

# INF 385T UX Hardware Design in the Corporate World

Spring 2025

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**CLASS MEETS:** Mondays, 6:00 – 9:00PM in UTA 1.208

**Instructor:** Dr. Brad Lawrence

Office: UTA 5.470

Pronouns: he/him/his

Office hours: by appointment

Email: [bradley.lawrence@austin.utexas.edu](mailto:bradley.lawrence@austin.utexas.edu)

Phone: TBD

## Course Description

### UNIVERSITY CATALOG COURSE DESCRIPTION

The emphasis of this course will focus on how to be successful in a UX career in a corporate setting, focusing on hardware product design. Students will become familiar with product development phase gates leading up to a product's launch, and what UX methodologies might be most useful to employ at each phase. In order to build cross-functional empathy, we will explore the roles of the extended product team players (e.g. Architecture, Marketing, Engineering, Program Management, Product Management, Industrial Design, Interaction Design, etc.) and discuss when to engage with them and how. We will also explore how to align design recommendations with a company's financial goals by touching on how to read a company's quarterly report, prioritizing UX requirements through a fiscally responsible lens, and business case development.

### LEARNING OUTCOMES

My goal for this course is that students come away with skills that will equip them with awareness of each corporate function's lingo ("talk the talk") and modus operandi ("walk the walk"), such that they can successfully ensure the adoption of their UX designs and recommendations. Implementing what we learn will also forge strong rapport and relationships with other product team counterparts. This rapport will pay off future dividends and help differentiate ourselves from others in our discipline, building a strong foundation from which to launch a fruitful UX career. Along our course journey, you will be able to:

1. Understand common phase gates employed by companies that design, produce, and sell hardware products and the various UX and cross-functional team inputs and outputs to each phase
2. Understand the differences between hardware UX design processes and methodologies and software UX design and methodologies (such as Agile implementation)

3. Conduct detailed heuristic evaluations of hardware products
4. Understand a product's Total Addressable Market (TAM), Serviceable Addressable Market (SAM), and Serviceable Obtainable Market (SOM)
5. Dissect a product Bill of Materials (BOM) and understand the cost impacts associated with hardware product design
6. Construct a basic business case with Revenue, Units and Margin (RUM) projections
7. Conceive of research methods to optimize corporate budgets and maximize UX design return on investment (ROI)
8. Compose an executive presentation to "sell" your product design recommendations

## How Will You Learn?

### STATEMENT OF LEARNING SUCCESS

Your success in this class is important to me. We all learn differently, and everyone struggles sometimes. You are not, ever, the only one having difficulty! If there are aspects of this course that prevent you from learning or exclude you, please let me know as soon as possible. Together we will develop strategies to meet both your needs and the requirements of the course. I also encourage you to reach out to the student resources available through UT and I am happy to connect you with a person or Center if you would like.

### TEACHING MODALITY INFORMATION

This course will be offered in-person and requires in-person attendance. No alternatives to in-person attendance, other than normal emergency accommodations, will be offered.

### COMMUNICATION

The course Canvas site can be found at [utexas.instructure.com](http://utexas.instructure.com). Please email me through Canvas. You are responsible for ensuring that the primary email address you have recorded with the university is the one you will check for course communications because that is the email address that Canvas uses.

### ASKING FOR HELP

I will be accessible via email outside of class time for assistance or to answer questions. Additionally, office hours can be made by appointment and will be conducted online.

### DISABILITY & ACCESS (D&A)

The university is committed to creating an accessible and inclusive learning environment consistent with university policy and federal and state law. Please let me know if you experience any barriers to learning so I can work with you to ensure you have equal opportunity to participate fully in this course. If you are a student with a disability, or think you may have a disability, and need accommodations please contact Disability & Access (D&A). Please refer to the D&A website for more information: <http://diversity.utexas.edu/disability/>. If you are

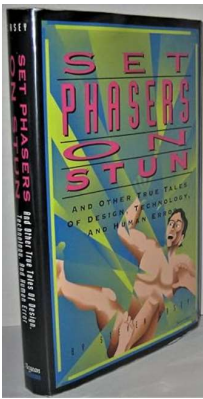
already registered with D&A, please deliver your Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodations and needs in this course.

## Course Requirements and Grading

### REQUIRED MATERIALS

Textbook: *Set Phasers on Stun: And Other True Tales of Design, Technology, and Human Error*. Subsequent Edition. Author: S.M. Casey.

Amazon link: <https://www.amazon.com/Set-Phasers-Stun-Design-Technology/dp/0963617885>



### CLASS LECTURE SLIDES AND HANDOUTS

For your reference, the PDF versions of class lecture slides will be posted on Canvas. You have my permission to print a copy for your personal use. Assignment and project descriptions are also posted on Canvas. The files posted on Canvas will be either linked to Canvas Syllabus/Calendar or available directly in the Files section.

### CLASSROOM EXPECTATIONS

#### **Class attendance**

You will not be graded directly on attendance. You are adults in a graduate-level course and are expected to be present for all course-related activities. Beyond the occasional need to be absent from class for a good reason, please consider that much of the learning for the course occurs in class. You cannot participate in this learning if you are not present.

**Excused Absence:** The only absences that will be considered excused are for religious holy days or extenuating circumstances due to an emergency. If you plan to miss class due to observance of a religious holy day, please let me know at least two weeks in advance. For religious holy days that fall within the first two weeks of the semester, the notice should be given on the first day of the semester. You will not be penalized for this absence,

although you will still be responsible for any work you will miss on that day if applicable. Check with me for details or arrangements.

If you have to be absent, use your resources wisely. Ask your other classmates to get a run-down and notes on any lessons you miss. If you find there are topics that we covered while you were gone that raise questions, you may come by during office hours or schedule a meeting to discuss. Email specific questions you have in advance so that we can make the most of our time. “What did I miss?” is not specific enough.

**Class participation**

Class participation is a must for this course and includes the presentation of assigned materials in the classroom, maintaining an active role in in-class activities as well as active participation in classroom discussions.

**Behavior expectations**

We are all professionals and I expect us all to behave as such. Please refrain from talking while I or other students are lecturing/presenting, unless it is during an active discussion or part of a Q&A. And stay off computers and mobile devices unless the usage is directly related to the course topic at hand or taking notes. To summarize, just like at the movie theater, don't talk or text.

**ASSIGNMENTS**

Below is a list of assignments and their grade percentages for this course. If any of these projects or grades change, I will notify you of those changes before we continue with the project. Grades will be computed on a 100 point scale.

Assignments	Points Possible	Percent of Total Grade
Weekly reading Q&A and discussion	50	10%
Assignment 1 (Detailed heuristic evaluation of a selected hardware product)	100	20%
Assignment 2 (Product usability test plan and behavioral specification)	100	20%
Assignment 3 (Fiscally responsible usability and UX feature/recommendation prioritization)	100	20%
Assignment 4 (Final Presentation: deliver a final executive presentation "selling" your product design recommendations to the "corporate VP"/instructor)	100	20%
Assignment presentations	50	10%

I reserve the right to add points to a student's grade for active class participation or contributions in related forums.

### **TOTAL: 500 points = 100% Grade Scale**

90% - 100% = A (90-93: A-)

80% - 89% = B (87-89: B+ | 80-83: B-)

70% - 79% = C (77-79: C+ | 70-73: C-)

60% - 69% = D (not passing)

0% - 59% = F (not passing)

### **WRITTEN ASSIGNMENTS**

You must prepare your written assignments using a presentation application like Powerpoint and submit it by uploading to Canvas by the due date/time. Please always use appropriate three- or four-letter file extensions in submitted filename (e.g., .pptx for Word files, .pdf for Adobe portable document format). Assignments usually may not be submitted via email to either the professor or the TA. All documents that you are submitting should include on the front page of your submission your name (spelled in the same way as in the course roster), course number/name, instructor's name, semester and the date of submission.

### **READING ASSIGNMENTS**

You are responsible for keeping up with readings in the book per the schedule given in the course schedule/calendar. All assigned readings are to be done before a class meeting. You are required to post at least one discussion question relevant to the assigned weekly reading on the designated Canvas Discussions area and respond to at least one question posted by another student. Your questions should be in depth (and not too short) to demonstrate that you read and did not skim the assigned material. Any student, TA or an instructor may post responses to online questions. The deadline for posting questions is Thursday before noon. The deadline for answering a question is Friday before 6PM. This allows time to respond to questions and prepare for class discussion Monday evening, where you should be prepared to discuss your questions.

### **IN-CLASS PRESENTATIONS**

Weeks 3/4, 9/10, and 13/14, students will present assignment summaries: heuristic analyses, product behavioral specifications (and methods used to derive the specification), and proposed product cost reductions as we progress through the course. These will be based off of your written assignments, of which you will have received feedback from the instructor prior to the presentation. Assume presentations will be ~5-10 minutes in length, and nothing too formal (goal is to learn the course content, but also have fun).

Final presentations will consist of students presenting the culmination of their work (Assignment 4) in the framework of a hypothetical presentation to company executives. They will provide persuasive data and rationale to obtain executive approval of their hardware design recommendations being adopted into the shipping product's design.

#### LATE WORK AND MAKING UP MISSED WORK

All written assignments must be turned in at the beginning of class on the due date. Individual student presentations must be prepared and delivered on the date assigned specifically to each student. You should think of all due dates for assignments as firm. The tight schedule of deliverables throughout the whole semester makes it nearly impossible to extend due dates. Any assignment that you do not hand in on time may be penalized in grading. If you are not able to complete an assignment by the due date, it would be best for you to hand in as much of it as you have done. It will help if you notify us about special circumstances that will adversely affect completion of an assignment.

#### ABSENCES

While you will not be penalized for absences, I do reserve right to add points to a student's grade for active class participation and absences will negate any opportunity receive additional participation points.

#### EQUITABLE ACCOMMODATION

Upon my discretion, a student may be able to make up one written assignment's grade, in a timely manner immediately after the assignment has been graded.

## Course Outline

The class will meet once a week for 3 hours. Keep connected via Canvas for updates on meeting locations. The first course will be pre-recorded online via Zoom, and others will be held in the classroom.

All instructions, assignments, readings, rubrics and essential information will be on the Canvas website at [utexas.instructure.com](https://utexas.instructure.com). Check Canvas regularly. **Changes** to the schedule may be made at my discretion if circumstances require. I will announce any such changes in class and will also communicate them via a Canvas announcement. It is your responsibility to note these changes when announced, and I will do my best to ensure that you are notified of changes with as much advance notice as possible.

Week	Date	Day	Class Topic	Reading Assignments (to be completed prior to class)	Assignments Due
1	1/13	M	Introductions, objectives, and syllabus walkthrough.		
N/A	1/20	M	NO CLASS – MLK, Jr. Day		
2	1/27	M	<p>We will discuss:</p> <ul style="list-style-type: none"> <li>• Hardware product design development process versus software Agile design process.</li> <li>• Hardware heuristic design analysis and next steps.</li> </ul> <p>Students will collect physical hardware product to serve as primary course material for study, evaluation, and hypothetical development.</p>	SPOS: pp. 9-39	
3	2/3	M	Product Heuristic Evaluation assignment presentations and peer discussion		A1: Product Heuristic Evaluation 5-10 minute student presentations (student order randomized)
4	2/10	M	Product Heuristic Evaluation assignment presentations and peer discussion		5-10 minute student presentations (student order randomized)
5	2/17		<p>Topics of discussion:</p> <ul style="list-style-type: none"> <li>• Detailed hardware design corporate phase gates (Concept, Feasibility, Plan, Develop, Launch &amp; Sustain Exits)</li> <li>• Cross-functional empathy</li> </ul>	SPOS: pp. 40-88	
6	2/24	M	Product design during favorable economic conditions when the company is outperforming financially (the “upswing of the pendulum”) will be examined.	SPOS: pp. 89-132	
7	3/3	M	Concepts of brand perception, product perceived quality will be introduced. Methods for marrying up usability data and mechanical data will be discussed culminating in Behavioral Specifications development.	SPOS: pp. 133-160	
8	3/10	M	Total Addressable Market (TAM), Serviceable Addressable Market	SPOS: pp. 161-199	

Week	Date	Day	Class Topic	Reading Assignments (to be completed prior to class)	Assignments Due
			(SAM), & Serviceable Obtainable Market (SOM). Business case/ROI.		
N/A	3/17	M	NO CLASS – SPRING BREAK		
9	3/24	M	Product Behavioral Specifications assignment presentations and peer discussion		A2: Product Behavioral Specifications (and UX Methods Deriving Specs.)  5-10 minute student presentations (student order randomized)
10	3/31	M	Product Behavioral Specifications assignment presentations and peer discussion.		5-10 minute student presentations (student order randomized)
11	4/7	M	Product design during economic downturns when the company is investigating cost reductions (the “downswing of the pendulum”) will be investigated.  Fiscally-responsible UX in practice will be discussed with examples of UX design priorities and tradeoffs and the employment of non-traditional UX methodologies to achieve corporate financial goals.  Presenting to executives. Answers First methodology.	SPOS: pp. 200-219	
12	4/14	M	Q & A on any outstanding questions related to the Fiscally Responsible UX assignment  Detailed explanation on how to construct the Final Presentation.	SPOS: pp. 220-249	A3: Fiscally Responsible Usability and UX Feature/Recommendation Prioritization (due 4/14 if you want feedback prior to Final Presentation)
13	4/21	M	Final Executive Presentations		A4: Final Executive Presentation (due prior to class, student order randomized)
14	4/28	M	Final Executive Presentations		A4: Final Executive Presentation (due prior to class, student order randomized)

**SPOS: Set Phasers on Stun**



## Course Policies and Disclosures

### HONOR CODE

The University of Texas at Austin strives to create a dynamic and engaging community of teaching and learning where students feel intellectually challenged; build knowledge and skills; and develop critical thinking, creativity, and intellectual curiosity. As a part of this community, it is important to engage in assignments, exams, and other work for your classes with openness, integrity, and a willingness to make mistakes and learn from them. The UT Austin honor code champions these principles:

I pledge, as a member of the University of Texas community, to do my work honestly, respectfully, and through the intentional pursuit of learning and scholarship.

The honor code affirmation includes three additional principles that elaborate on the core theme:

- I pledge to be honest about what I create and to acknowledge what I use that belongs to others.
- I pledge to value the process of learning in addition to the outcome, while celebrating and learning from mistakes.
- This code encompasses all of the academic and scholarly endeavors of the university community.

The honor code is more than a set of rules, it reflects the values that are foundational to your academic community. By affirming and embracing the honor code, you are both upholding the integrity of your work and contributing to a campus culture of trust and respect.

### ACADEMIC INTEGRITY EXPECTATIONS

Students who violate University rules on academic misconduct are subject to the student conduct process. A student found responsible for academic misconduct may be assigned both a status sanction and a grade impact for the course. The grade impact could range from a zero on the assignment in question up to a failing grade in the course. A status sanction can range from a written warning, probation, deferred suspension and/or dismissal from the University. To learn more about academic integrity standards, tips for avoiding a potential academic misconduct violation, and the overall conduct process, please visit the Student Conduct and Academic Integrity website at: <http://deanofstudents.utexas.edu/conduct>.

### CONFIDENTIALITY OF CLASS RECORDINGS

Class recordings are reserved only for students in this class for educational purposes and are protected under FERPA. The recordings should not be shared outside the class in any form. Violation of this restriction by a student could lead to Student Misconduct proceedings.

### GETTING HELP WITH TECHNOLOGY

Students needing help with technology in this course should contact the [ITS Service Desk](#).

## CONTENT WARNING

Our classroom provides an open space for the critical and orderly exchange of ideas through discussion. Some readings and other content in this course will include topics and comments that some students may find offensive and/or traumatizing. I'll aim to forewarn students about potentially disturbing content and I ask all students to help to create an atmosphere of mutual respect and sensitivity.

## SHARING OF COURSE MATERIALS IS PROHIBITED

No materials used in this class, including, but not limited to, lecture hand-outs, videos, assessments (quizzes, exams, papers, projects, homework assignments), in-class materials, review sheets, and additional problem sets, may be shared online or with anyone outside of the class without explicit, my written permission. Unauthorized sharing of materials may facilitate cheating. The University is aware of the sites used for sharing materials, and any materials found online that are associated with you, or any suspected unauthorized sharing of materials, will be reported to [Student Conduct and Academic Integrity](#) in the Office of the Dean of Students. These reports can result in initiation of the student conduct process and include charge(s) for academic misconduct, potentially resulting in sanctions, including a grade impact.

## ARTIFICIAL INTELLIGENCE

The creation of artificial intelligence tools for widespread use is an exciting innovation. These tools have both appropriate and inappropriate uses in classwork. The use of artificial intelligence tools (such as ChatGPT) in this class shall be permitted on a limited basis. You will be informed as to the assignments for which AI may be utilized. You are also welcome to seek my prior-approval to use AI writing tools on any assignment. In either instance, AI writing tools should be used with caution and proper citation, as the use of AI should be properly attributed. Using AI writing tools without my permission or authorization, or failing to properly cite AI even where permitted, shall constitute a violation of UT Austin's Institutional Rules on academic integrity.

If you are considering the use of AI writing tools but are unsure if you are allowed or the extent to which they may be utilized appropriately, please ask.

## RELIGIOUS HOLY DAYS

By [UT Austin policy](#), you must notify me of your pending absence for a religious holy day as far in advance as possible of the date of observance. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

## NAMES AND PRONOUNS

Class rosters are provided to the instructor with the student's legal name, unless they have added a chosen name with the registrar's office. If you have not yet done so, I will gladly honor your request to address you with the name and pronouns that you prefer for me to use for you. It is helpful to advise me of any changes or needs

regarding your name and pronouns early in the semester so that I may make appropriate updates to my records and be informed about how to support you in this class.

- For instructions on how to add your pronouns to Canvas, visit [this site](#).
- If you would like to update your chosen name with the registrar's office, you can do so [here](#), and reference [this guide](#).
- For additional guidelines prepared by the Gender and Sexuality Center for changing your name on various campus systems, see the Resources page under UT Resources [here](#).

#### LAND ACKNOWLEDGMENT

I would like to acknowledge that we are meeting on the Indigenous lands of Turtle Island, the ancestral name for what now is called North America. Moreover, I would like to acknowledge the Alabama-Coushatta, Caddo, Carrizo/Comecrudo, Coahuiltecan, Comanche, Kickapoo, Lipan Apache, Tonkawa and Ysleta Del Sur Pueblo, and all the American Indian and Indigenous Peoples and communities who have been or have become a part of these lands and territories in Texas.

#### COUNSELING AND MENTAL HEALTH CENTER (CMHC)

Students who are struggling for any reason and who believe that it might impact their performance in the course are urged to reach out to Bryce Moffett if they feel comfortable. This will allow her to provide any resources or accommodations that she can. If immediate mental health assistance is needed, call the Counseling and Mental Health Center (CMHC) at 512-471-3515 or you may also contact Bryce Moffett, LCSW (iSchool CARE counselor) at 512-232-4449. Bryce's office is located in FAC18S and she holds drop in Office Hours on Wednesday from 2-3pm. For urgent mental health concerns, please contact the CMHC 24/7 Crisis Line at 512-471-2255.

## Important Safety Information

#### CARRYING OF HANDGUNS ON CAMPUS

Students in this class should be aware of the following university policies related to Texas' Open Carry Law:

- Students in this class who hold a license to carry are asked to [review the university policy regarding campus carry](#).
- Individuals who hold a license to carry are eligible to carry a concealed handgun on campus, including in most outdoor areas, buildings and spaces that are accessible to the public, and in classrooms.
- It is the responsibility of concealed-carry license holders to carry their handguns on or about their person at all times while on campus. Open carry is NOT permitted, meaning that a license holder may not carry a partially or wholly visible handgun on campus premises or on any university driveway, street, sidewalk or walkway, parking lot, parking garage, or other parking area.

- Per my right, I prohibit carrying of handguns in my personal office. Note that this information will also be conveyed to all students verbally during the first week of class. This written notice is intended to reinforce the verbal notification, and is not a “legally effective” means of notification in its own right.

## TITLE IX DISCLOSURE

Beginning January 1, 2020, Texas Education Code, Section 51.252 (formerly known as Senate Bill 212) requires all employees of Texas universities, including faculty, to report to the [Title IX Office](#) any information regarding incidents of sexual harassment, sexual assault, dating violence, or stalking that is disclosed to them. Texas law requires that all employees who witness or receive information about incidents of this type (including, but not limited to, written forms, applications, one-on-one conversations, class assignments, class discussions, or third-party reports) must report it to the Title IX Coordinator. Before talking with me, or with any faculty or staff member about a Title IX-related incident, please remember that I will be required to report this information.

Although graduate teaching and research assistants are not subject to Texas Education Code, Section 51.252, they are [mandatory reporters](#) under federal Title IX regulations and are required to report [a wide range of behaviors we refer to as sexual misconduct](#), including the types of misconduct covered under Texas Education Code, Section 51.252. Title IX of the Education Amendments of 1972 is a federal civil rights law that prohibits discrimination on the basis of sex – including pregnancy and parental status – in educational programs and activities. The Title IX Office has developed supportive ways and compiled campus resources to support all impacted by a Title IX matter.

If you would like to speak with a case manager, who can provide support, resources, or academic accommodations, in the Title IX Office, please email: [supportandresources@austin.utexas.edu](mailto:supportandresources@austin.utexas.edu). Case managers can also provide support, resources, and accommodations for pregnant, nursing, and parenting students.

For more information about reporting options and resources, please visit: <https://titleix.utexas.edu>, contact the Title IX Office via email at: [titleix@austin.utexas.edu](mailto:titleix@austin.utexas.edu), or call 512-471-0419.

## CAMPUS SAFETY

The following are recommendations regarding emergency evacuation from the [Office of Emergency Management](#), 512-232-2114:

- Students should sign up for Campus Emergency Text Alerts at the page linked above.
- Occupants of buildings on The University of Texas at Austin campus must evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.
- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.
- Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.

- In the event of an evacuation, follow the instruction of faculty or class instructors. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.
- For more information, please visit the [Office of Emergency Management](#).

## University Resources

For a list of university resources that may be helpful to you as you engage with and navigate your courses and the university, see the [University Resources Students Canvas page](#).