

BU Spark! Product Innovation

XCC 433: Spring 2020

COURSE INFO

Instructor: Ziba Cranmer
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Office Hours: Tuesdays 3-5pm or by [appointment](#) @ MCS 150

Instructor: James Grady
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Office Hours: Mon. 9-10:30am and Wed. 9-10:30am @808 Comm. Ave, Rm. 406C

Teaching Assistant: Michael Hendricks
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Office Hours: Mondays 2:00 - 3:30pm @ BU Spark!, MCS/Hariri Institute Room 150
Wednesdays 1:00-3:00pm @BU Spark! Conference Room (MSC 147)

Teaching Assistant: Dharmesh Tarapore
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Eng. in Residence: Bandon Das/ Langdon White
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Office Hours: Wednesdays 2:30-5:00pm @ MCS 153

Course Time: Monday, 3:30pm – 6:30pm*

Course Location: 808 Commonwealth Ave, Room 410-411

Course Requirements: Online Application

*** We will have supplemental, required, sessions:**

- **January 24 from 3:30-5:30pm: XCC Launch Event**
- **February 15-16 from 11:00am -5:00pm: Design Sprint**
- **May 1 from 5:00-7:00pm: Demo Day/Dolphin Tank**
- **XCC Showcase May 2nd from 9:00 am - 11:30 am.**

COURSE OVERVIEW & OBJECTIVES

This course aims to provide students—working in interdisciplinary teams—an opportunity to advance a technology product or a technology innovation, through a human-centered design approach. The course provides instruction on the fundamentals of product creation and user experience design (UXD).

Students will have formally applied to the course and have an approved product concept or problem in mind. While the overall course is designed to provide the structure of a typical product creation experience, students will be self-directed in the technical development of their project with the support of specialized mentors relevant to their project. Technical students will be paired with students who have a creative design background that can guide visual representations, user interface design, animation, and advanced interactive techniques. The goal is for students to have a working Minimum Viable Product (“MVP”) by the end of the semester.

LEARNING OUTCOMES

As a result of completing this course, students will:

- Gain an understanding of product development and innovation processes including design thinking, problem scoping, customer discovery, validation, product design, visual design, low and high fidelity wireframing, and testing.
- Learn how to effectively scope and manage development for your product or artifact in a team-development setting using agile development processes, time estimation, and weekly retrospectives.
- Work effectively in teams and communicate ideas to others
- Practice critical analysis of the product development process through self-reflection and peer feedback

HUB UNITS

This class has been approved for Spring 2020 as a Cross College Challenge (XC 433) which will meet the BU Hub Learning Outcomes for the following 4 Hub Areas:

1. Creativity/Innovation

As teams work on their projects and address specific challenges throughout the semester:

- Students learn creativity as an iterative process of imagining new possibilities that involves risk-taking, use of multiple strategies, and reconceiving in response to feedback. They will be able to identify individual and institutional factors that promote and inhibit creativity.
- Students engage in creative activity by conceiving and executing original work as part of their team.

2. Oral and/or Signed Communication

In communicating with team members, sponsors and other constituents of the project, and through their final team project presentations:

- Students will craft and deliver responsible, considered and well-structured oral and/or signed arguments using media and modes of expression appropriate to the situation.
- Students will interact, attend and respond thoughtfully to others.

- Students will be able to speak/sign effectively in situations ranging from the formal to the extemporaneous and interact comfortably with diverse audiences.

3. Research and Information Literacy

By engaging in substantial research to complete their projects, and following an iterative process for creating a project proposal, completing interim assignments and a final report:

- Students search for, select, and use a range of publicly available and discipline-specific information sources ethically and strategically to address research questions.
- Students understand the overall research process and its component parts, formulate good research questions or hypotheses, gather and analyze information, and critique, interpret, and communicate findings.
- For some teams, the fruits of research will yield new approaches to enduring questions, or new artistic expressions, or fresh arguments.

4. Teamwork/Collaboration

Students are assigned to a team and receive explicit training in teamwork. Through this sustained collaboration on the project, and through the completion of a team contract and project plan:

- Students will learn the characteristics of a well-functioning team.
- Students will engage the tools and strategies for working successfully on a diverse team, including assigning roles and responsibilities, giving and receiving feedback, and engaging in meaningful group reflection that inspires collective ownership of results.

COURSE FORMAT

This course is taught through a combination of lectures, presentations from external speakers, interactive workshops, and regular reviews by mentors and peers of work progress. There will be four phases of the course:

- I. **User Insights:** Students will engage in a series of activities designed to gain knowledge of the problem they seek to solve, conduct interviews, competitor feature analysis and value proposition, and build customer profiles.
- II. **Design:** A series of intense workshops to envision and refine the product concept and minimum viable product (MVP) that students will aim to complete by the end of the semester. This will include validating assumptions, rapid ideation, developing a feature list, prioritization, prototyping, and usability testing with users.
- III. **Build:** The majority of the course will be spent in a self-directed process of building out the product following the principles of agile development. Students will engage in weekly progress reports and regular code reviews with mentors, instructors, and peers. Ideally, students will test initial prototypes with users.
- IV. **MVP and Future Product Roadmap:** The final component of the course will focus on finalizing the MVP and preparing for 'Demo Day'—an event where students display their work. Spring Semester, a select number of students will be invited to

participate in ‘Dolphin Tank’—a constructive feedback session with prominent BU Alumni.

CLASS TOOLS* (*links forthcoming*)

- Blackboard - for submitting assignments
- Jira for weekly sprint tracking
- [Slack](#) for messages (please check regularly)
- Readings and Supplementary Materials

Note: The syllabus may change during the semester to accommodate new ideas and the availability of guest speakers.

REFERENCE MATERIALS

The class will draw from the following writings around the philosophy and execution of product design. Necessary excerpts will be provided during the course, while the full content will be a supplement/reference. You do not need to purchase these books.

- [Value Proposition Design](#) by Alexander Osterwalder
- [Lean Product Playbook](#) by Dan Olsen
- [Running Lean](#) by Ash Maurya

STUDENT DELIVERABLES*

Students will have the following deliverables, described in greater detail on the class Blackboard.

Design Phase:

- Self Assessment
- Team agreement
- Value Proposition Canvas
- Job Map
- Assumptions Map
- Interview Prospect Map
- Problem and Solution Interview Scripts
- 5 Problem interviews
- 3 Customer Profiles/ User Persona
- 5 Solution/ Usability interviews
- Validation exercise
- “Understand” Presentation
- Prototype Outline/Wireframes V1-2
- MVP Feature Set

Build Phase

- Scrum Roles

- Jira board - updated weekly
- Weekly retrospectives
- Tech stack plan
- Learning Plan
- Mid-Term Team Evaluation and Team Agreement Revision
- 5 Mentor Meetings + Reports
- Style/Brand guide
- Hi-Fi wireframes
- Risk Audit
- Final Product Demo, Poster, and Presentation

***Note: Deliverables/ deadlines may change during the semester based on progress and relevancy.**

GRADING

The course grade will be a weighted sum of your grades on the following:

Attendance & Participation	10%	Attendance: 50% <ul style="list-style-type: none"> ● 1: on time ● .5: late ● 0: no show Participation: 50% - weekly retrospective submissions (individual grade) <ul style="list-style-type: none"> ● 1: contributed ● 0: no contribution
Mentor Engagement	10%	<ul style="list-style-type: none"> ● Complete 5 mentor meetings by the end of the semester ● Fill out a Student Mentor Report for every mentor meeting <p><i>**Does not include times with mentors are included in class</i></p>
Assignments	20%	On time submissions: 100% <ul style="list-style-type: none"> ● If Ziba or Michael make revisions, score will drop to 50%. You will have 2 weeks to fix changes, which will bring the score back to 100% Late submission: 10% reduction (within 24 hrs), 25% reduction (within one week) <ul style="list-style-type: none"> ● Timely submission is critical to keep pace with the development; however, if you plan to submit an assignment late, please contact the professor to discuss impact on grade <p><i>**Extensions may be granted by the instructors on select assignments to all students</i></p>

Weekly Development Sprints	40%	<p>JIRA Cards: 50% (group grades)</p> <ul style="list-style-type: none"> ● 13-week long sprints (starting week of 9/9) ● 1st 4 will be graded complete/incomplete; subsequent will be graded according to the rubric below ● Grading Rubric <p>Development - Weekly Standup Reports: 50% (individual grades)</p> <ul style="list-style-type: none"> ● Each team submits weekly stand up report via blackboard ● Grades based on volume of work and quality of planning estimates and sequencing (future and past) ● Complete 15 minute stand up with instructors in class
Final Project	10%	<p>Final Poster: 20%</p> <ul style="list-style-type: none"> ● Grading rubric based on presentation of problem, solution, technology overview, ethics self-assessment, and innovation journey <p>Final Deliverable: 80%</p> <ul style="list-style-type: none"> ● Grades based on volume of work, quality of work, overall presentation, *bonus points for deployment <p><i>Extra credit will be given for teams that deploy!</i></p>
Team Feedback	10%	<ul style="list-style-type: none"> - Peer evaluation - mid-evaluation based on team agreement - Final peer evaluation based on team agreement

ASSIGNMENTS

Assignments are meant to cement material learnt in class and will usually involve integrating concepts into projects. Late submissions are accepted up to 2 days after the deadline, with a 10% penalty for each day.

MENTORING AND OFFICE HOURS

Each student will be matched with two professional mentors by the third week of the course. In addition to the professional mentor, students will have access to a number of specialist mentors with experience in a variety of programming languages and technologies relevant to the student projects.

Engagement with the mentor is the responsibility of the student. Engagement with the mentors (innovation coaches and specialists) will be tracked through mentor reports and three mentor evaluations issued throughout the semester. We encourage students to check in regularly with their innovation coaches either in-person or virtually. Leveraging this relationships and visiting your mentors' places of work is a good opportunity to build your professional network.

Office hours with instructors are listed above or can be booked through [the Spark! portal](#). We are also available on Slack or email for scheduling and questions.

CLASS AND UNIVERSITY POLICIES

Attendance, Assignment Completion & Late Work: Due to the sequential nature of the product creation experience and the goal of completing a product demo by the end of the semester, attendance is mandatory. If you have to miss class for any reason, you must make arrangements with the professor which may involve making up the time in a one-on-one session during office hours or attending an alternative workshop. We expect students to keep pace with the course, but also to follow the flow of their project which we realize will require adjustments and delays. Expect an intense time commitment at the beginning of the course to allow for the completion of the Design Sprint phase as quickly as possible.

Academic Conduct: You may discuss homework assignments with classmates, but you are solely responsible for what you turn in. Collaboration in the form of discussion is allowed and encouraged. We understand that there may be teams working on projects together and they must document which team member completed different tasks on the team Jira board. Any use of 3rd party code in your product creation should be through open source licensing terms and clearly documented. We – both teaching staff and students – are expected to abide by the guidelines and rules of the Academic Code of Conduct (<http://www.bu.edu/academics/policies/academic-conduct-code/>).

Disability Accommodations: If you are a student with a disability or believe you might have a disability that requires accommodations, please contact the Office for Disability Services (ODS) at 617-353-3658 to coordinate any reasonable accommodation requests. For more information, please see <http://www.bu.edu/disability>.

CLASS/ MEETING OUTLINE

Date/ Session	Content
Pre Program January 24 3:30-5:30pm (Friday)	<ul style="list-style-type: none"> ● XXC Launch event 3:30-5:30 ● Location: Photonics Center Colloquium Room at 8 Saint Marys Street
Session 1: January 27 (Monday)	<ul style="list-style-type: none"> ● Program overview ● Intro to product creation ● Jobs, pains, and gains ● Critical path v1

	<ul style="list-style-type: none"> ● Assumptions mapping (in-class exercise) ● Customer profiles (in Session exercise) ● Personas ● Interview prospect mapping ● Job Map ● Customer discovery overview ● Interview guidance
Session 2 February 3 (Monday)	<ul style="list-style-type: none"> ● Online validation experiment ● Competitive analysis ● Additional validation experiments
Session 3 February 10 (Monday)	<ul style="list-style-type: none"> ● High-Performance Teams ● Intro to Agile - Part 1 ● Jira Instruction - Part 1 ● Work style assessments Discussion ● Team agreements discussion ● Difficult conversations
Session 4 February 15 (Saturday)	Design Sprint Part I - Diverge <ul style="list-style-type: none"> ● Understand Presentation ● Critical Path, Personas, Customer Profile Set up ● MindMap (individual) ● Critical Path Crazy 8 (individual) x 3 ● Opportunity Space/ value proposition gut check ● Crazy 8 prioritization ● Revised User Journey ● Assumptions Map update
Session 5 February 16 (Sunday)	Design Sprint Part II – Converge <ul style="list-style-type: none"> ● Revised user stories (with critical path embedded) overview ● User stories + feature and task list (based on user journey) ● Value prop gut check ● \$100 investment test ● Group wireframe ● Solution interviews ● Present wireframes and feature to mentor
Session 6 February 18	<ul style="list-style-type: none"> ● Guest Speaker from Innovate (3:30pm) - 10 minutes ● Wireframe overview workshop + tools overview, including terminology, usability and assumptions testing

(*Tuesday/ Monday Schedule)	<ul style="list-style-type: none"> ● Architecture overview + recommendations
Session 7 February 24 (Monday)	<ul style="list-style-type: none"> ● User Flow Speed Dating (UX/UI mentors invited) ● Tech stack review session (with technical mentors) ● Intro to Agile - Part 2 ● Jira Instruction - Part 2
Session 8 March 2 (Monday)	<ul style="list-style-type: none"> ● Final Tech stack review, development environment review ● Jira board feedback from TF (grade would have received) ● 15 minute reviews with instructors ● Git and Github
Session 9 March 16 (Monday)	<ul style="list-style-type: none"> ● Red Hat workshop: wireframes, design patterns, etc. UX, roles, style guides, communications, terminology, open source tools: Patternfly (Red Hat) ● Test Driven Development - Part I
Session 10 March 23 (Monday)	<ul style="list-style-type: none"> ● Team health check up ● Test driven development - part II ● Product Creation Case Study/ Guest Speaker
Session 11 March 30 (Monday)	<ul style="list-style-type: none"> ● Product Creation Case Study/ Guest Speaker ● DevOps/ Continuous Delivery
Session 12 April 6 (Monday)	<ul style="list-style-type: none"> ● Product Creation Case Study/ Guest Speaker ● Hi-Fi Review for UXD Fellows (peer review)
Session 13 April 13 (Monday)	<ul style="list-style-type: none"> ● Legal Issues in Tech Innovation ● Ethics, bias, and privacy
Session 14 April 22 (*Wednesday, Monday schedule)	<ul style="list-style-type: none"> ● Pitching Workshop ● Standups
Session 15 April 27 (Last Class)	<ul style="list-style-type: none"> ● Demos and StandUps

Session 16 May 1 (Friday) 5:00-7:00pm	<ul style="list-style-type: none">● Demo Day/ Dolphin Tank @Howard Thurman
May 2 (Saturday) 9:00-12:00pm	<ul style="list-style-type: none">● XCC SHowcase Event