



NYU

TANDON SCHOOL
OF ENGINEERING

Department of Technology Management and Innovation
MG-GY 9753 Product Design Studio
Fall 2019

Professor: Hannah Berkin-Harper

Contact Details: berkin.harper@nyu.edu

Office/Hours: By Appointment
5 MetroTech Center, LC401

Class Schedule:

Course Pre-requisites: Graduate Standing

Course Description:

An Industrial Design overview for non-designers: The course is formulated as several short exercises and one semester-long project in which teams choose from several product design categories and develop their ideas from concept to prototype.

We will explore the industrial design process, including researching and establishing user and client needs, developing product specifications, conceptual and visual design, design iteration and prototyping methods, detail design, design for manufacturing, and design for environmental sustainability. We will also draw, make models, develop SolidWorks skills and learn 3D printing techniques.

Course Objective:

This course will explore the following topics:

- The design process and how it varies between different kinds of businesses from small start-ups to consultancies to large established companies.
- Design thinking and its role in the overall design strategy
- Innovation in product design
- Identifying and evaluating product opportunities
- Needs-finding, human factors, and establishing specifications
- Concept generation and development
- Product architecture, industrial design, and prototyping
- CAD, sketching, and light model making

Readings:

Required Text(s): “Product Design and Development” by Karl T. Ulrich and Steven D. Eppinger (required). Articles as assigned.

Optional Text(s):

Course Assignments and Grading:

Attendance, preparation, and participation: 25%

Assignments 50%

Final Project 25%

Please see specific grading requirements on the assignment and final project sheets.

Course Topic Outline

Class Date and Topic	Readings, Assignments, & Exams
Week 1- Introduction and Overview	<ul style="list-style-type: none">• Paper Folding assignment, semester assignment handout• Role of the Designer [Name of Assignment Due/Exam]
Week 2	<ul style="list-style-type: none">• Chapters 1,2• https://www.usertesting.com/blog/2015/07/09/how-ideo-uses-customer-insights-to-design-innovative-products-users-love/• https://dschool-old.stanford.edu/sandbox/groups/designresources/wiki/36873/attachments/74b3d/ModeGuideBOOTCAMP2010L.pdf?sessionID=573efa71aea50503341224491c862e32f5edc0a9• https://www.arts.gov/sites/default/files/Valuing-Industrial-Design.pdf <p>Topics of interest based on the assignment. Please come up with 3 project ideas each. Ideas can be written as 1-2 sentences. Please write or type each topic on a separate half sheet of paper (standard letter) in a size large enough to pin to the wall and read from afar.</p>
Week 3	<ul style="list-style-type: none">• Chapters 3,5,6• https://www.wired.com/insights/2013/12/human-centered-design-matters/• http://www.designkit.org/methods/45 <p>Project Proposal Due</p>

Week 4	<ul style="list-style-type: none"> • Chapter 07 • http://www.designkit.org/methods/60 <p>SKETCHING WORKSHOP- sketching exercise handout</p>
Week 5	<ul style="list-style-type: none"> • Chapter 10, 11 • https://www.forbes.com/2010/04/20/brainstorming-ideation-ideas-leadership-managing-innovation.html <p>[Name of Assignment Due/Exam]</p>
Week 6	<ul style="list-style-type: none"> • https://www.vitsoe.com/us/about/good-design • https://www.guggenheim.org/arts-curriculum/topic/form-follows-function • http://www.nytimes.com/2009/06/01/arts/01iht-DESIGN1.html <p>Bring in 5 images of products that you think have great design and 5 you think are not designed well. List on each the reasons why you think they are good/bad.</p>
Week 7	First Round Concepts Due. In-class critique.
Week 8	<ul style="list-style-type: none"> • http://www.designkit.org/methods/57 • http://www.designkit.org/methods/40 • https://medium.com/@janemvu/design-thinking-how-to-get-the-right-feedback-to-create-a-successful-product-505ad0e61786 <p>CAD exercises due</p>
Week 9	<ul style="list-style-type: none"> • Chapters 13, 14: Design for Manufacturing and Prototyping. <p>USER FEEDBACK DUE</p>
Week 10	<ul style="list-style-type: none"> • Chapter 12, Design for Environment • https://hbr.org/1965/11/exploit-the-product-life-cycle • http://pubs.acs.org/doi/pdf/10.1021/es032373g • https://www.theguardian.com/sustainable-business/designing-sustainability-challenges-green-materials • https://www.greenbiz.com/blog/2013/09/30/10-ways-detect-true-green-design-tech <p>Sustainability overview of your product, work in progress.</p>
Week 11	Second Prototype Due, 2D and 3D, sustainability analysis.

Week 12	<ul style="list-style-type: none"> Chapter 16: Intellectual Property, Patents, Inventions. https://www.housewares.org/pdf/IPPrimer.pdf
Week 13	<ul style="list-style-type: none"> Chapter 17, 18: Product Development Management and Economics Manufacturing Process Overview
Week 14	CAD and 3D printing
Week 15	Final tinkering, Final questions
Week 16	Final Presentation Due

Academic Integrity:

All students are responsible for understanding and complying with the NYU Statement on [Academic Integrity](#).

Academic Integrity for Students at NYU

This policy sets forth core principles and standards with respect to academic integrity for students at New York University. Each school at New York University may establish its own detailed supplemental guidelines for academic integrity, consistent with its own culture, and consistent with the University-wide general guidelines described in this document.

At NYU, a commitment to excellence, fairness, honesty, and respect within and outside the classroom is essential to maintaining the integrity of our community. By accepting membership in this community, students take responsibility for demonstrating these values in their own conduct and for recognizing and supporting these values in others. In turn, these values will create a campus climate that encourages the free exchange of ideas, promotes scholarly excellence through active and creative thought, and allows community members to achieve and be recognized for achieving their highest potential.

In pursuing these goals, NYU expects and requires its students to adhere to the highest standards of scholarship, research and academic conduct. Essential to the process of teaching and learning is the periodic assessment of students' academic progress through measures such as papers, examinations, presentations, and other projects. Academic dishonesty compromises the validity of these assessments as well as the relationship of trust within the community. Students who engage in such behavior will be subject to review and the possible imposition of penalties in accordance with the standards, practices, and procedures of NYU and its colleges and schools. Violations may result in failure on a particular assignment, failure in a course, suspension or expulsion from the University, or other penalties.

Faculty are expected to guide students in understanding other people's ideas, in developing and clarifying their own thinking, and in using and conscientiously acknowledging resources - an increasingly complex endeavor given the current environment of widely available and continually emerging electronic resources. In addition, students come to NYU from diverse educational contexts and may have understandings regarding academic expectations that differ from those at NYU. NYU values and respects all academic traditions; however, while at NYU, students are expected to adhere

to the norms and standards of academic integrity espoused by the NYU community and will be assessed in accordance with these standards. Students should ask their professors for guidance regarding these standards as well as style guide preferences for citation of sources for assignments in their courses.

Following are examples of behaviors that compromise the academic and intellectual community of NYU. The list is not exhaustive. Students should consult the websites and guidelines of their individual schools for an extended list of examples and for further clarification.

1. Plagiarism: presenting others' work without adequate acknowledgement of its source, as though it were one's own. Plagiarism is a form of fraud. We all stand on the shoulders of others, and we must give credit to the creators of the works that we incorporate into products that we call our own. Some examples of plagiarism:

- a sequence of words incorporated without quotation marks
- an unacknowledged passage paraphrased from another's work
- the use of ideas, sound recordings, computer data or images created by others as though it were one's own

2. Cheating: deceiving a faculty member or other individual who assess student performance into believing that one's mastery of a subject or discipline is greater than it is by a range of dishonest methods, including but not limited to:

- bringing or accessing unauthorized materials during an examination (e.g., notes, books, or other information accessed via cell phones, computers, other technology or any other means)
- providing assistance to acts of academic misconduct/dishonesty (e.g., sharing copies of exams via cell phones, computers, other technology or any other means, allowing others to copy answers on an exam)
- submitting the same or substantially similar work in multiple courses, either in the same semester or in a different semester, without the express approval of all instructors
- submitting work (papers, homework assignments, computer programs, experimental results, artwork, etc.) that was created by another, substantially or in whole, as one's own
- submitting answers on an exam that were obtained from the work of another person or providing answers or assistance to others during an exam when not explicitly permitted by the instructor
- submitting evaluations of group members' work for an assigned group project which misrepresent the work that was performed by another group member
- altering or forging academic documents, including but not limited to admissions materials, academic records, grade reports, add/drop forms, course registration forms, etc.

3. Any behavior that violates the academic policies set forth by the student's NYU School, department, or division.

Moses Center Statement of Disability

If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities at [212-998-4980](tel:212-998-4980) or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 2nd floor.