

PRODUCT INNOVATION LAB FALL 2023 SYLLABUS

Time: Monday, 6:00pm – 9:00pm

Classroom: 2336 Fitts-Woolard Hall, Centennial Campus

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

FACULTY TEAM

College of Management:

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Prof. Tom Snyder
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Texts can be ordered or purchased from your favorite retailer, or as indicated below.

REQUIRED TEXT

Brown, Tim: *Change by Design*, ISBN 978-0-06-176608-4, HarperCollins, New York, 2009.

Additional Articles as Posted.

OPTIONAL REFERENCE TEXTS

Luchs, M. G., Swan, K. S., and Griffin, A.: *Design Thinking: New Product Development Essentials from the PDMA*, 978-1-118-97180-2, John Wiley & Sons, New Jersey, 2016. Download from NCSU library.

Ulrich, K. T. and Eppinger, S. D.: *Product Design and Development*, 7th edition, 978-1-260-04365-5, McGraw-Hill, New York, 2020. The 6th edition of 2016 is also fine.

Thiel, Peter: *Zero to One*, ISBN 978-0-8041-3929-8, Crown Business, New York, 2014.

Osterwalder, Alex, et al.: *Value Proposition Design*, strategyzer.com/vpd.

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 economic prosperity. Innovative design and new product development is not the domain of any one function, but a multidisciplinary process that requires coordination, communication, and integration. This course accomplishes design-business-engineering collaboration by creating cross-disciplinary teams whereby students learn and apply the necessary skills to design, develop and prototype an innovative product solution that meets market needs.

COURSE OBJECTIVES

This course will present and utilize an integrated approach to new product design, development, and launch. Each team will experience formulating, designing, and evaluating new product solutions. Students completing this course will gain competence with a set of tools and methods for design and product development. Students will be able to coordinate multiple, interdisciplinary tasks in order to achieve a common objective in a realistic project 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 multidisciplinary project work.
- For a given market opportunity, develop an innovative product solution defined by thorough business analysis and a go-to-market strategy, design prototypes, and engineering analysis.

COURSE APPROACH

Students in the course will identify an innovation opportunity and design/develop a new product solution that meets relevant user/market needs. Project definitions for the course will be presented at the first class meeting. The innovation opportunity will be developed through an integrated team approach. Each team will typically have members from multiple disciplines (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 project 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 at least one other regular meeting time for each week, other than Monday evening class. 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 *10+ hours per person per week* on this class.

Teams should designate a student as the project manager for each phase of the project. 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. 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. 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 making the project a success.

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 student grades as deemed appropriate by the faculty. An under-performing team member may be “fired” with the permission of the instructors.

The instructor-of-record is ultimately responsible for the grades of students enrolled in each section.

GRADING

The grading objective is to give each team project one grade. However, individual students may receive different grades if it is determined through faculty observation and peer feedback that there is significant variation in individual performance. Student peer evaluations will contribute to individual grades. Letter grades will be assigned for each phase of the project as follows. Each project team may have weekly tasks or goals tailored specifically to their project activities and needs. The final course grade is ultimately determined by the final project review and deliverables. Milestone grades give an indication of project progress.

Activity	Percentage
Progress Reports and Weekly Project Tasks	10%
Project Charter and Work Plan	5%
Milestone 1: Report and Presentation	10%
Milestone 2: Report and Presentation	15%
Final Review: Report and Presentation	55%
Project Poster	5%

PROJECT POSTER SHOWCASE & GALLERY WALK

At the end of the semester, after final presentations and reports are completed, we will organize a poster 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. 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. This is an excellent opportunity to network with other interested parties inside and external to NC State. The showcase is in cooperation with RIoT (www.riot.org). For those teams interested in carrying their projects forward beyond the end of the course, the showcase provides a forum for meeting people who may provide knowledge, mentoring, resources, or useful contacts.

USE OF GENERATIVE AI OR OTHER TOOLS FOR PROJECT WORK

Generative AI tools like ChatGPT can help generate ideas and images, brainstorm, or aid in your project research. However, you should note that the material generated by these programs may be inaccurate, incomplete, or otherwise problematic since it is derived from previously created texts and other sources (often uncited) that the models were trained on. Beware that use may also stifle your own independent thinking and creativity. Don't just cut and paste AI-generated content without understanding or giving proper citation to the source of your material. Note that generative AI tools still have a tendency to fake citations and produce inaccurate outputs. Don't trust anything the system says without reviewing and critiquing the content, just as you would from any other source. You will be responsible for any inaccurate or biased content you submit, regardless of source.

If you use an AI tool or other tool to generate any portion of any assignment or work, you must credit the tool and give clear citation as you would for any work you quote or rely upon as source material. Be thoughtful and responsible for the work you submit, and acknowledge material and resources that are not your own, including AI-generated material.

COURSE REQUIREMENTS and POLICIES

- *Class Attendance and Team Policy:* Class attendance and full participation in course activities and project teams are expected. For complete attendance and excused absence policies, see <http://policies.ncsu.edu/regulation/reg-02-20-03>.
- *Intellectual Property:* The NCSU Policy regarding intellectual property is in effect for this class. For more information, see the following website: <http://policies.ncsu.edu/policy/pol-10-00-01>
- *IT Resources:* Contact the NC State OIT Help Desk at 919-515-HELP or help@ncsu.edu, or visit the [OIT Help website](#).
- *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 "Course Deliverables" document on the Moodle website.
- *Weekly Progress Reports and Project Tasks:* Each team is required to submit a weekly progress report *by 8:00pm Sunday* each week. The weekly progress report is submitted electronically. Additional weekly project tasks may also be included, depending on specific goals or activities of each project in consultation with faculty and project mentors. All electronic or hard copy submissions to the faculty team should follow the file naming and document conventions as described in "Document Submission Notes" posted on Moodle.
- *Peer Evaluations:* A confidential peer evaluation form should be submitted at Milestone 1 and 2, and at the Final Review. Details will be provided in class.
- *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.
- *Project Expense Budget:* Each team will have a modest budget, if needed, to help cover expenses related to prototype building and other project expenses. 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. All reimbursable expenses must be pre-approved by a faculty member.
- *Late Assignments:* All assignments are due at the date/time posted for each assignment. It is expected that all written assignments will be typed and of professional quality. Assignments may be added or changed as the term progresses. **No late assignments will be accepted.**
- *Academic Integrity and Honesty:* Students are expected to understand and follow the policies on academic conduct (<http://policies.ncsu.edu/policy/pol-11-35-01>). Academic dishonesty will be severely penalized. Submission of any test or assignment indicates your agreement with the statement: "I have neither given nor received unauthorized aid on this test or assignment."
- *Incomplete Grades:* The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at <http://policies.ncsu.edu/regulation/reg-02-50-03>. Additional information relative to incomplete grades for graduate students can be found in the Graduate Administrative Handbook Section 3.18.F http://www.fis.ncsu.edu/grad_publicns/handbook/.
- *Electronically-Hosted Components:* Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

- *Students with Disabilities:* Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Services Office at Holmes Hall, Suite 304, Campus Box 7509, (<http://www.ncsu.edu/dso>), 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation at <http://policies.ncsu.edu/regulation/reg-02-20-01>.
- *Non-Discrimination Policy:* NC State University provides equality of opportunity in education and employment for all students and employees. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> or http://www.ncsu.edu/equal_op/. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.
- *NC State University Policies, Regulations, and Rules (PRR):* Students are responsible for reviewing the PRRs which pertain to their course rights and responsibilities. These include: <http://policies.ncsu.edu/policy/pol-04-25-05> (Equal Opportunity and Non-Discrimination Policy Statement), <http://oied.ncsu.edu/oied/policies.php> (Office for Institutional Equity and Diversity), <http://policies.ncsu.edu/policy/pol-11-35-01> (Code of Student Conduct), and <http://policies.ncsu.edu/regulation/reg-02-50-03> (Grades and Grade Point Average)

ADDITIONAL POLICIES FOR FALL 2023

COVID-19 and Other Health Concerns

Students should stay current with NC State's practices and expectations regarding COVID-19 through the [Protect the Pack](#) website. If you need to make a request for an academic consideration related to COVID-19 or other illness, please contact an instructor as soon as possible to discuss options. [[Withdrawal Process](#)]

Health and Well-Being Resources

Everyone is encouraged to take care of themselves and their peers. If you need additional support, there are many resources on campus to help you:

- Counseling Center ([NCSU Counseling Center](#))
- Student Health Services ([Health Services | Student](#))
- If the personal behavior of a classmate concerns or worries you, either for the classmate's well-being or yours, we encourage you to report this behavior to the NC State CARES team, <https://prevention.dasa.ncsu.edu/nc-state-cares/about/>. ([Share a Concern](#)).
- If you or someone you know are experiencing food, housing or financial insecurity, please see the Pack Essentials Program ([Pack Essentials](#)).

Community Standards related to COVID-19

We are all responsible for protecting ourselves and our community. Please see the [community standards](#) and Rule 04.21.01 regarding Personal Safety Requirements Related to COVID-19 [RUL 04.21.01 – Personal Safety Requirements Related to COVID-19 – Policies, Regulations & Rules](#)

Need Help?

If you find yourself in a place where you need help, academically or otherwise, please review these [Step-by-Step Help Topics](#).

Other Important Resources

- Keep Learning: [Keep Learning](#)
- Protect the Pack FAQs: [Frequently Asked Questions | Protect the Pack](#)
- NC State Protect the Pack Resources for Students: [Resources for Students | Protect the Pack](#)
- Academic Success Center (tutoring, drop in advising, career and wellness advising): [Academic Success Center](#).
- NC State Libraries [Technology Lending Program](#)