University of North Florida - School of Computing
CAP 6100 - Interface Design and Implementation

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Course Information

Catalog Description

This course covers issues associated with the design, implementation, and evaluation of human/computer interfaces including interface devices, metaphors, and interaction styles. Topics covered include task analysis; dialog models and examples; user centered design including naive and expert user interfaces; interface development methodologies and implementation tools; interface testing and quality assessment.

Prerequisite or Co-Requisite: CEN 6016 - Engineering of Software I

Learning Outcomes

Upon completion of the course, students should be able to:

- Employ user experience task analysis on a real-world user work activity.
- Create conceptual user interaction design from multiple perspectives (e.g., ecological, interaction, and emotional) for a real-world context.
- Develop user interface prototypes that address usability requirements and problems identified from task analysis.
- Conduct usability evaluation to identify and report user experience problems in a user interface prototype.
- Present basic concepts of user interaction design, refined user interface prototype, and usability evaluation report.
- Write a research paper on a user interface topic that adheres to appropriate academic standards.

Method of Teaching

Lecture, in-class activities, assignments, group projects, research paper, and presentations

Textbook

The UX Book: Process and Guidelines for Ensuring a Quality User Experience (1st Edition)
Year: 2012
Authors: Rex Hartson and Pardha Pyla
Publisher: Morgan Kaufmann
ISBN-13: 978-0123852410

Method of Evaluation

Assessment Item	Team Assessment	Individual Assessment
UI Design Project		
Deliverable 1 – Contextual Inquiry and Analysis	5%	5%
Deliverable 2 – Paper Prototype	5%	5%
Deliverable 3 – UI Prototype Implementation	5%	5%
Deliverable 4 – Usability Study and UX Evaluation Report	5%	5%
Deliverable 5 – Refined UI Prototype	5%	5%
Project Presentation (at Symposium)	5%	5%
UI Research Paper		
First Draft – Introduction		10%
Interim Draft – Background		10%
Final Paper – Conceptual analysis and framework		10%
In-Class Assignments		5%
Class Participation		5%
Sub Total	30%	70%
Total	100%	

Letter grades will be based on following percentage ranges:
94 – 100   = A
90 – 93.99 = A-
87 – 89.99 = B+
84 – 86.99 = B
80 – 83.99 = B-
77 – 79.99 = C+
70 – 76.99 = C
60 – 69.99 = D
less than 60=F

The penalty for cheating on assignments will be F grade in the course. Work which is similar beyond coincidence will automatically be considered cheating by all parties.

Late Assignments

There will be a penalty of 10 % per day for late submission of assignments (including weekends and holidays).

Academic dishonesty

UNF will not tolerate academic dishonesty in any form as it is contrary to the process of learning. Students should demonstrate academic integrity in all of their course works. Students who violate

university rules on academic dishonesty will be punished with the most severe penalty allowed by the university policy. The policy on academic integrity and misuse of computer equipment and computer accounts found at http://www.unf.edu/ccec/computing/Policies___Guidelines.aspx applies to this course.

Course outcomes, assignments, and activities matrix

Course outcomes	Assignments/Assessments	Activities performed by students
Employ user experience task analysis on a real-world user work activity	Deliverable 1 – Contextual Inquiry and Analysis	Creating a list of user tasks, gathering work activity data using Contextual Inquiry, and conducting Contextual Analysis on work activity data.
Create conceptual user interaction design from multiple perspectives (e.g., ecological, interaction, and emotional) for a real-world context	Deliverable 2 – Paper Prototype	Create conceptual design of user interface design and sketch of the interface design, and conduct a rapid evaluation to identify problems.
Develop user interface prototypes that address usability requirements and problems identified from task analysis	Deliverable 3 – UI Prototype Implementation	Develop user interface prototype based on the conceptual design using a mock-up tool.
Conduct usability evaluation to identify and report user experience problems in a user interface prototype	Deliverable 4 – Usability Study and UX Evaluation Report Deliverable 5 – Refined UI Prototype	Create script for user tasks for using the user interface prototype, conduct usability evaluation using real users, report the evaluation findings, and refine the user interface prototype based on evaluation findings.
Present basic concepts of user interaction design, refined user interface prototype, and usability evaluation report	Project Presentation (at Symposium)	Present the completed project and its outcomes at the symposium in a poster format.
Write a research paper on a user interface topic that adheres to appropriate academic standards.	First Draft – Introduction Interim Draft – Background Final Paper – Research plan and Conceptual framework	Read relevant literature, write summary of relevant and important articles, identify concepts relevant to a topic, developed a conceptual framework or a research proposal, and write an academic research paper to describe the focus of the study

Course outcomes	Assignments/Assessments	Activities performed by students
		and discuss the developed conceptual framework or research plan.

Attendance and Class participation

It is important to attend the class regularly, participate, and contribute in the class discussions. Class participation includes attendance, participation in class discussions, weekly project progress reports, and overall knowledge and interest in the course materials. Class participation grade would be linked to your attendance and participation. While attendance may not necessarily be taken every day, both excessive absences and attendance would be duly noted. In case of excessive absence (<50%), will result in zero grade for class participation.

In the case of extreme absence (<25%), you may be given failing grade for the entire course, as the extreme absence equals to not taking the course. If you miss a class, it is your responsibility for obtaining the material that is covered and other information provided in the class. Please note that it is not possible to make up a missed class.

Other remarks

- A grade of incomplete will not be given except for catastrophic illness or calamity.
- All university rules regarding classroom behavior and attendance apply.

Deliverables

UI Design Project

The major work portion of the course is the semester long team-oriented UI Design project. It involves defining, analyzing, specifying, designing, prototyping, and evaluating an interaction design for a complex system. The purpose of the project is to give you exposure to all steps involved in developing a significant user interaction design.

Team experience (*Group contract due: Week 1*)
Students are expected to form a team of 3 or 4 students for the UI Design Project.

Project Deliverable 0 – Pick a Complex System *(Due: Week 2)*
UI Design project involves creating a simulated user interface for a complex system. Each team will pick unique system. You will use the selected system for the entire course, so choose wisely. You will need to pick a system with considerable complexity; that is, 10 or more interface or 30 or more controls. Selected system can be a product, a device, a website, a web application, or a mobile application.

Project Deliverable 1 - Contextual Inquiry and Analysis *(Due: Week 5)*
1. User tasks
The script of exactly what you will say to instruct the users on which tasks they should achieve (remember, the instructions should tell them what to do, not how). This includes the questions you

will ask initially to find out the context of why, when and how the user does work tasks now. Note that this script will have two parts - the preliminary interview questions, and then the specific instructions to perform the tasks.

2. Contextual Inquiry

A transcript of what the user did and said, and what you did and said. If at some points you have to help the users, because they cannot figure out what to do, that must be included in your transcript. It is not necessary to write down every word that the user says, just what is interesting and useful. Be sure to write down all actions on the system, whether correct or wrong.

3. Contextual Analysis

Make a list of "do's" and "don'ts" for the user interface of your system that you learned as a result of contextual inquiry study that will guide your alternative design for the device. All of the recommendations for "don'ts" should clearly refer back to breakdowns you observed. All the "do's" should refer back to things the user did successfully that you want to retain in your design.

Project Deliverable 2 – Paper Prototype *(Due: Week 8)*

Create a complete paper prototype of the version of your redesigned system interface. You can draw your paper prototype on paper or using simple drawing tools like Visio or Illustrator.

Project Deliverable 3 – UI Prototype Implementation *(Due: Week 11)*

Create a complete working UI prototype but not functional. UI prototype can be created using tools such as Adobe Fireworks, Balsamiq, OmniGraffle, HTML, etc.

Project Deliverable 4 – Usability Study and UX Evaluation Report *(Due: Week 13)*

Using the implemented prototype run a usability evaluation with three or more real people (users). Submit a script that you used to direct the users on what to do. A transcript or summary of what the user did and said, and what you did and said. If at some points you have to help the users, because they cannot figure out what to do, that must be included in your transcript. Report problems described by the user with the UI prototype.

Project Deliverable 5 – Refined UI Prototype *(Due: Week 15)*

Modify the UI prototype to the fix the problems identified users in the usability evaluation report. Conduct usability evaluation on the refined prototype using different group of users and submit the evaluation report.

School of Computing Symposium

CAP 6100 students will present results of their UI Design project work at the School of Computing Symposium. UI Design project presentations will be held as a part of the symposium.

UX Research Paper

This course covers user interaction design concepts from practice-oriented perspective. Topics covered in the course only scratches the surface of what is a large and highly dynamic field. The research paper assignment provides an opportunity to explore research work performed in some aspects of user interaction design in-depth and to write an academic paper about that topic. Please note that writing research paper is an individual activity.

You may write the research paper on any topic of your choice related to user interaction design. Your paper should be long enough to discuss the topic in-depth. There is no particular length requirements, but suggest about 3000-5000 words (10-20 pages). Make sure to use a proper academic writing style. References should be listed in a consistent format, and citations to references should be given throughout the paper to back up facts and claims.

The research paper will be graded based on the breadth, depth, and insight of your research, as well as the quality of writing in your paper. I highly recommend getting feedback on your paper drafts before submitting them. I suggest consulting with your thesis advisor or your favorite professors in the school for feedback on your drafts.

Topic Selection *(Due: Week 3)*
You can select any topic relevant to user interaction design to write your research paper. You cannot complete an empirical research[1] (i.e., gathering and analysis quantitative or qualitative data) within one semester time period. Thus, suggest writing a research proposal to conduct empirical research or conducting descriptive research (focuses on describing or explaining a phenomenon). Descriptive research[2], typically, involves extensive review of literature and critical analysis. Feel free to consult with me for advice about paper topics and objective of the research paper.

First Draft – Introduction *(Due: Week 6)*
The Introduction section of a research paper should provide higher level overview of the topic as well as the purpose of your study. The introduction section should contain statements on why choose the topic and significance of the research paper. The introduction section can also provide overview of the research method and approach followed to conduct the stated research and how the research objectives will be achieved. In general, introduction should briefly discuss all the major points of the topic and research conducted.

Interim Draft – Background *(Due: Week 10)*
The background section should provide anyone reading the paper with the necessary contextual information to understand the research problem undertaken in the paper. Background section provides the history and nature of a well-defined research problem with reference to the existing literature. Background section should provide summarized review of relevant previous studies and extend to which those studies have investigated the topic. It should identify where the gap exists in the literature that your research attempts to address.

Final Paper – Research Plan and Conceptual Framework *(Due: Week 15)*
Conducting research is essential navigating through an uncharted territory. Write a research proposal helps the researcher in planning and thinking about the research critically. Research proposal is vital for conducting a quality research. Research proposal should provide details on the research problem and plans for conducting systematic investigation. The proposal should provide clear and realistic answers to the WHY the research is important, WHAT is the problem address, WHERE it will be conducted, HOW the research will be conducted, HOW MUCH it will cost and WHEN it will be completed questions related to your particular research. As this is an empirical

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[1] http://en.wikipedia.org/wiki/Empirical_research
[2] http://en.wikipedia.org/wiki/Descriptive_research

research proposal, in-depth details on the system being evaluated, methodology used for evaluation, and complete plan for evaluation including recruitment plan and user tasks should be included in the proposal.

Conceptual analysis and framework involves process of identifying relevant concepts to a topic, categorizing them into sets, and identify relationship between concepts and concept sets. Concepts can be an abstract entity within a phenomenon, or a representation of an aspect of the phenomenon, or a functioning component within a phenomenon. Conceptual framework is essentially a concept map that interlinks identified concepts to provide a comprehensive understanding of a phenomenon or topic under study.

Course Topics

It is expected that the student will come prepared to the class meetings with questions for instructor on the course topics and project related issues. The student is responsible for all topics presented regardless of their coverage.

Please note that below listing of chapters does not mean that all text in those chapters would be covered in this course. Only materials pertaining to course would be covered. Throughout the course, instructor would provide other supplementary materials to provide targeted guidance to team project deliverables.

Week	Topics	Chapters	Deliverable Dues
1	Course Introduction and UI Design	Chapter 1	Team selection and Contract
2	Contextual Inquiry	Chapter 3	Project – Deliverable 0
3	Contextual Analysis	Chapters 4, 5, and 6	Paper – Topic Selection
4			
5	Sketching and Conceptual Design	Chapters 7 and 8	Project – Deliverable 1
6			Paper – First Draft
7	Prototyping	Chapters 9 and 11	
8			Project – Deliverable 2
9	UX Evaluation	Chapter 12	
10	Rigorous Empirical Evaluation	Chapters 14, 15, and 16	Paper – Interim Draft
11			Project – Deliverable 3
12	Evaluation Reporting	Chapter 17	
13			Project – Deliverable 4
14	Thanksgiving Holiday		
15	UX Design Guidelines	Chapter 22	Project – Deliverable 5 Paper – Final Draft
	UI Demo and Poster Presentations		SOC Symposium

Please Note
Instructor reserves the right to modify course to meet the student's needs.

Other Relevant Information

Students with Disabilities

Students with disabilities who seek reasonable accommodations in the classroom or other aspects of performing their coursework must first register with the UNF Disability Resource Center (DRC) located in Building 57, Room 1500. DRC staff members work with students to obtain required documentation of disability and to identify appropriate accommodations as required by applicable disability laws including the Americans with Disabilities Act (ADA). After receiving all necessary documentation, the DRC staff determines whether a student qualifies for services with the DRC and if so, the accommodations the student requires will be provided. DRC staff then prepares a letter for the student to provide faculty advising them of approved accommodations. For further information, contact the DRC by phone (904) 620-2769, email (drc@unf.edu), or visit the DRC website (http://www.unf.edu/drc/).

Military and veteran students who return from combat exposure may be utilizing the post 9/11 GI bill to continue postsecondary education goals and may need both physical and academic accommodations. Contact Ray Wikstrom, Director of Military and Veterans' Resource Center by phone (904) 620-2655, email (ray.wikstrom@unf.edu).

Satisfactory Progress Policy

The School of Computing enforces the "one repeat" rule for all prerequisite and core courses offered by the School for its major programs. Students who do not successfully complete a prerequisite or core requirement for a School of Computing course on the first attempt (i.e., earn a grade of D, F, W, WP or WF) will be granted one chance to repeat the course. Students who do not successfully complete a prerequisite or core requirement within two attempts will not be permitted to register for courses offered by the School in future semesters. This stipulation applies whether or not the student has declared a major in a School of Computing program.
http://www.unf.edu/ccec/computing/PoliciesGuidelines/Satisfactory_Progress_Policy.aspx