

ADES 3503 – Planning and Developing Interactive Systems

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Course Description

This three-semester-credit-hour undergraduate course will transpire over a 15-week span of time and is designed to build upon knowledge students enrolled in it will have constructed during their prior enrollments in the array of courses that precede it in the BFA in Communication Design: User Experience Design Track (BFA CDES: UXDT) degree plan sequence (specifically, these courses are ADES 1500, ADES 1513, ADES 1543, ADES 2513, ADES 2518, and ADES 2523; please note that ADES 3503 is usually taken concurrently with ADES 3513). This course is designed to be taken during the first semester of the third year of enrollment in the curriculum that facilitates the BFA CDES: UXDT degree plan.

The primary goals, expressed as student learning outcomes, of the learning experiences that constitute ADES 3503 *Planning and Developing Interactive Systems* are to allow each individual BFA CDES: UXDT candidate enrolled in it to:

1. develop the knowledge, understandings and sensibilities necessary to engage in both the creative and technical processes necessary to inform and guide the primary aspects of planning and developing interactive systems¹ from a human-centered perspective, which are briefly accounted for as follows: information architecture, usability, design, and (to a limited degree in the context of this course) software engineering;²
2. cultivate the abilities and sensibilities necessary to gather, analyze, document and report out about the needs and wants of a specific set of users/potential users of a particular interactive system designed to facilitate a particular activity or set of activities (this interactive system may or may not yet exist...) as a means to ensure that these needs and wants guide the development and design of a) a new version of an extant, interactive system, or b) the development and formulation of a completely original interactive system, intended to help these users satisfy particular goals and complete given tasks efficiently and effectively;
3. evolve the abilities he/she has developed in his/her enrollment in the BFA CDES: UXDT thus far regarding key aspects of interactive design as they could or should be applied to given interactive systems challenges, such as "*learnability*" (i.e., how easy is a given system to learn to use?), "*memorability*" (i.e., how easy is it for a specific group of users to remember how to use once they've learned it initially?), "*consistency*" (i.e., to what extent are similar user tasks designed to be replicated or conducted within a given system in similar ways?), "*guidability*" (i.e., to what extent does a given system make "what should be done next" clear to a specific user group?), "*constrainability*" (i.e., how should the system be designed to limit the amount of mistakes a given user group makes during their initial and subsequent engagement with it?), "*feedback re: usability*" (i.e., how should the system be designed to provide a given user group real-time feedback in ways that effectively communicate the status of the system, what has transpired during a recent use cycle, what is transpiring now, and will or is likely to transpire in the future?);

1. In the context of this course, an *interactive system* is characterized by the meaningful amounts and significant types of interactions that occur between a) particular types of people and some form(s) of computational systems or computing environments that allow the people to complete a task or fulfill a goal, like an app that facilitates parking for students on the UNT campus or the computerized system students use to register for their classes each semester, or b) particular types of people and a product or an environment that is systemically organized to facilitate a particular function or set of functions on behalf of the people who use them, like a snack-vending machine or the security screening areas that operate at all U.S. airports.

2. It's useful to think about how someone who is challenged to plan and develop an interactive system must fulfill a role that is akin to a film director. Like a film director who must cultivate knowledge and understanding about a diverse but interrelated group of subjects like script-writing, film editing, cinematography and acting that all contribute to the development of a film, an interactive systems planner and developer must cultivate knowledge of and about several interrelated areas of designing that combine to affect the types of experiences a given group of users will have as they attempt to operate a specific interactive system.

4. develop the abilities necessary to determine and implement a style of interaction on a per-interactive system design basis that effectively facilitates dialogic interactivity between various aspects of the system and a given user group;
5. learn to work individually and in team structures to effectively plan, implement and evaluate "waterfall" models³ of interactive systems development, and to understand its limitations and deficiencies, and learn to work individually and in team structures to effectively plan, implement and evaluate scenario-based interactive systems design methods⁴ and iterative, user-centered systems design methods;⁵
6. learn to work individually and in team structures to effectively engage in task analysis and modeling as means to inform the prototyping and design of interactive systems;
7. learn to work individually and in team structures to assess the design decision-making that has informed and guided the evolution and implementation of the interactive systems they have been challenged to design over the course of the semester.

Course Content

This course will be comprised of three sequential, interactive systems design projects that will be assigned to teams of three to four (preferably three) ADES 3503 students each. Each of these projects will challenge the student team assigned to address it to develop, design, implement and test at least a portion of a viable, user-centered, interactive system that will facilitate a given user group's ability to facilitate a specific set of tasks or achieve a specific set of goals. Each of these projects should, when completed, yield an interactive system that functions well enough to allow members of the given user group to operate it in at least three relevant scenarios of use so that its efficacy and appropriateness can be tested and assessed.

Each BFA CDES: UXDT student enrolled in ADES 3503 "Planning and Developing Interactive Systems" will be challenged—on a per-project basis—to construct and discover new knowledge and understandings as he/she engages in various "problem identification and framing" exercises as the semester progresses (the knowledge and understandings constructed from each of these exercises will guide the development of each assigned interactive systems design project). Additionally, students teams will necessarily engage in iterative design processes, prototype(s) development, and some degree of testing and implementation on a per project basis as required to successfully realize the completion of their respective, assigned interactive systems projects.

A select array of technical skills that will help students facilitate particular aspects of the development and design of their data visualization and infographic-based artifacts and systems will be addressed or demonstrated by the instructor on a limited basis as the course schedule progresses, but the majority of class time will be spent engaging in the critical analysis of each student team's evolving work (again, on a per-project basis). It is expected that each student team will augment the development of each of his/her course projects as necessary with their own, self-guided construction of knowledge regarding the operation(s) of various types of software, programming and other aspects involving individual project execution and delivery.

Prerequisites (for students enrolled in the BFA in Communication Design, User Experience Design Track):

ADES 1500, 1543, 1513, 2513, 2518, and 2523; a course grade of "C" or better MUST have been earned in each of these courses to enroll in ADES 3513.

3. The advantages of the *waterfall model* are that each waterfall "stage" produces a set of specifications that can be formulated to affect the next stage, thus compartmentalizing the work into clearly defined "chunks," or "phases." Some feedback is gleaned from each stage, and while this can be used to affect changes to previous stage, this tends to impede the whole process. The waterfall model is predicated on the idea that that design decisions that occur in one stage should affect the NEXT stage, SO— it is very problematic to change project requirements and parameters as the project develops, and it is difficult to consider alternate designs or design work. Additionally, it should be noted that any changes in design ideas that occur in latter stages can be difficult to implement IF they require significant recoding or reprogramming of portions of the system that were already thought to have been completed.

4. Scenario-based methods are based on the examination of scenarios, or stories, that articulate how a given aspect of a design might be used, the problems it might create, and how these might be resolved. These can be as simple or complex as a given interactive systems design challenge calls for them to be.

5. Iterative, user-centered design methods allows for numerous opportunities to identify and include user needs, wants and requirements into a cyclically occurring series of project development phases that transpire during the development, testing and analysis of multiple prototypes.

Prerequisites (for students enrolled in the BFA in Communication Design, Graphic Design Track):

Permission of the instructor, and proof-of-passage of ADES 1500, 1510, 2510, 2515 and 2520 with a course grade of "C" or better.

Required Texts

Allanwood, G. & Beare, P. (2019). *User Experience Design: A Practical Introduction (Second Edition)*. London, UK: Bloomsbury Visual Arts.

Steane, J. & Yee, J. (2012). *Interaction Design: from Concept to Completion*. London, UK: Bloomsbury Visual Arts.

Recommended Texts

Spencer. (2010). *A Practical Guide to Information Architecture*. Penarth, UK: Five Simple Steps.

Course Objectives

Through the completion of course assignments, *students will acquire competency in the following areas:*

- the construction of knowledge that informs how individuals and groups think and make choices as they engage in everyday interactions in specific situations or "scenarios of use" involving their operations of interactive systems
- a set of core skills and a knowledge base necessary to effectively plan and guide interactive systems project management processes
- processes for communicating effectively with the people who constitute interactive systems project development teams
- processes for communicating effectively with the people who constitute interactive systems project development user groups
- the ability to develop strategies for ensuring that a well-understood-by-all-team-members-and-stakeholders process is formulated and effectively followed and adjusted over time as necessary to meet expectations, deliver on promises, and value diverse inputs and critical feedback as the capstone-to-pitch design process evolves

Through the completion of course assignments, *students will develop competency in the following areas:*

- the ability to create a product/app/site-specific content inventory⁶ that then informs the creation of a functional inventory⁷ that guides the development and design of an interactive system
- the ability to effectively and efficiently document information-cum-knowledge about user needs, so that these can be used to positively affect system needs
- the ability to cultivate knowledge and understandings gleaned from the effective utilization of personas within specific scenarios of use as they plan and develop interactive systems
- the ability to cultivate knowledge and understandings gleaned from the effective utilization of journey maps⁸ to affect their design decision-making as they plan and develop interactive systems
- the ability to cultivate and utilize knowledge that effectively answers key developmental questions, such as "what do clients and stakeholders need and desire, and why?," "what aspects of our project will be most challenging to the individuals and groups involved?," and "how can the best work be done efficiently?"
- The ability to identify and critically analyze primary and secondary user tasks and goals re: the planning and development of interactive systems

6. A **content inventory** typically lists all the physical content that is present on an interactive product, app or site. A content inventory also typically appears as a spreadsheet, listing out every page on a website, or screen on a specific product or app. Each page or screen gets its own line—and sometimes every content element does as well, including headers, body text, articles, buttons, search, navigation bars, and interactive elements. Each type of content may then get additional notes including metadata, a "usefulness" score, alternative terms for the item, etc.

7. Once a content inventory has been completed, the information that has been organized and categorized into it is often used to create a **functional inventory**, which, like the content inventory that informs its creation, is also depicted within a spreadsheet. A functional inventory utilizes the organizational structure inherent in a spreadsheet to account for and briefly describe all of the functions associated with each interactive component of a given website, interactive product or app.

8. A **journey map** is a visualization of the process that a specific persona undertakes within a given interactive system to accomplish a particular goal

Through the completion of course assignments, *students will continue to develop competency in the following areas:*

- the abilities necessary to develop, design and imbue effective functionality within the so-called “global elements” that occur across an entire interactive system (i.e., that a user encounters on each screen or page or environment)
- the abilities to develop, design and effectively implement—as supported by data gleaned through usability testing with members of target user groups)—navigation elements and the patterns of use that guide their functionality across an entire interactive system
- the abilities to construct and cultivate knowledge of and about how to design and deploy informational hierarchies—comprised mostly of typographic elements, symbols, imagery and the considerate assertion of color—that aid and abet a given user group’s ability to discern and effectively act upon the information provided within a given interactive system
- the ability to use appropriate descriptive language and nomenclature regarding the processes that inform and guide the design of effective user experiences and interactive systems
- The abilities necessary to consistently and effectively initiate and sustain meaningful critical dialogue between themselves and their peers, their instructor(s), and potential collaborators and funders in ways that positively inform their design decision-making as a complex, interactive systems project evolves

Course Structure

This course is offered in a design studioloab format, and will meet for two, 170-minute class sessions per week. Course content and studioloab etiquette during critically dialectic exchanges between fellow-students and students and faculty are all consistent with the requirements of pursuing a career in professional User Experience and Interaction Design environments. Under the guidance of the instructor, each BFA CDES: UXDT student enrolled in ADES 3503 will spend specified amounts of time—between four and six weeks—engaged in developing and designing three assigned projects that must endeavor to aid and abet the efforts of a given user group as they attempt to fulfill a particular set of tasks or goals while using a specific interactive system. Students must be present for each class session that transpires over the course of the semester, and *actively participate* in the class discussions and critiques that will occur during these spans of time. Individual students on specific teams will be responsible for showing and being prepared to explicate and defend whatever project-based work the course schedule specifies for critical review and discussion on specific days. The CVAD Computing Labs at the CVAD Building Complex in Denton are available to ADES 3503 students to work on assigned course projects outside of scheduled class time.

Evaluation

Each of the three interaction design systems that will constitute the gradable content of ADES 3503 will be worth a specific number of total course points that will accumulate toward a given student’s final course grade. As each gradable project that will operate over the course of the semester schedule in ADES 3503 will be a team project, individual students’ grades will be calculated based on both their individual performances within a each team to which they are assigned, and on the performance of each team to which they were assigned as a whole. How effectively each student and student team is assessed to have addressed specific “per phase” project criteria will be recorded on an assessment document that each student and each student team will receive one to two weeks after the culmination of each of the three project schedules. A final interactive systems design project and final presentation of same, or “pitch,” must be completed by the final exam date and time for this course. *There is no final exam for this course, as the final project functions in lieu of this.* An outline of the project schedule and a depiction of how the weighted percentage that the grade earned for each project will affect the final course grade for an individual ADES 3513 student appears below.

Project 01 *Student teams will work to plan and develop what Don Norman describes as an “information appliance:” an interactive system that a given user group can use to address specific needs or complete particular jobs; examples of these could be home medical advisors, or a system that displays combinations of how real-time weather and traffic will affect a given user’s commute, or a system that monitors and categorizes the types of “electronically facilitated activities” a given child engages in on a daily basis* [08.27.19–10.01.19]

30%

Project 02	<p><i>Each student team will endeavor to plan and develop an interactive system that relies on gamification to inform and guide how the system operates to meet the needs of a particular user group that is challenged to learn a given array of topic-specific material (like how different types of scholarship and fellowship models and student loan programs work—or don't—for particular types of college students, or how and why different types of flora and fauna have come to occupy different types of geographic regions in Texas)</i></p> <p>[10.01.19–11.12.19]</p>	40%
Project 03	<p><i>Assigned student teams will work to identify and frame the context for a "problematic situation" that is occurring that is negatively affecting how a given user group interacts with a given system, or is being challenged to, as that user group attempts to complete a specific task or fulfill a particular goal or set of goals. Each team will then endeavor to plan, develop and design a type of interactive system, or at least three aspects of one, that improves the interactive experience on the part of the user group. This project could entail student teams developing systems that act on behalf of users or user groups as "agents" that make use of stores of data acquired from specific types of user activity. Agents such as these could be capable of undertaking simple actions such as managing and making appointments, or retrieving and sorting data files.</i></p> <p>[11.12.19–12.10.19]</p>	30%

Attendance Policy

Attendance is mandatory. Students must sign the attendance sheet or answer a roll call facilitated by the instructor during the first (5) minutes of class. No student may sign or answer for another. Every unexcused absence over three will result in a letter grade reduction of the final course grade beginning with the fourth unexcused absence. Each three instances of tardiness over an initial two of these will be counted as one absence. (A student is tardy if he/she arrives after the first 15 minutes of class have elapsed.) No make-up opportunities for a missed class session will be given to any student enrolled in this course *unless* that student presents the professor with a UNT-Approved Absence Verification form within 72 hours of the ending of the class session that was missed. Students are hereby notified that meeting with the Instructor of Record for this course during an office hours session does NOT make up/cannot be substituted for a class session that was missed. Missing five class sessions over the course of the semester for any reason(s), *even if some portion of these absences are excused*, will cause a student to flunk (i.e., earn a final course grade of "F") in ADES 3503.

Course Risk Factor

This class has been assigned a level 1 Risk Rating, which means that students are exposed to some minor hazards (most particularly, repeated computer usage), but are not likely to suffer bodily harm.

American Disabilities Act

The College of Visual Arts and Design is committed to full academic access for all qualified students, including those with disabilities. In keeping with this commitment and in order to facilitate equality of educational access, faculty members in the College will execute reasonable accommodations for qualified students with a disability, such as making appropriate adjustments to the classroom environment, as well as to the teaching, testing, or learning methodologies that are operated within the structure of the course, as long as actuating any of these adjustments does not fundamentally alter the content that must be delivered within the structure of the course.

If you have a disability, it is your responsibility to obtain verifying information from the Office of Disability Accommodation (ODA; <https://disability.unt.edu/>), and to inform the instructor of your need for an accommodation. Requests for accommodation must be given to the instructor no later than 5 pm CST on the final day of the first week of classes for students registered with the ODA as of the beginning of the current semester. If you register with the ODA after the first week of classes, your accommodation requests will be considered after this deadline.

Grades assigned before an accommodation is provided will not be changed. Information about how to obtain academic accommodations can be found in UNT Policy 18.1.14, at <https://disability.unt.edu/>, and by visiting

the ODA in Sage Hall on the UNT Denton campus, room 167 (visit the UNT website for updated location information). You also may call the ODA at 940.565.4323.

Building Emergency Procedures

In case of emergency, an alarm will sound. If this occurs, please follow the building evacuation plans posted on each floor of your building and proceed to the nearest parking lot. In case of a tornado (campus sirens will sound), or other weather-related threat, please go to the nearest hallway or room on your floor *without exterior windows* and remain there until an all clear signal is sounded. Follow the instructions of your instructors and act accordingly.

Student Rights and Responsibilities

Each University of North Texas student is entitled to certain rights associated with higher education institutions. See www.unt.edu/csrr for further information.

Disclaimer

The instructor retains the right to change the course syllabus and schedule without notice.