INSTITUTION National University of Computer & Emerging Sciences, Islamabad

Computer Science (BS CS) – Spring 2022

PROGRAM (S) TO BE EVALUATED

Course Description

Course Code	CS-4074
Course Title	User Experience Engineering
Credit Hours	3
Prerequisites by Course(s) and Topics	Human Computer Interaction
Grading Policy	Absolute grading
Policy about missed assessment items in the course	Retake of missed assessment items (other than midterm/ final exam) will not be held. For a missed midterm/ final exam, an exam retake/ pretake application along with necessary evidence are required to be submitted to the department secretary. The examination assessment and retake committee decides the exam retake/ pretake cases.
Course Plagiarism Policy	Plagiarism in any component of the project or midterm/ final exam may result in F grade in the course. Plagiarism in an assignment will result in zero marks in the whole assignments category.
Assessment Instruments with Weights (homework, quizzes, midterms, final, programming assignments, lab work, etc.)	100% theory Breakdown of Course Work (Total): Midterm 2 20% Assignments 2 5% Class Participation/Presentation 1 10% Quiz/Homework 3 5% Project 5 25% Final 1 30%
Course Coordinator	Dr. Amna Basharat
URL (if any)	
Current Catalog Description	This course provides an introduction to the exciting and growing field of UX Research and Design. It aims to equip students with the theoretical and practical foundations of Integrating UX Research and UX Design to create great products through understanding user needs, rapidly generating prototypes, and evaluating design concepts. Students will gain hands-on experience with taking a product from initial concept, through user research, ideation and refinement, formal analysis, prototyping, and user testing, applying perspectives and methods to ensure a great user experience at every step.

Textbook	The Joy of UX: User Experience and Interactive Design for Developers by David Platt
Reference Material	**The Design of Everyday Things by Don Norman** 100 THINGS EVERY DESIGNER NEEDS TO KNOW ABOUT PEOPLE by Susan Weinschenk iOS Interface Guidelines Android Material Design Guidelines Coursera User Experience Research and Design Specialization

Course Goals

A. Course Learning Outcomes (CLOs)

After completion of the course, the students shall be able to:

1. Learn how UX research and design techniques can help you better understand user needs and create a great user experience.
2. Incorporate UX Research and Design methods to design a complete product, taking it from an initial concept to an interactive prototype.
3. Apply a human-centered design process in the conception, design, prototyping and evaluation of the real product
4. Independently research topics in UX design, research and latest trends and formally present the project-work to the peers
5. Learn, apply and critique the state of the art UX design and research tools and practices related to the emerging areas of web, mobile and related technologies such as smart and wearable devices.
6. Execute a complete UX project from ideation to design, prototype and evaluation while working in a team, using the skills and knowledge gained through the course; and be able to present their work to peers.

Topics Covered in the Course, with Number of Lectures on Each Topic (assume 16-week instruction and one and a half-hour lectures)

Topics to be covered:

List of Topics	No. of Weeks	Contact Hours	CLO(s)
Introduction to User Experience Engineering	**1.5**	**4.5**	**1,4**
UX Process, Methods, Components	**1.5**	**4.5**	**1,2,3,4**
Personas for Representing users, User Stories	**2**	**6**	**1,2,3,4**
UX Design – Part I	**2**	**6**	**2,3**
UX Design – Part II -Prototyping Techniques	**1**	**3**	**2,3**
Mid Semester UX Project Presentations	**2**	**6**	**1,5**

	Evaluating Designs with Users	**2**	**6**	**1,5,6**
	State of the Art UX trends in Web and Mobile Application Development	**1**	**3**	**1,5,6**
	Research Presentations, Project Presentations	**2**	**6**	**1,2,3,4,5,6**
	Total	**15**	**45**	

Projects Done in the Course	UX Design Project spanned across 6 milestones			
Assignments Done in the Course	Micro Usability Test and Sketching Assignment			
Class Time Spent on (in credit hours, Hrs/Min)	**Theory**	**Problem Analysis**	**Solution Design**	**Social and Ethical Issues**
	1.0, 60min	0.9, 45min	0.9, 45min	0.2, 10min
Oral and Written Communications	Every student is required to submit at least __6__ written reports of typically __8_ pages and to make __5___ oral presentations of typically __15___ minute's duration. Include only material that is graded for grammar, spelling, style, and so forth, as well as for technical content, completeness, and accuracy.			

A. Tentative course outline and lecture plan

1 Lecture = 1.5hrs, Total 30*1.5 = 45hrs

Number of Lectures	Topics	Week
2	**Introduction to User Experience Engineering** ● Learn about the skills needed for UX research and design ● Understand how UX researchers discover and assess user needs	**1**
2	**UX Process, Methods and Components** ● Learn how to conduct a micro-usability test ● Understand how UX designers take an idea from a concept to a working prototype ● Understand how to incorporate a user-centered focus into the design process	**2**
2	**User Needs Assessment** ● Find out what user needs assessments are, what qualitative research is, and how the two are related. ● Learn an end-to-end methodology for qualitative research that is suited for understanding user needs. The methodology includes knowledge of semi-structured interviews, in-situ observation, and affinity walls. ● Be exposed to good practices for conducting semi-structured interviews, in-situ observation, and affinity walls.	**3**

	• Gain some experience with semi-structured interviews, in-situ observations, and affinity walls.	
3	**Design Thinking Framework and Design Sprints**	**3,4**
3	**UX Design – Part I** • Learn to produce initial sketches that capture the process of ideation • Create user stories and storyboards to support the concept • Develop interface wireframes to provide an engaging test example • Use comparative analysis techniques Run a design walkthrough to test the concept	**4,5**
2	**Personas for Representing users, User Stories, Storyboards, Scenarios** • Understand the different types of user needs and their context • How to conduct effective user interviews • Develop personas and scenarios as design tools • Use public information (e.g., the Internet) to further your understanding of user needs • Review additional techniques for uncovering user needs	**6**
2	**UX Design – Part II** • How to run a paper prototype test • Expand on the wireframe by developing high-fidelity mockups • Develop interactivity to further test the user experience Create a design specification document	**7**
2	**Mid Semester UX Project Presentations**	**8**
2	**Principles of Designing for Humans/Heuristic Evaluations** • Identify key features of human behavior and describe their impact on the design of interactive systems • Critique and design interactive systems based on human capabilities and behavior • Describe themes from social sciences and human computer interaction and how they relate to interactive system design • Learn to use checklists and formal analysis methods	**10**
2	**Evaluating Designs with Users** • Different approaches to usability testing and their appropriate use • How to design an effective usability test • How to to run an effective usability test to get the most information possible out of each encounter Analyze and report on usability testing	**11**
4	**Tool Talks and Case Study Presentations**	**12,13**
3	**Industry Seminars on Creating UX Portfolios, Design Systems**	**14,15**
3	**UX Final Project Presentations**	**15,16**