BU Spark! Technology Innovation Fellowship Program

XCC 475: Fall 2023

COURSE INFO:

Instructor: Ziba Cranmer
Contact Info: zcranmer@bu.edu; 503-807-7815; *Ziba* on Slack
Office Hours: Thursdays 4:00-6:00pm at Spark!(2nd or 13th Floor - by appointment)
at zibacranmer.youcanbook.me (zoom or @Spark!)

Instructor: James Grady
Contact Info: jjgrady@bu.edu; 617-461-6296; *James* on Slack
Office Hours: Mondays 9:00 – 10:30; Wednesdays 11:00 – 12:30
Please make an appointment in advance.
Make an appointment in advance via slack or email.
Office FLR 406C and zoom

Instructor: Asad Malik
Contact Info: am5815@bu.ed; 6617-708-7935; *Asad* on Slack
Office Hours: Thursdays 4-6:00pm; Sunday 12:00-3:00 pm at Spark! (2nd floor)
Please make an appointment buspark-asad.youcanbook.me/

Teaching Assistant: Macy So
Contact Info: mso7@bu.edu
Office Hours: Wednesdays 1-3pm via https://macyso.youcanbook.me/
Location pending confirmation

Teaching Assistant: Jiangyan (Molly) Zhou
Contact Info: jyanzhou@bu.edu
Office Hours: Tues 1-3pm and Thurs 1-3pm via at https://xxx.youcanbook.me/
Location pending confirmation

Teaching Assistant: Daniel Oh
Contact Info: danoh@bu.edu
Office Hours: Tuesdays 10-1am and Thursdays 10-12pm
Location pending confirmation

OTHER SPARK! RESOURCES:

Spark! Technical Team & EIRs: https://www.bu.edu/spark/resources/consultations/

Course Time: Monday, 2:30pm – 5:15m*
Course Location: CDS164 at 645 Commonwealth Avenue, Room 152

Requirements: Online Application
Supplemental Sessions for Pre-Program Discovery Sprint and Design Sprint:
Wednesday, August 30 [5:00-6:30pm] Pre-Program Session I: Welcome + Overview
Thursday, August 31 [5:00-6:30pm] Pre-Program Session II: Discovery Sprint

Wednesday, September 5 [4:00-6:0pm] XCC Course Kick off event - Photonics
Wednesday, September 6 [5:00-6:30pm] Pre-Program Session III: Discovery Sprint
Friday, August 8 [4:00-5:30pm] Pre-Program Session IV: Discovery Sprint
Saturday, September 23 [11:00-5:00pm] Design Sprint Part I
Sunday, September 24 [11:00-5:00pm] Design Sprint Part II
Wednesday, December 13 [4:00-7:00pm] Demo Day/ XCC Project Showcase

Full schedule and class outline with PPTs and assignments here: *https://tinyurl.com/sparkinno-fall23*

Assignment list here: *https://tinyurl.com/sparkinno-fall23*

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.

CFA AR675: GRADUATE DESIGN TRACK COURSE OVERVIEW & OBJECTIVES

MFA in Graphic Design students are welcome to apply to the Graduate Design track of the Innovation Fellowship program with instructor approval. See more info on additional course work and deliverables here.

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

XCC & HUB UNITS

This program is part of the HUB's Cross College Challenge which will meet the BU Hub Learning Outcomes for the 4 Hub Areas listed below. As a Cross College Challenge Course "XCC" students will be expected to participate in the Launch Event and Final Showcase:

1. 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.
- Spark! teams will achieve this learning outcome through focused research with users to validate the problem and proposed solutions and in-depth feedback on user experience. The other focus of research will be on the analysis of alternative solutions/ competitors. These activities will be conducted during the discovery sprint during the first part of the program and will include 20 user interviews and an online validation exercise.

2. 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.
- The Spark! interpretation of the creativity and innovation component will take place primarily through the design sprint phase of the program. Once the build phase begins, there will be iteration in the form of continuously refining and narrowing the features to achieve the highest value feature set possible within the time remaining in the semester.

3. 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.
- The Spark! program will focus the team's oral communication over several distinct presentations of the team's problem statement, solution, and value proposition to stakeholders at key milestones in the program. This includes the "*understand*" presentation at the beginning of the semester, a mid-term presentation, peer presentations, a storytelling workshop, and the final presentation at Demo Day.

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.
- The application of teamwork and collaboration learning outcomes will be centered around the implementation of agile development principles and the development and evaluation of team agreements to reinforce practices of high performing teams. Students will have an opportunity to give and receive feedback at the beginning of the semester, mid-semester, and at the end and will be expected to proactively solve team issues using the feedback and decision-making tools provided. Team members are expected to contribute equally throughout the course of the project.

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. ***Discovery:*** Students will engage in a series of activities designed to gain knowledge and user insights related to 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. Students are expected to have working code running on a third party platform throughout the build phase.

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. The end of semester Demo Day will be held in conjunction with the XCC Final Showcase.

CLASS TOOLS AND ASSIGNMENTS* le

- Assignment List: https://sites.google.com/view/spark-innovation-course/schedule
- Weekly Schedule: https://sites.google.com/view/spark-innovation-course/schedu
- Jira for weekly sprint tracking: https://buspark.atlassian.net/
- Slack for messages: https://join.slack.com/t/sparkinno-fall23/signup ***please check daily before class for latest updates****
- Gradescope - for submitting assignments: https://www.gradescope.com/courses/588996 (Entry Code:VBGXXZ)

TECH STACK AND TEAM RESOURCES:

Recommended Tech Stack: Spark! has selected a set of technology stacks(tech stacks) and development suggestions with the end goal of having better knowledge transfer between different projects within Spark!. Although a selection of a tech stack from this document is recommended, student teams are free to select a different combination of technologies. Students are encouraged to select one of the preferred tech stacks as there are more resources and assistance available to students through Spark! when using one of the preferred tech stacks. You can find our recommended TechStack here: https://buspark.io/docs/tech-stack/

Students are also able to **access computing services** e.g. AWS credits, etc. They must be requested at this link and we will assess the request and get back to your team as soon as possible. https://buspark.io/documentation/compute-resources/request-resources

Each team is allowed **up to $200 for incidental expenses** directly associated with implementing their project (i.e. not pizza, etc.). You can submit receipts or procurement requests through this form: https://tinyurl.com/spark-budget-request. For questions, please email Erin Murdock at emurdock@bu.edu.(**please copy buspark@bu.edu**)

Consultations with Spark! Experts in Residence and Technical Team are available at this link: https://www.bu.edu/spark/resources/consultations/. This is a helpful resource especially if your technical mentor is unavailable or you need specialized expertise for troubleshooting. You will find Spark! staff and Experts in Residence with advanced skills in software engineering, machine learning, and data science.

Spark! also has access to **Treehouse for tutorials** (login from instructors): https://teamtreehouse.com/

Dedicated Librarian: Paula Carey – pac@bu.edu

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
- *Readings, PPTs, videos, and resources for each session will also be posted on the course website: https://tinyurl.com/sparkinno-fall23*

TEAMS

Teams will be composed of 2-4 developers (i.e. students with a technical background in computing) and 1-2 UX designers. Some students will be participating for course credit and others as part of the paid internship track but **all students will be required to share equally in the assignments and attend the Monday sessions as well as the discovery and design sprints**. Teamwork is essential to achieving success in this course and we will help you develop as a high functioning team, but this means you are also responsible for proactively managing your engagement as a productive team member. We are here to help you learn how to communicate effectively, resolve conflicts and work through challenges as they arise. This will be an important part of both the participation grade and, more importantly, your overall experience in the program. Students are expected to meet twice outside of class per week for a

sprint planning session and a sprint retrospective; we will also try to make time for these during class wherever possible. During the build phase, each team is expected to contribute a minimum of 8 hours toward design or development. Team members who fail to live up to a minimum expectation on their teams will not succeed in this program.

CLASS/ MEETING OUTLINE

SCHEDULE: *https://sites.google.com/view/spark-innovation-course/schedule*

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

Class Location: 645 Commonwealth Ave, Room 164

GRADING AND ASSIGNMENTS*
Students will have the following deliverables, described in greater detail on the class Blackboard.

Assignments are meant to cement material learnt in class and will usually involve integrating concepts into projects. Late submissions are accepted up to 3 days after the deadline, with a 10% penalty for each day.

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

Full list of assignments and rubrics:

Grade Category	% of grade
Discovery Sprint: User Insights	10%
Design Sprint: Product Concept and Design	10%
Oral and Signed Communication	10%
Teamwork and Collaboration	10%
(Individual) Assignments	5%
(Individual) Team Participation - Peer Feedback	15%
Product Development and Design	40%

Grading Breakdown:

Letter Grade	Numeric Grade
A	95% +
A-	90% - 95%
B+	87% - 90%
B	83% - 87%

B-	80% - 83%
C+	77% - 80%
C	73% - 77%
C-	70% - 73%
D	60% - 70%

Extra Credit: There is extra credit available for students that achieve exceptional milestones such as publishing on an app store, etc. and equivalent level accomplishments for other technologies.

Re-Grades:
If you notice an issue with a grade you've received, please don't email the teaching staff. Instead, please submit a regrade on Gradescope within 48h of receiving the grade. Anything beyond 48h will not be accepted for a re-grade.

****Please note:***

- *All students must share github with instructors and TFs for grading*
- *For projects that started prior to the course, teams must share code and establish start date for new features and development*
- *Deliverables/ deadlines may change during the semester based on progress and relevancy.*

MENTORING AND OFFICE HOURS

Each student will be matched with professional mentors by the second week of the program. In addition to the professional mentor, students will have access to several 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 two mentor evaluations issued throughout the semester. We encourage students to check in regularly with their mentors either in-person or virtually. Leveraging these relationships for discussions about your career path, and, in a post-covid context, 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 for the entirety of each session is mandatory. Attendance is also mandatory for the Discovery and Design Sprints.** If you must miss a session 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. We understand that students may need to miss class due to physical or mental health issues and these will be considered excused absences, but they must be communicated in advance of class. Students will receive half credit for attendance if they miss more than 30 minutes of class.

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.

Sexual Misconduct: Boston University is committed to fostering a safe, productive learning environment. Title IX and our school policy prohibit discrimination on the basis of sex, which regards sexual misconduct — including harassment, domestic and dating violence, sexual assault, and stalking. We understand that sexual violence can undermine students' academic success, and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. Confidential support and academic advocacy resources can be found with the Center for Sexual Assault Response & Prevention.

Equal Opportunity: This course celebrates diversity and welcomes all. BU has strict guidelines on classroom behavior and practices when it comes to treatment of students and guests on the basis of race, color, religion, sex, gender identity, sexual orientation, age, mental or physical disability, genetic information, military service, national origin, or due to marital, parental, or veteran status. Discrimination for any of these reasons is prohibited. Please refer to the Equal Opportunity/Affirmative Action Policy for more details.

Positive Classroom Experience: At your discretion, please alert one or both of your instructors to anything related to preferred pronouns, preferred name or nickname, and/or any extenuating circumstances or triggers that might affect your classroom experience. We want to make sure you have the most positive experience in the classroom as possible.

This course affirms people of all gender expressions and identities. If you prefer to be called a different name than what is on the class roster, please let us know. Feel free to correct us on your preferred gender pronoun. If you have any other questions or concerns, please do not hesitate to let us know.

Social Climate: Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Dean of Students for support. Furthermore, please notify one or both of your professors, if you are comfortable in doing so. This will enable us to provide any resources we may possess.

It is not unusual for students to feel stress, and about 15% of students experience depression, anxiety or other mental health concerns. Please know that we are here to help you find the resources to help you get through this stressful time.

If work shown in this class, professional or student-generated, offends you in any way, please mention it in class or talk to us privately about it so that we can all learn from each other. This is not to say we will ever restrict freedom of speech or water down an aggressive or edgy idea, but we want to discuss anything that someone deems troublesome or offensive.

Finally, there are many resources available to students.

Student athletics: All student-athletes should be provided with a sheet from Student-Athlete Support Services regarding absences throughout the semester. These sheets should be handed in as soon as possible to avoid potential conflicts and so arrangements can be made to provide for missed lecture notes, classwork, or discussion.