CDS – DS488 Spark! UX Design X-Lab Practicum

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Course Dates: 01/18/2024 - 04/30/2023
Course Time & Location: Tues & Thurs, 5:00-6.15 PM;
Comm Building, Room 109

Office Location: 1310, 13th Floor CDS Building
Office Hours: Tues & Thurs, 4:00-4.45 PM (Off hours on request via email)

Course Credits: 4

Teaching Assistants:

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Resources & Support:
- Spark! Engineers and Experts in Residence: Find a list of all experts in residence and their offices here: http://www.bu.edu/spark/resources/

Course Description

In this course, students will work together in teams on two initiatives.

The first (primary) initiative is to conceive, scope, research, design, prototype and test a new real-world website, or digital business application for a real client.

The secondary initiative is to collaborate with a development team already working on a previously designed UX project – in the DS519 Software Engineering Practicum class – to consult with and support them as that project goes through the development process. Students will monitor the development, integration, QA, UAT and launch of the live site or digital application experience – for a real client.

This course will give students an opportunity to apply the methods and practices of user experience design to a real-world project. Students will work in teams to address the needs of industry partners for applying interactive software to solve practical problems. We will address all phases of the user experience design process from user research and discovery to design and validation. The focus will be on mastering techniques and methods for learning about users, applying design thinking methods to conceive and iterate on solutions, and on validating designs through user testing and feedback. Students will also learn how to collaborate effectively on multi-disciplinary teams. Along the way,

students will have the opportunity to learn about and apply cutting edge tools for user research and design while hearing from current practitioners and experts working in the field of user experience design.

Prerequisites

Students are expected to have some prior exposure to the methods and practices of user experience design either by completing the DS280 Spark! Introduction to UX Design, XC475 Spark! Technology Innovation Fellowship Course, or by demonstrating equivalent UX experience.

Reality

No two UX design engagements are ever exactly the same, and it will be the job of the student team collaborators to roll with the unique circumstances of their client assignments in real time – making updates to scope, timing, deliverables, schedules and approaches based on client input and based on how the project unfolds in real time. (This is a huge part of successful UX design – following a robust, structured process – but knowing when to deviate from it slightly in order to get to success…)

Hub Learning Outcomes

Digital/Multimedia Expression

Learning Outcome #1: Students will be able to craft and deliver responsible, considered, and well-structured arguments using media and modes of expression appropriate to the situation.

In the context of user experience, the "argument" is defined as a point of view about the needs of the user who is engaging with technology in the form of an interactive software application in service of specific client business goals. This is expressed in the form of decisions about the functionality and visual presentation of the user experience as manifested in a technical solution. Through the application of user experience and visual design principles and the use of design and prototyping tools, students will learn how to create user interfaces that deliver high-quality, responsive and usable interactions. Specifically, students will implement a discovery process to inform the design of a user experience (reflecting their argument for the desired experience) and they will create user stories, wireframes and prototypes to test the efficacy of this experience.

Learning Outcome #2: Students will be able to demonstrate an understanding of the capabilities of various communication technologies and will be able to use these technologies ethically and effectively.

The field of user experience and user interface design utilizes a broad set of tools and standard practices that students must master – to work successfully alongside developers and technologists in the creation of compelling digital experiences. These include a variety of design programs including Figma, Miro, or similar tools. Students will learn how to assess which tools are best for their use case as well as how to use their selected tools through assignments that involve creating the product prototype or wireframes.

Learning Outcome #3: Students will be able to demonstrate an understanding of the fundamentals of visual communication, such as principles governing design, time-based and interactive media, and the audio-visual representation of qualitative and quantitative data.

Through a variety of assignments including benchmarking competitor products and reviewing the functionality options within established design systems, students will gain an understanding of the trends and best practices of user experience and user interface design. Students will learn the relationship between a design system and their target technology platform. Through regular UX Weekly Snapshot reviews, as well as critiques and work-in-progress reviews, they will receive ongoing feedback from mentors on their work.

Creativity/Innovation

Learning Outcome #1: Students will demonstrate understanding of creativity as a learnable, iterative process of imagining new possibilities that involves risk-taking, use of multiple strategies, and reconceiving in response to feedback, and will be able to identify individual and institutional factors that promote and inhibit creativity.

Through assignments in this class, students will learn to apply design thinking principles to formulating innovative solutions to user and client problems. Iteration and evolution will be encouraged through the application of user experience design tools and methods. Students will receive regular feedback on designs through in-class critiques and through testing with prospective users. This feedback should be captured chronologically in each weekly snapshot document.

Learning Outcome #2: Students will be able to exercise their own potential for engaging in creative activity by conceiving and executing original work either alone or as part of a team.

An essential component of this class will be to take an analysis of user goals and needs and conceive interactive software solutions that improve the user experience. This could be by improving users' productivity, by enhancing their quality of life, or by introducing them to new possibilities that previously were not within their reach. This will begin by exploring existing technologies, products, and solutions relevant to the users' domain and enhancing or extending them in some way by proposing new and innovative solutions using the tools of design.

Social Inquiry II

Learning Outcome #1: Students will apply principles and methods from the social sciences based on collecting new or analyzing existing data in order to address questions, solve problems, or deepen understanding. They will understand the nature of evidence employed in the social sciences and will demonstrate a capacity to differentiate competing claims in such fields. This includes reflecting on and critically evaluating how social scientists formulate hypotheses, gather empirical evidence of multiple sorts, and analyze and interpret this evidence.

Understanding the behavior of users, whether interacting as individuals or in groups, is critical to designers' ability to formulate experiential solutions that deliver new capabilities or update existing processes. The field of user experience design and user research draws heavily on the social sciences for devising methods of learning about user behaviors, needs, desires, and goals. (An example of this might be Contextual Inquiry – asking target users about their needs, wants and aspirations before designing a new experience for them). This class will introduce students to structured methods such as *interviewing*, *surveying*, and *ethnography* as they are used by user researchers to gather information about prospective users. They will learn how to choose appropriate methods depending on the situation and will be given the opportunity to practice these methods and apply techniques for analyzing qualitative and quantitative data – to inform their UX design approaches.

Other Outcomes

Students will complete this course with an overview of the essential steps of user experience design including:

1. How to conduct a robust user research process including user interviews and user characterization.
2. How to translate research outcomes into requirements and designs that 'define' the experience.
3. How to complete wireframes, storyboards, and UX prototypes for user testing, and clients.

4. How to work with other designers and researchers to achieve team goals.
5. How to work with other capabilities involved in delivering a project of this nature – Project Managers, Development Team members Subject-Matter Experts and (of course) the Client.

Instructional Format, Course Pedagogy, and Approach to Learning

This course will take a project-based learning approach with students working on a project for external business partners. Instructional time will be split between client interaction, requirements-gathering. understanding and applying UX concepts, working on project deliverables, and participating in group reviews. Students will work in teams and will be assigned to specific roles based on their experience, interest and the needs of their team's project. Along the way they will gain experience in working with an industry client to frame the problem to be addressed and present their UX work at a professional level.

Other Course Materials

- The Spark! UX Design Toolkit
- DS488 Weekly Design Snapshot

Courseware/Tools

- Miro
- Figma
- Google Suite

Suggested reading for Teamwork and Collaboration:

- "The Power of a Positive Team: Proven Principles and Practices that Make Great Teams Great" by Jon Gordon
- "Teamwork 101: What Every Leader Needs to Know" by John C. Maxwell
- Advancing the Team

Assignments and Grading

%	Category	Grading Elements
15%	Individual grades for Participation, Teamwork and Collaboration	• Attendance • Team agreement • Peer reviews • Team participation
15%	Individual grades for Project Planning, Organization and Time Management	• Requirements gathering • Problem statement and project plan • Real time plan updates & adjustments based on client feedback and actual project progress
50%	Team grades for Weekly Design Snapshots	12 weekly design sprints will comprise different Experience Design journey tasks & deliverables for each team and project. *(Each project may or may not include items listed below, but the final list will be planned by each team based on their unique client project.)* Each team will plan tasks, activities, deliverables and project cadence based on their assigned client project. Each successfully completed weekly snapshot will cover 4.25% of the final grade for all members of each team. Common UX Design process tasks and deliverables – which may be applicable to each team's project may be (but are not limited to): Discovery & Definition phase • Interviews • Personas • Journey map • User stories/scenarios UX Design phase • Low and high-fidelity wireframes • Visual design style guide • Visual design application • Clickable UX prototypes Usability testing Phase • Usability test plan • Usability testing (results) • Usability report
20%	Final Presentation Phase	Final Presentation phase • Completed final Prototype(s) & PPT presentations • Completed Project Wrap-Up packages • Completed Demo Day Poster • Collected project snapshots

Grading

Each student will be graded throughout the semester via a combination of individual grades and team-based grades (as indicated in the table above) based on work assigned throughout the semester. From this process, instructors will apply the BU standard grading rubric (see below) in formulating final individual grades at the end of the semester.

Letter Grade	Numeric Grade
A	94 – 100%
A-	90 – 93.9%
B+	87 – 89.9%
B	84 – 86.9%
B-	80 – 83.9%
C+	77 – 79.9%

Participation
Students are expected to participate actively in the peer review process for major project deliverables and Project Snapshot reviews. They will also be graded on the quality of participation with their team based on the team assessment questionnaire given at the completion of the project. "High-Performance Teamwork" is a critical success factor in delivering high-quality UX solutions that can be coded and launched efficiently and effectively. Students are expected to proactively "Lean In" to their team and to contribute at a high level – both in terms of their core/formal responsibilities AND in terms of their collaboration to ensure the overall success of the team and its collective work. This requires a high degree of communication, clarification, continuous checking for shared understanding and matched expectations – which cannot happen 'passively' – they must be actively cultivated and worked at by each member of the team – flexing and adapting as necessary to account for the unique attributes and variables of the project, the client, the academic, operational and logistical environments – and most importantly the team members working together on the engagement.

Project Planning Phase
Students will be asked to construct a problem statement and an initial project plan at the start of their project. This will include a definition of roles and responsibilities for team members (which will be documented in each team's "Team Agreement"). The plan will also align the client's stated need with the end-to-end user experience design process in terms of the tasks, deliverables, schedule and cadence required to deliver their project successfully. (This will require customizing a unique project plan for each client assignment that works for them, and the needs of their project.) The plan will be documented in one place at a high level, and will be described in weekly snapshot documentation at the detailed level. The plan will be refined as/if necessary as the semester progresses and as the project matures.

Discovery & Definition Phase
A robust discovery phase involves immersion with the client to understand business requirements, interviews with the intended user(s) of the experience that will be created, and an understanding of the technology realities that will govern it. The assignments in this phase may include (but may not be limited to) stakeholder interviews (to gather business requirements), user interviews (to gather user needs and wants), user personas, user stories and journey maps intended to characterize the activities, goals, and pain points of target audience users, as well as technical interviews to understand the tech, data and integration parameters the project will need to meet.

Experience Design Phase

The output of the definition process is centered around a set of user stories and scenarios that reflect the priorities identified in the discovery phase. The subsequent deliverables are all designed to translate these insights into engaging interactive experiences – initially captured by low fidelity wireframes or a storyboard – documenting the user experience. Students will then evolve those lo-fi wireframes into detailed high-fidelity wireframes, visual UI designs and high-fidelity clickable prototypes suitable for user testing. The visual style guide should directly reflect the insights identified through the user research process, and should map to each client's existing unique brand. The guide should balance the reality of technical constraints associated with a chosen design system and best practices in other notable pieces of work while also creating a unique experience and visual style.

Usability Testing Phase
Validating the experience design work each team creates with target audience users is an essential part of the designer's toolkit. Students will learn how to prepare for, script, execute and report out on their usability test – following standard usability test protocol and reporting practices. Insights gained during usability testing will then be used to further refine and optimize the UX design prior to finalizing it.

Final Presentation Phase
Presentations include a complete set of (13) weekly UX Design Snapshots, client check-ins, final project presentations (PPT & clickable UX prototype) and development hand-off/wrap-up documentation. The UX Design Snapshots are weekly summaries of the work completed *(which **MUST** include links to a visual representation of the design artifact)*, a verbal summary of the activities of the prior week, the plan for the upcoming week, feedback received, and backlog priorities etc. Client check-ins will be brief presentations designed to gather information, share ideas and update clients upon completion of major project deliverables. The final presentation will take place during the last class meeting and will summarize final experience design outcomes. In addition to the final class presentation, all teams are required to participate in Spark! Demo Day. One team will be selected to present on stage, based on the submission of outstanding work. All teams will generate poster presentations showcasing their projects for the Demo Day expo.

Initial Outline of Class Meetings: Date, Topic, and Readings & Assignments Due

Date	Topic	Assignments
Week 1 01/18/24	Course Introduction ● Instructor Introductions ● Student Introductions ● Syllabus overview ● Discuss principles of user-centered design ● Team and project assignment formats – discussion ● Discussion on collaborating effectively on teams ● Working across disciplines – especially with development teams on 'maintenance' projects ● Overview of the Weekly Team Snapshot Doc	● Review the DS488 Syllabus ● Review the Design System Toolkit ● Review the Weekly Snapshot Doc

Week 2 01/23/24 01/25/24	Project Introductions • Joint 488/519 working session • Pitch Day for joint DS488/DS519 projects. Review Project Briefs • Pitch Day for new DS488-only projects. Review Project Briefs • Form Design Teams	• Meet with new student UX team in person • UX Team meeting with project managers in person • Complete the team agreement template and refer to this guidance doc.
Week 3 01/30/24 02/01/24	User Research • Problem definition • Design benchmarking (Competitive analysis) • Review Project Description with Client. • Q&A and confirmation of business goals & requirements • The initial project plan • Ethnography • Ethics in research • User research methods • Who to interview • Constructing good research questions	Social Inquiry 1: • Client check-in #1*(TBD)* • Schedule team client visit • Project requirements • Problem statement • Project plan • Competitive product benchmarking • Research plan • Weekly Snapshot Doc 01
Week 4 02/06/24 02/08/24	User Interview workshop • Practice, then conduct interviews and/or focus groups as appropriate • Joint working session with DS519 team	Social Inquiry 2: • User interviews *(gathering raw data)* • Review Maintenance project research/background materials • Maintenance project plan • Weekly Snapshot Doc 02
Week 5 02/13/24 02/15/24	Characterizing the opportunity • Identifying the UX opportunity • Empathy map • Understanding technical requirements and constraints • Client validation of UX Priorities • Team working session	• Client check-in #2 • Opportunity statement • Client Priorities Validation doc • Requirements • User scenarios • Empathy Map • Weekly Snapshot Doc 03

Week 6 02/20/24 02/22/24	User modeling • Qualitative methods • Personas • Journey maps • User stories • Joint working session with DS519 team	Social Inquiry 3: Analyzing the data gathered to inform: • User personas • User journey Map • User stories • Present & collaborate on UX plan for Maintenance Project • Weekly Snapshot Doc 04
Week 7 02/27/24 02/29/24	From requirements to design to development • User flows • Wireframing • Visualizing solutions • The visual design framework (Design systems & Brand Guides) • Team working session: Peer review & critique of Personas, Journey Maps and User Stories	• User flows • Initial low-fidelity wireframes • Visual style guide • Weekly Snapshot Doc 05
Week 8 03/05/24 03/07/24	Wireframing workshop • Peer review of initial wireframes • Iterate on initial concepts • Accessibility overview • Joint working session with DS519 team • Agile/Scrum process overview • Discuss collaboration and hand-offs between UXD and Development	• Client check-in #3 • Hi-fidelity wireframes • Weekly Snapshot Doc 06
03/12/24 03/14/24	Spring Break – No class	• No assignments due
Week 9 03/19/24 03/21/24	Design prototyping • Peer review of High-Fidelity wireframes • High Fidelity UX prototyping • Joint working session with DS519 team	• Interactive prototypes • Weekly Snapshot Doc 07 • TBD based on Maintenance Project UX scope & parameters
Week 10 03/26/24 03/28/24	Usability testing and design validation • What is a usability test • Types of testing • The usability test protocol • Team working session:Peer review of clickable prototype for testing	• Usability test plan • Weekly Snapshot Doc 08

Week 11 04/02/24 04/04/24	Usability testing workshop ● Practice for and conduct multiple usability tests (with target audiences (personas) identified in week 6 ● Joint working session with DS519 team	● Completed usability tests and report of findings ● Weekly Snapshot Doc 9 ● TBD based on Maintenance Project UX scope & parameters
Week 12 04/09/24 04/11/24	● Iteration and refinement of final presentation materials – with prototype demo and PPT presentation for the client and Poster for SPARK! Demo Day ● Team working session: Peer review of draft final clickable prototype(s), PPT deck	● Updated interactive prototype based on testing insights ● Practice run of client presentation ● Draft of Demo Day team poster ● Weekly Snapshot Doc 10
Week 13 04/16/24 04/18/24	● Team iteration and refinement ● Joint working session with DS519 team	● Weekly Snapshot Doc 11 ● TBD based on Maintenance Project UX scope & parameters
Week 13 04/23/24 04/25/24	● Iteration and refinement ● Team working session: Dry run/peer review of final presentations	● Weekly Snapshot Doc 12 ● Refine final presentations ● Complete Project Posters for SPARK! Demo Day ● Assemble Project Wrap-Up packages
Week 14 04/30/24	● Last Day of class ● Present final clickable prototypes and PPT overview decks for New and Maintenance projects ● DS519 Team invited to attend	● Completed client-ready presentation (PPT & Prototype) ● Completed Project Wrap-Up packages ● Completed Demo Day Poster ● Peer assessment questionnaire ● Weekly Snapshot Doc 13 *(MUST include links to ALL project deliverables for both New and Maintenance projects for grading.)*
00/00/24	Spark! Demo Day?	● End

Class and University Policies

Attendance & Absences

Due to the sequential nature of the project-based learning experience and the goal of completing the product by the end of the semester, attendance is required, including for all clients, if relevant, and weekly peer review sessions. If you must miss class for any reason, please email the instructors ahead of time.

Assignment Completion & Late Work

Assignments are due the day before class at 11:59pm and may be submitted up to 24 hours late with a 5% late penalty for each day the assignment is late.

Religious Holidays & Mental Health

We understand that our student community is diverse and affirm the University's Policy on Religious Observance. Please communicate in advance with faculty if you have a religious obligation that may impact attendance or meeting deadlines. Additionally, we recognize that life is stressful and want to support your mental health. Students should feel supported by faculty to manage their personal mental health.

Borrowing Code and Academic Conduct

Software engineering is an inherently collaborative endeavor. In most cases, you will find open-source design systems on the internet that you might want to use in your own projects. While this is permitted, you *must* cite your sources appropriately. You are also responsible for ensuring that you have the original author's permission to use their work. The Open-Source Initiative maintains an excellent page on the different types of software licenses and what you can and cannot do with them. Using code you have borrowed from the internet without permission and/or attribution is an instance of plagiarism, which is a violation of the Academic Code of Conduct. If you are in doubt about whether something might be construed as plagiarism, please check with course staff and in general—err on the side of caution.

Disability Accommodations

Accommodations for Students with Documented Disabilities: 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 or access@bu.edu to coordinate any reasonable accommodation requests. ODS is located at 25 Buick Street on the 3rd floor. For more information, please see http://www.bu.edu/disability