### SYLLABUS

<table>
<thead>
<tr>
<th>Course Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course Year:</strong> Fall 2019 – Design Minor</td>
<td></td>
</tr>
<tr>
<td><strong>Course Type:</strong> Lecture</td>
<td></td>
</tr>
<tr>
<td><strong>Credit Hours:</strong> 3-3-6 U</td>
<td></td>
</tr>
<tr>
<td><strong>Schedule:</strong> Friday 9:00-12:00 AM</td>
<td></td>
</tr>
<tr>
<td><strong>Location:</strong> 5-233</td>
<td></td>
</tr>
<tr>
<td><strong>Optional Weekly Lab:</strong> Tuesday 7:00-9:00 PM in Room 9-450</td>
<td></td>
</tr>
<tr>
<td><strong>Prerequisites/Co-requisites (if any):</strong> None</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instructor Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instructor Name:</strong> Lee Moreau</td>
<td></td>
</tr>
<tr>
<td><strong>Instructor Email Address:</strong> <a href="mailto:LMoreau@MIT.edu">LMoreau@MIT.edu</a></td>
<td></td>
</tr>
<tr>
<td><strong>Twitter:</strong> @moreaulee</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teaching Assistant</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TA Name:</strong> Xio Alvarez</td>
<td></td>
</tr>
<tr>
<td><strong>TA Email Address:</strong> <a href="mailto:xio@mit.edu">xio@mit.edu</a></td>
<td></td>
</tr>
</tbody>
</table>
4.051 THE HUMAN FACTOR IN INNOVATION AND DESIGN STRATEGY

Using Human-Centered Design to Impact the World.

The Human Factor in Innovation and Design Strategy will expose students to the core methodologies used in human-centered design with a focus on understanding how it can be applied to solve real-world challenges. In the course, students will hear leading design practitioners, thinkers, and business leaders explain how they approach design challenges, and how design brings value to human experiences and to the contemporary marketplace.

The whole point of human-centered design is to tame complexity, to turn what would appear to be a complicated tool into one that fits the task, that is understandable, usable, enjoyable. – Don Norman

Design research both inspires imagination and informs intuition through a variety of methods with related intents: to expose patterns underlying the rich reality of people’s behaviors and experiences, to explore reactions to probes and prototypes, and to shed light on the unknown through iterative hypothesis and experiment. – Jane Fulton Suri

Get closer than ever to your customers. So close that you tell them what they need well before they realize it themselves. – Steve Jobs

Human-centered design has been practiced for decades, but its design research methods have only recently become refined and codified by thought leaders and scholars (Donald A. Norman, Jane Fulton-Suri, Roger Martin), design innovation practices (IDEO, Continuum, and Frog) and within academic institutions (Rotman School of Management, the IIT Institute of Design, and Stanford’s d.school). Compared to most artistic and design practices, this is relatively new creative territory…and its rules are still being written.

This course will serve as an introduction to human-centered design through both its theory and its practice. The course will meet once per week in a single 3-hour session. One half of each class will feature a lecture presentation by the instructor or an inspirational guest speaker. A typical lecture will include a brief introduction by the instructor to help provide context, a 30-45 minute presentation by the guest speaker, followed by a moderated discussion between the guest and the students. The other half of each class will be a group working session intended to introduce human-centered design methods, present case studies, review weekly assignments, and allow for critique with the instructor(s).

Inspiration and provocation.

The course’s four multi-week assignments are meant to provide students with an opportunity to experience the primary aspects of the human-centered design process first hand, engaging from the early stages of in-context qualitative research, through envisioning, to iteratively prototyping and testing new experiences.

Design Problems
Exercise 1: Preparing for Learning – 2 weeks
Exercise 2: Learning (Field Research) – 2 weeks
Exercise 3: Envisioning Experiences – 3 weeks
Exercise 4: Prototyping to Learn – 3-4 weeks

To succeed in this course, students will need to demonstrate the curiosity, persistence, and craft necessary to engage in human-centered design. Students will frequently be asked to work in teams of 2-4 people, therefore effective collaboration and team work will be necessary to fulfill the course requirements.
4.051  THE HUMAN FACTOR IN INNOVATION AND DESIGN STRATEGY

<table>
<thead>
<tr>
<th>Specific Area of Focus</th>
<th>Collaboration with Boston Children’s Museum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This semester, in an effort to bring greater rigor and tangibility to our design research, we are partnering with the curatorial and operations teams from Boston Children’s Museum. This collaboration will allow us to have access to real-world constraints, actual respondents (including museum staff, child visitor’s and their parents), and feedback on our work, but it will also require strict adherence to museum research protocols and respect for the museum’s time and resources. Additionally, museum staffers may also provide additional requirements, areas of focus, and feedback for students during the semester as the project’s develop. Please honor these requests within the development of your design research process. Our first official visit and tour of Boston Children’s Museum will be during class on Friday, September 27, but students are encouraged to visit on their own prior to that date. You can also go on a virtual tour of the museum here: <a href="https://www.bostonchildrensmuseum.org/museum-virtual-tour">https://www.bostonchildrensmuseum.org/museum-virtual-tour</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The readings are highly recommended, but not required. Each student is expected to attend all lectures and spend approximately 6 hours per week on assignments and projects outside of class.</td>
</tr>
</tbody>
</table>

**Grading Criteria**

- Attendance for all lectures is mandatory.
- Most of the assignments in this course will be iterative in nature. Students will be expected to take risks, attempt new things, work in new ways, and play out a number of scenarios before arriving at the optimal solution. The design process takes work.
- You are expected to present substantial new work at each class. Make progress every week.
- The design process is progressive in nature. Late work is not acceptable and will affect grading.

Students will be graded on originality of concept, quality of design work, clarity of communication, participation in class activities and lecture discussions, improvement during the course, ability to work as a team, and helpfulness to other students in class.

For students, the final grade is based on:

- **30%** Class Attendance and Participation (Showing up and contributing to the course’s positive chemistry.)
- **30%** Communication of Concepts and Ideas (Clarity of thought and communication.)
- **20%** Conceptualization and Execution of Design (Great ideas rendered beautifully.)
- **20%** Teamwork and Collaboration (Working well with others.)

Note: For assignments or projects requiring teamwork, each student will be graded individually based on their performance.
4.051 THE HUMAN FACTOR IN INNOVATION AND DESIGN STRATEGY

Course Schedule:

The course is assumed to be based upon a 14-week semester and breaks down as follows. Each exercise identifies its particular meeting schedule and work requirements:

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Exercises</th>
<th>Special Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1 - Friday 9/6</td>
<td>Introductory Lecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 2 - Friday 9/13</td>
<td>Lecture 1: Empathize</td>
<td>Assign Exercise 1: Preparing for Learning</td>
<td></td>
</tr>
<tr>
<td>Week 3 - Friday 9/20</td>
<td>NO CLASS</td>
<td>Student Holiday</td>
<td></td>
</tr>
<tr>
<td>Week 4 - Friday 9/27</td>
<td></td>
<td>Exercise 1 Due</td>
<td>Visit Boston Children's Museum</td>
</tr>
<tr>
<td>Week 5 - Friday 10/4</td>
<td>Lecture 2: Analyze</td>
<td>Assign Exercise 2: Learning (Field Research)</td>
<td></td>
</tr>
<tr>
<td>Week 6 - Friday 10/11</td>
<td></td>
<td></td>
<td>Conduct Field Research at BCM</td>
</tr>
<tr>
<td>Week 7 - Friday 10/18</td>
<td>Lecture 3: Envision</td>
<td>Exercise 2 Due</td>
<td>Conduct Field Research at BCM</td>
</tr>
<tr>
<td>Week 8 - Friday 10/25</td>
<td>Assign Exercise 3: Envisioning Experiences</td>
<td>Created By Festival – No Research</td>
<td></td>
</tr>
<tr>
<td>Week 9 - Friday 11/1</td>
<td>Lecture 4: Prototype</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 10 - Friday 11/8</td>
<td></td>
<td>Exercise 3 Due</td>
<td></td>
</tr>
<tr>
<td>Week 11 - Friday 11/15</td>
<td>Lecture 5: Test</td>
<td>Assign Exercise 4: Prototyping to Learn</td>
<td></td>
</tr>
<tr>
<td>Week 12 - Friday 11/22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 13 - Friday 11/29</td>
<td>NO CLASS</td>
<td>Thanksgiving Weekend</td>
<td></td>
</tr>
<tr>
<td>Week 14 - Friday 12/06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final - TBD</td>
<td></td>
<td>Exercise 4 Due</td>
<td>Final Presentation and Review</td>
</tr>
</tbody>
</table>

Note: Guest Lectures Dates and Times are subject to change due to speaker availability.

---------------------------------------------
Week 1
Friday 9/06
Introductory Lecture: Understanding Human-Centered Design
Readings:

---------------------------------------------
Week 2
Friday 9/13
Lecture 1: Empathize
Readings:

Assign Exercise 1: Preparing for Learning (Human Understanding) – 2 weeks
Assignment Deadline: Week 4

---------------------------------------------
Week 3
Friday 9/20
NO CLASS – STUDENT HOLIDAY
4.051 THE HUMAN FACTOR IN INNOVATION AND DESIGN STRATEGY

----------------------------------------
Week 4  Friday 9/27
Guest Lecture: TBD Ethnographic Research
Readings:

Group Critique: Exercise 1: Preparing for Learning (Human Understanding)

----------------------------------------
Week 5  Friday 10/04
Lecture 2: Analyze
Readings:

Assign Exercise 2: Learning (Field Research) – 2 weeks
Assignment Deadline: Week 7

----------------------------------------
Week 6  Friday 10/11
Guest Lecture: TBD Service and Systems Design
Readings:

----------------------------------------
Week 7  Friday 10/18
Lecture 3: Envision
Readings:

Group Critique: Exercise 2: Learning (Field Research)

----------------------------------------
Week 8  Friday 10/25
Guest Lecture: TBD Product Design
Readings:

Assign Exercise 3: Envisioning Experiences – 2 weeks
Assignment Deadline: Week 10

----------------------------------------
Week 9  Friday 11/01
Lecture 4: Prototype
Readings:

----------------------------------------
Week 10  Friday 11/08
Guest Lecture: TBD Experience Design
Readings:

Group Critique: Exercise 3: Envisioning Experiences
### 4.051 THE HUMAN FACTOR IN INNOVATION AND DESIGN STRATEGY

<table>
<thead>
<tr>
<th>Week 11</th>
<th>Lecture 5: Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday 11/15</td>
<td>Readings:</td>
</tr>
</tbody>
</table>

Assign Exercise 4: Prototyping to Learn – 3-4 weeks

*Assignment Deadline: Final Exam – Date TBD*

<table>
<thead>
<tr>
<th>Week 12</th>
<th>Guest Lecture: TBD Theatrical Prototyping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday 11/22</td>
<td>Readings:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 13</th>
<th>NO CLASS – THANKSGIVING RECESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday 11/29</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 14</th>
<th>Guest Lecture: TBD Making It Real</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday 12/06</td>
<td>Readings:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date TBD</th>
<th>FINAL EXAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/16 – 12/20</td>
<td><strong>Final Presentation: Exercise 4: Prototyping to Learn</strong></td>
</tr>
<tr>
<td></td>
<td>Readings:</td>
</tr>
</tbody>
</table>
4.051 THE HUMAN FACTOR IN INNOVATION AND DESIGN STRATEGY

Additional Readings:

- https://www.90yearsofdesign.philips.com
- Weinschenk, Susan M. 100 Things Every Designer Needs to Know About People. New Riders, 2011.
- Patnaik, Dev. Wired to Care: How Companies Prosper When They Create Widespread Empathy. FT Press, 2009.
- Stickdorn, Marc. This is Service Design Thinking: Basics, Tools, Cases. Wiley, 2012.
- Govindarajan, Vijay and Trimble, Chris. Reverse Innovation: Create Far From Home, Win Everywhere
- Patnaik, Dev. Wired to Care: How Companies Prosper When They Create Widespread Empathy
4.051 THE HUMAN FACTOR IN INNOVATION AND DESIGN STRATEGY

- Philips Design Probes: https://www.90yearsofdesign.philips.com/article/67
- Corning: A Day Made of Glass 2: https://youtu.be/iZkHpNnXLB0
- IDEO Automobile: https://youtu.be/hqbsL825U7c