

MIT Department of Architecture

**4.141/4.142: How to Design (almost) Anything, Spring 2017, W 2-5pm, 3-9-6 U/G**

Course Staff & Presenters: Justin Lavallee, Skylar Tibbits, Nathan Melenbrink, Jonathan Grinham

Teaching Assistant: Athina Papadopoulou

**4.141/4.142: How to Design (almost) Anything**

**Class Overview:** This class introduces fundamental design principles and practices, such as seeing, sketching, storytelling, prototyping and performing, as a way to demystify design as a discipline. Taught by a diverse group of faculty and guest presenters, students will take a deep dive into design through lectures, labs, and weekly project assignments. A technique-based class intended for students without a design background, this class aims to enable more effective collaboration with designers and the ability to apply the foundations of design to any discipline.

**Class structure:** The class is organized in weekly sessions each structured around a core design topic. Each week the course staff will offer a specialized lecture on the weekly topic, which will be followed by a discussion and a review of students' projects from the previous week. Talks by external presenters and guests from various industry sectors will complement the lectures in order to provide different perspectives and insights on design processes and methods. The exposure to industry combined with theoretical and practical experience offer a more holistic approach to design.

Each week will be complemented by a lab session offering technical knowledge on design tools and methods as well as hands-on training in the shop to familiarize students with all the equipment needed to develop design projects. The architecture shop is equipped with some of the most advanced tools needed for design, from 3d printing to milling to robotic fabrication tools and more, and will be available to all registered students.

Students will be working on a semester-long project that will gradually develop through the weekly assignments, exemplifying the 12 most critical design principles. Student projects will both address the weekly topics as well as a broader context/theme for design: Light. Light is addressed here as a tool for perception, as a design product and as a medium that we interact with in many everyday contexts. This is not limited to any type of product (desk light, chandelier, floor lamp etc) rather we are more interested in investigating the way that people use light and inventing new creative products & systems of light.

**Why learn How to Design (almost) Anything:** Design traditionally operates within specific disciplinary boundaries: we are either part of the architecture discipline, or graphic design, or product design, or web design or even design within mechanical engineering or systems design. However, we rarely seek overlaps between these different design disciplines. This course aims to give students an explicit and fundamental introduction to design in order to more effectively utilize and collaborate through the lens of design. Taking a cross-disciplinary design approach we aim to incorporate new design tools, methods and technologies that encompass all of the design streams to provide a solid design foundation for future designers that wish to incorporate design thinking and doing in their practice.

**Class History:** How to Design (almost) Anything is product of the widely successful How to Make (almost) Anything class, taught by Neil Gershenfeld. A topic of discussion and debate for many years was the possibility of embedding more design instruction into the course. In the Fall of 2015, we initiated weekly design critiques and delivered a recitation with the title "How to Design (almost) Anything" as an experimental approach to addressing this. We realized through trial and error that trying to shoehorn Design into HTMaA was unlikely to be an ideal format given that HTMaA is a crash-course into Making and has little room for a thorough or substantial design process. At a final Design recitation in the Fall of 2015, Neil joined us for a lively discussion as to the possibilities of a course called "How to Design (almost) Anything," after which we pursued the development of this course to focused exclusively on a crash-course for Design. The question is: Now that you know how to make, how do you design what you can make?

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**4.141/4.142 Tentative Schedule:**

Week 1 (Feb. 6)

2/8 Lecture: Introduction

Week 2 (Feb. 13)

2/15 Lecture: Culture & Context

Week 3 (Feb. 20)

2/22 Lecture: Seeing

Week 4 (Feb. 27)

3/1 Lecture: Concepts & idea Generation

Week 5 (March 6)

3/8 Lecture: Design Process & Tools

Week 6 (March 13)

3/15 Lecture: Iteration vs Evolution

Week 7 (March 20)

3/22 Lecture: Constraints

Week 8 (March 27 Spring Break)

Week 9 (April 3)

4/05 Lecture: Failure

Week 10 (April 10)

4/12 Lecture: Collaboration

Week 11 (April 17)

4/19 Lecture: Stories/Narrative

Week 12 (April 24)

4/26 Lecture: Performance

Week 13 (May 1)

5/3 Lecture: Scalability

Week 14 (May 8)

5/10 Lecture: Future Trends

Week 15 (May 15) (No New Assignments – Project Development)

5/17 Final Review

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**Learning Objectives:**

The course consists of various assignments exploring different design topics through concept generation, physical and digital drawing, and physical fabrication. Students should be able to engage with an increasing level of design principles through iterative studies and move fluidly between different modes and scales of operation. Conventions of design representation and communication through drawing and modeling will be explored. Students will need to demonstrate basic application of design skills, understanding of conventions, and an ability to sustain an increasing level of rigor in their project over the semester.

**Completion Requirements:**

Completion of each of the exercises, rigor in process and clarity in representation, as well as the overall progress of the semester (including attendance) will be fundamental to completing the course.

**Evaluation Criteria and Grading:** The following criteria will be used for the evaluation of student's work, both in terms of helping their progress and in final grading. (01) Thesis: How clearly is the student articulating the conceptual intentions? (02) Translation of Thesis: How well is the student using their thesis to develop a design response to given problems? (03) Representation Appropriateness: How well matched is their choice of representational means to their intentions? (04) Representation Quality: How have they developed their skills in drawing, modeling, digital/physical representation? To what degree does their representations convey what they ought to? (05) Oral Presentation Skills: How clearly are they presenting their ideas orally, whether at their desk, in class discussions, or to a more formal jury? (06) Participation in Discussions: How actively and how constructively are they involved in class discussions, both formally and informally? (07) Response to Criticism: How do they effectively take advantage of criticism from instructors, classmates and outside jurors? (08) Auto-Critical Skills: To what extent are they able to critique their own work regularly and effectively? (09) Attendance – see below.

**A: Excellent** - Project surpasses expectations in terms of inventiveness, appropriateness, verbal and visual ability, conceptual rigor, craft, and personal development. Student pursues concepts and techniques above and beyond what is discussed in class.

**B: Above Average** - Project is thorough, well researched, diligently pursued, and successfully completed. Student pursues ideas and suggestions presented in class and puts in effort to resolve required problems. Project is complete on all levels and demonstrates potential for excellence.

**C: Average** - Project meets the minimum requirements. Suggestions made in class are not pursued with dedication or rigor. Project is incomplete in one or more areas.

**D: Poor** - Project is incomplete. Basic skills including graphic skills, model-making skills, verbal clarity or logic of presentation are not level-appropriate. Student does not demonstrate the design skill and knowledge base.

**F: Failure** - Project is unresolved. Minimum objectives are not met. Performance is not acceptable. This grade will be assigned when you have excessive unexcused absences.

Work in the class will build sequentially. Therefore, your commitment to incremental development on a daily/weekly basis is of paramount importance. It is important that you take advantage of the studio-like environment. Magnification of your development as a designer is made possible by the collective nature of the course. Group reviews are collective for a reason. Each of you has something to gain from your peers. Since studio is a place for all, it necessitates the careful attention to the needs of everyone in it. Please see your instructors if there are any problems that you are unable to resolve on your own. All spraying of fixative, spray paint or any other substance should be done in the shop. Security is a necessary component for a studio that is accessible to you and your colleagues 24 hours a day, 7 days a week.

**Attendance:** Attendance for the full duration of each class is mandatory. This class is an exceptional learning environment that requires your physical presence as well as your intellectual presence. You are allowed three excused absences for the semester. An excused absence is defined as one that was discussed with and approved by the professor at least 24 hours prior to the date of absence, or a family or medical emergency that is confirmed by your physician or a dean in Student Support Services. Absences beyond the three allotted will result in a decrease in your final grade. If you miss six or more studio classes, you will be asked to drop the subject or receive a failing grade.