IDEA & Innovation

Course Overview:
This semester long class we will be tackling real-world design challenges for our community through a series of exercises and guided explorations of the world around us and the many ways to interact with it. These projects will involve both conceptual and physical prototyping both in and outside of the Innovation Lab space.

Units and Activities: What will we be learning about and doing in this course?

We will be address the studio prompt here:

Our world has changed and continues to change. It is not a new idea, our world is always changing, societies, cultures, tectonic plates, there is literally nothing that stays stationary and unmoved through time. But the last 6 months of our lives have seen massive upheaval, the societal equivalent of the continents pulling apart in the space of a school semester, leaving little of our world ready to adapt. The physical, societal, and familial infrastructures which allow for our lives to run smoothly have been challenged. We now hear terms like high touch surfaces, mask breaks, hybrid schedules on a daily basis in our own lives, but what of these infrastructures have adapted successfully to meet these challenges and new norms?

In this studio we will work to actively adapt the infrastructures of our lives to seek a new normal or at least stability during this seismic shift. We will talk with relevant stakeholders to find what gaps and needs are present in our community as it seeks to provide a health informed, socially responsible, and emotionally productive future with limited resources. We will then design a myriad of responses to these needs and gaps which will be tested and iterated upon until the most suitable responses can be deployed in our community.

The possibilities are wide ranging from how we interact with a doorknob to how we could wash hands outside, to how we create clean air within an existing building. The projects could be a unified community response or it could be a personal device which only the user will ever interact with.

Briefly outlined and subject to change:

Feedback and Critique - Talking with classmates and colleagues about ideas and accepting, requesting, and responding to others’ viewpoints is absolutely critical to our learning goals.

Design Research - Define and research elements of the design process, and how these processes might be different or similar to the other methods around.

Craft and Fabrication (1) - Hand craft and fabrication basic to all later fabrication techniques, also structured to introduce the space and its resources.

Representation and Presentation - Turn an idea into a graphic, clearly communicated image/object, and share these ideas with others for feedback or just presentation.

CAD, Fabrication, and Electronics (as needed) - Taking ideas from the concept to the testable product in one form or another.
Standards: What knowledge and skills will I gain by the end of this course?

Anchor Standards:

**Design:** Students will receive design briefs which state frame an area of investigation in which the students will identify key areas of interest, research, produce prototypes (both physical and conceptual), and present their work. These briefs and the projects are decidedly open-ended and the students must be willing to experiment and explore various ideas in a somewhat independent manner.

Content Standards: This course builds student knowledge using a variate of the NGSX standards. The content standards for Fundamentals of Innovation are:

**Identify:** Define a problem and identify the factors which influence their design process and often act as design constraints. These can involve end-users, physical limitations, social constraints, laws, etc..

**Research:** Individually research issues, precedents, and background information for a design problem to create a deeper understanding of the problem and existing work.

**Iteration:** Develop multiple possible responses to design constraints, including quick tests, simple physical prototypes, sketches, diagrams, computer models, and developed prototypes which build design foundations for the project.

**Receiving Feedback:** Solicit feedback and critique of prototypes from peers, instructors, or end-users in order to get more diverse viewpoints and more complete responses to design constraints.

**Giving Feedback:** Provide feedback and critique of prototypes from peers, instructors, or end-users in order to share diverse viewpoints and more complete responses to design constraints.

**Refine Design:** Develop a design which can be shown to satisfy the design constraints through multiple iterations, tests, and reviews. This design should be a synthesis of all the previous lessons learned from the iterations.

**Documentation:** Document the design process including iterative prototypes, sketches, diagrams, and reflections. This documentation is meant to both archive the process for later review and to aid in reflection and self-analysis during the design process.

**Presentation:** Present prototypes throughout the design process describing the concept, purpose, constraints, and background information allowing an audience to understand and provide feedback. Presentations may be to verbal, written, recorded, etc...
Assessment of Learning:
For information about assessment types, scoring, and overall grade calculation: click here.

Assessment Scoring:
Teachers will provide framing for summative assessment scores using proficiency level scoring criteria for grading similar to the example below:

### Anchor Standard: Design

**Course Standards:** Students will receive design briefs which state frame an area of investigation in which the students will identify key areas of interest, research, produce prototypes (both physical and conceptual), and present their work. These briefs and the projects are decidedly open-ended and the students must be willing to experiment and explore various ideas in a somewhat independent manner.

<table>
<thead>
<tr>
<th></th>
<th>1.0, 1.3, 1.7 NC</th>
<th>2.0, 2.3, 2.7 C, C+, B-</th>
<th>3.0, 3.3 B, B+</th>
<th>3.7, 4.0 A-, A</th>
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<tbody>
<tr>
<td><strong>Beginning</strong></td>
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<tr>
<td><strong>Identify</strong></td>
<td>Student accepts the design prompt without attempting to evaluate, analyze, or understand the issues, challenges, or gaps present.</td>
<td>Student is able to identify the important aspects of the design prompt and develop a project out of it.</td>
<td>Student is able to demonstrate comprehension of the prompt and project concept through rephrasing and explanations.</td>
<td>Student is able to critically evaluate the design prompt and delve into a greater understanding of what they are attempting to respond to. Student is able to rephrase the prompt into their own words. Student uses the prompt and the ensuing research to construct a set of design constraints for the following project phase.</td>
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<tr>
<td><strong>Research</strong></td>
<td>Student does not research materials related to the design being undertaken or does not provide any evidence of this investigation.</td>
<td>Student is able to find a couple precedents or research results that are applicable to their project, but they struggle to appropriately analyze and apply this research to their project work.</td>
<td>Student researches and provides a well written and useful description of each source found as well as a citation to the original work in language which demonstrates a high level of comprehension.</td>
<td>Student provides evidence of thoroughly analyzing and evaluating found resources which can enrich the studio as a whole.</td>
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<td><strong>Iteration</strong></td>
<td>Student does not produce multiple prototypes during each phase of the design process.</td>
<td>Multiple prototypes are produced for each phase of the design process.</td>
<td>Multiple iterations are made for each phase of the design process and are varied not only in technical details, but are conceptually different as well.</td>
<td>Multiple iterations with varying concepts are developed for each phase and each one is created through a synthesis of previously learned lessons in early iterations. This process will involve students evaluating their own design decisions from previous stages.</td>
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<td><strong>Receiving Feedback/Critique</strong></td>
<td>Student is not receptive to feedback from peers, teachers or guests.</td>
<td>Feedback is received respectfully by the student and is recorded by them, or a designated other, for later review.</td>
<td>Feedback is broken down and rephrased into students work for later evaluation and application.</td>
<td>Feedback is fully paraphrased and summarized and applied directly to the design work through incorporation or responses which show clear evidence of thoughtful evaluation of the feedback.</td>
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<td><strong>Providing Feedback/Critique</strong></td>
<td>Student does not provide feedback.</td>
<td>Student provides feedback to peers in a respectful way relating to the work being presented.</td>
<td>Feedback being provided is not just about a technical or surface level aspect, but instead go to a deeper conceptual understanding.</td>
<td>Feedback is productive and conceptual, but is delivered in a way which allows peers to maintain agency and excitement about the work being their own still.</td>
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<td>Refine Design</td>
<td>Student does not produce a refined design out of their iterative process.</td>
<td>A refined design which is able to show some element of the overall final concept is produced.</td>
<td>A refined design is produced which is able to successfully synthesize the previous iterations and clearly demonstrate some level of care.</td>
<td>A refined design is produced which can be used/applied/installed as intended given the initial design criterias and prompt.</td>
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<td>Documentation</td>
<td>Student does not document work for the given time period.</td>
<td>Work being done by the student is documented with both images and descriptions.</td>
<td>Documentation of the work being done is thorough and includes a description of the project work and the process as a reflective and analytical step.</td>
<td>Documentation reflects that the student is evaluating their own work and process with discussions on the work, process, next steps, and outside resources which are influencing them.</td>
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<td>Presentation</td>
<td>Student does not produce a presentation or does not produce a presentation that falls within the defined criteria.</td>
<td>Presentation shows the student's design process and the steps taken to get to their current state.</td>
<td>Presentation is able to give the audience a greater understanding of the context for the design and the design is responding to it. Presentation is done in a professional and prepared manner.</td>
<td>Presentation is well formatted, presented and scoped for the given situation and is able to provide a well crafted message on the design and context to inform others. Presentation is more about the conceptual work than the technical steps to get there.</td>
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**Communication:**

**How Do I Access Work from Home, and What Should I Expect?**
- All work will be posted in Google Classroom.
- The work will be explained during our in-person meetings and/or by video posted to Google Classroom.
- The work will also be explained in our Class Planner posted to Google Classroom.
- If you have any questions, email your teacher.

**How Do I Know What My Grades Are?**
- On Summative Assessments, teachers will provide both a 4-point grade and a letter grade.
- You can monitor your progress in the following ways:
  - By reading feedback and scoring returned to students on summative assessments.
  - By monitoring the scores and Overall Course Mastery Grade in the Parent/Student portal on JumpRope. Reminders to check grades will be sent from the school.
  - Communicating with your teacher if you are unclear.

**Where Can I Find This Syllabus during the School Year?**
- This syllabus will be available on the school website in each subject’s department tab once the school year is up and running. It will also be available in our Google Classroom.

**How Do I SeeWhat’s Due?**
- Assignment and summative assessment due dates with handouts are posted in Google Classroom, with connection to Google Calendar, for student access.

**How Do I See What’s Past Due?**
If a student is missing a grade on an assessment, it will be listed in the red “Missing Assessment” section of the JumpRope Parent/Student Portal along with any attachments. Please contact your teacher if you have any questions.

Materials:
Students are expected to have a writing utensil and notebook everyday. We can provide notebooks to students who would like one. All other materials will be provided.

Schoolwide Procedures:
Please see the Student Handbook for Procedures and Policies related to: Due dates and deadlines, extra credit, retaking assessments, and turnaround time for grade entry.

Personal Mobile Devices: This class will follow the procedures outlined in the student handbook.

Classroom Expectations:

Students will be expected to:
- Be on time and ready for class daily.
- Be safe
- Be attentive and engaged in the class work
- Be creative and bold with wild ideas
- Be respectful of others, the space, and themselves
- Be open to a wide range of perspective
- Collaborate with others