. T. Eppinger, S. D.: *Product Design and Development, 5th edition*, 978-0-07-340477-6, McGraw-Hill, New York, 2012.

COURSE PHILOSOPHY

New product development is a critical process that crosses multiple functional areas in a firm. In today's globally competitive business environment, new product development is not a strategic option, it is a fundamental prerequisite for a company's survival, organizational renewal, and national economic prosperity. In addition, new product development is not the domain of any one function, but a multidisciplinary process that requires coordination, communication, and integration. This course will operationalize the business-design-engineering link by creating cross-disciplinary teams in which students will learn and apply the skills necessary to develop a functional new product prototype.

COURSE OBJECTIVES

This course will present and utilize an integrated approach to new product design, development, and marketing. The course will provide a team experience of formulating, designing, and evaluating a new product concept. Students completing this course will have operational knowledge of and competence with a set of tools and methodologies for product design and development. Students will be able to coordinate multiple, interdisciplinary tasks in order to achieve a common objective in an action-oriented business setting. Other objectives include:

- Investigate, develop and use current methods in business analysis, design, and engineering pertaining to an integrated approach to product development.
- Provide a team experience through hands-on work with participating disciplines.
- Develop a unique product opportunity that includes a thorough business analysis and strategy, design prototypes, and engineering analysis and recommendations.

COURSE APPROACH

Students in the course will identify a product opportunity and develop a concept for that product opportunity. The product platform(s) for the course will be presented at the first class meeting. The product opportunity will be developed through an integrated team approach. Therefore, each team will typically have members from at least two disciplines (industrial design, engineering, and business management).

CLASS AND TEAM MEETINGS

The entire class will meet as a group on Monday evenings. These Monday evening class sessions are mandatory for everyone enrolled in the course. Your team will be also be scheduled to meet each Monday with one or more faculty members to review your project's status, progress, and key outstanding issues. Everyone on the team is expected to be present and participate in these meetings. Also, regardless of when this team-faculty meeting is held on any given Monday evening, you should expect to be available for the entire class period to work with your teammates.

Each individual project team must designate one other standing meeting time for each week, other than the Monday evening. Team meetings can be virtual or face-to-face, on/off-campus, and they can be coordinated however the team deems appropriate to complete the necessary work. Each student should expect to spend *8-10 hours per person per week* on this class.

Teams should designate a student as the project manager for each phase, which may be an MBA student but is not strictly required to be so. This can be a rotating responsibility over the length of the semester. The project manager will serve as the team coordinator and a key contact for the team. However, it should be noted that the role of project manager does not in any way imply being in charge of a team. Rather, it is designed to be a role with an emphasis on building a spirit of cooperation, coordination, and shared responsibility within the team. That said, everyone on the team is ultimately responsible for doing the necessary work, making sufficient progress on the project, working together in a harmonious manner, dealing constructively with project and team problems when they occur, and in summary making the project a success.

GRADING

The grading objective is to give each team project one grade. However, individual team members may receive different grades if it is determined through faculty observation and team member feedback that there is significant variation in individual performance on a team. Student peer evaluations will contribute to individual grades. Letter grades will be assigned for each phase of the project as follows.

Activity	Percentage
Introductory Workshops	10%
Progress Reports	10%
Project Charter and Work Plan	5%
Milestone 1: Report and Presentation	10%
Milestone 2: Report and Presentation	15%
Final Review: Report and Presentation	40%
Project Showcase and Gallery Walk	10%

INTRODUCTORY WORKSHOPS

This course combines students into teams with a variety of skills, experiences, and educational backgrounds. To help individual students and teams perform well on projects, three distinctly

different workshops will be offered early in the semester. These workshops are designed primarily to get students familiar with elements of design, customer experience, engineering, and prototyping. The workshops will be scheduled outside of the regular Monday evening class period, with two sessions of each workshop offered to accommodate individual scheduling conflicts. A separate document describing the workshops and providing a schedule of when the workshops will be offered will be posted on the course website and discussed early in the semester.

TEAM DYNAMICS

In an integrated product approach, differences in both functional disciplines and personalities will inevitably lead to conflict. However, in order for a team to be successful in this course, these differences must become an advantage. Teams must learn to work different styles and opinions into a common strategy/direction shared by all members of the team. Teams must self-determine distribution of responsibilities for meetings, reports, and presentations. It is very important to handle team problems in an up-front, open, and professional manner. Your ability to do well in this course depends on it! Faculty are available to mediate whenever necessary. Each week, teams must indicate on the progress report whether or not there is a need for faculty intervention in team interactions.

Student peer evaluation of team members will take place following each major project phase. Peer evaluations are an important and integral part of faculty evaluations. Peer evaluations can affect individual team member grades as deemed appropriate by the faculty. An under-performing team member may be fired with the permission of the instructors.

PROJECT SHOWCASE & GALLERY WALK

At the end of the semester, after teams have completed their final presentations, we will organize a showcase and gallery walk for all projects. In this showcase, all teams will have the opportunity to present an overview of their project results to an external audience of invited guests. Each team will display a project poster that summarizes its work, including main project activities, outcomes, and potential next steps. Each team will also display its final prototype for review and evaluation. This is an excellent opportunity to network with other interested parties inside and external to NC State. The showcase is scheduled to be held at HQ Raleigh (<http://www.hqraleigh.com>), an incubator in the downtown Raleigh area. For those teams interested in carrying their projects forward beyond the end of the course, it provides a forum for meeting people who may provide knowledge, mentoring, resources, or useful contacts.

COURSE POLICIES

- *Final Reports and Milestone Deliverables:* It is the student's responsibility to review and follow all guidelines regarding report and presentation requirements and formatting for milestones and final reports. See the "Deliverables Summary / Guidelines" document on the moodle website.
- *Weekly Progress Reports:* Each team is required to submit a written weekly progress report by 8:00pm Sunday each week. The weekly progress report should be 2-3 pages long with attachments or pointers to files as necessary. The progress reports should be formatted as described in the "Progress Report Form" document on the moodle website. All electronic or hard copy submissions to the faculty team, including the Progress Reports, should follow the file naming and document conventions as described in "Document Submission Instructions", posted on moodle.
- *Peer Evaluations:* A confidential team peer evaluation form should be submitted at Milestone 1 and 2, and at the Final Review. See the "Team Evaluation Form" on moodle.
- *Expense Budget:* Each team will be provided with a modest budget, if needed, to help cover expenses related to report generation and prototype building. Expenses will be reimbursed at the end of the semester. Students must submit receipts along with a completed "Expense Reimbursement Form" that will be posted on the moodle website. Each student must submit

his or her own expense report for legitimate expenses incurred. The deadline for submitting receipts is listed on the reimbursement form. All reimbursable expenses must be pre-approved by a member of the faculty team.

- *Prototypes and Poster Presentations:* Each team is required to build a prototype model for their project, and to develop content suitable for presenting an overview of the project to interested parties, subject to confidentiality restrictions. Details concerning these materials will be provided during the semester. All prototypes and summary presentation content are the property of the course and must be submitted to the instructors.
- *Non-Discrimination Policy:* NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at <http://policies.ncsu.edu> and <http://oied.ncsu.edu/main>. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact NCSU's Office for Institutional Equity and Diversity at oied-communications@ncsu.edu.
- *Students with Disabilities:* Students with disabilities should see the faculty to make arrangements for accommodations in accordance with university policy: <http://policies.ncsu.edu/regulation/reg-02-20-01>
- *Intellectual Property:* The NCSU Policy regarding intellectual property is in effect for this class. For more information, see the following websites:
<http://www.ncsu.edu/sparcs/policy/>
<http://policies.ncsu.edu/policy/pol-10-00-01>