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| **COURSE TITLE** | **UI UX** |
| **COURSE CODE** | **05MB0106** |
| **COURSE CREDITS** | **4** |

**Objective:**

1. Aim to provide an understanding of the fundamentals of HCI, including theories and models, and learn to program interactive systems.
2. The goal is to Develop proficiency in User Interface Design by understanding the design process, various interaction styles, and effective naming conventions and abbreviations.
3. Master Mobile UI Design, covering interaction styles (keypads, touchpads, gestures), disruptive innovation, and essential design tools.
4. Explore best practices in UI design, focusing on HTML/CSS and JavaScript techniques for optimal Mobile UI development.
5. Analyze case studies of effective UI designs and common errors to gain insights into best practices and pitfalls in UI design.

**Course Outcomes:** After completion of this course, student will be able to:

1. Students will have Master HCI fundamentals, theories, and models, and gain programming skills for designing interactive systems.
2. Students will learn UI design principles, encompassing the design process, interaction styles, and effective naming conventions.
3. Proficiently navigates mobile UI design, encompassing interaction styles, disruptive innovations, and adept utilization of design tools.
4. Students will develop expertise in UI design by mastering best practices for mobile interfaces using HTML/CSS and JavaScript techniques.
5. Gain insights into effective UI design principles and avoid common errors through a comprehensive analysis of case studies.

**Pre-requisite of course:**NA

**Teaching and Examination Scheme**

| Theory Hours | Tutorial Hours | Practical Hours | ESE | IA | CSE | Viva | Term Work |
|---|---|---|---|---|---|---|---|
| 2 | 0 | 4 | 50 | 30 | 20 | 0 | 50 |

| Contents : Unit | Topics | Contact Hours |
|---|---|---|
| 1 | **Introduction to HCI & User Interface Design**<br>Human-Computer Interaction Foundations , Models & Theories, Programming interactive systems, The Design Process , Interaction Styles, Naming & Abbreviations. | 15 |

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| Contents : Unit | Topics | Contact Hours |
|---|---|---|
| 2 | **Mobile UI Design & Case Studies**<br>Mobile Interaction Styles: Keypads, Touchpads, Gestures, Disruption & Innovation, Design Tools, Mobile UI Best practices – HTML & CSS, Mobile UI Best practices – JS, Effective UI Design Examples, Common Errors | 15 |
| **Total Hours** | | **30** |

**Suggested List of Experiments:**

| Contents : Unit | Topics | Contact Hours |
|---|---|---|
| 1 | **Unit 1**<br>Design a user interface for a simple web application that allows users to create, read, update, and delete tasks. Consider factors such as layout, navigation, and feedback., Conduct a usability test with a small group of users to evaluate the effectiveness of a given website or application. Identify usability issues and propose improvements., Choose a specific HCI model (e.g., Norman's Interaction Model, Nielsen's Usability Heuristics) and apply it to analyze the user experience of a mobile app. Identify strengths and weaknesses of the app based on the chosen model., Create personas and scenarios for a new online shopping platform. Use these personas and scenarios to inform the design decisions and improve the user experience., Develop a prototype of a mobile app using a programming language/framework of your choice (e.g., Flutter/Dart, React Native/JavaScript). Implement key interactive features such as buttons, forms, and navigation., Choose a specific user interface (e.g., a mobile app, a website) and outline the different stages of the design process you would follow to create it. Include steps such as research, wireframing, prototyping, testing, and iteration., Conduct a usability test on an existing user interface and analyze the results. Identify areas for improvement and propose design changes based on user feedback., Design a user interface for a smart home device that uses both voice commands and touch screen interactions. Consider how users will interact with the device using different styles and ensure a seamless experience., Develop a style guide for a web application that specifies naming conventions and abbreviations for UI elements such as buttons, labels, and menus. Ensure consistency and clarity in naming throughout the application., Evaluate the usability of an existing user interface and assess the effectiveness of its naming conventions and use of abbreviations. Make recommendations for improvement based on principles of clarity and conciseness. | 30 |

**Suggested List of Experiments:**

| Contents : Unit | Topics | Contact Hours |
|---|---|---|
| 2 | **Unit 2**<br>Design a mobile app interface that utilizes both keypad input (for numerical data entry) and touchpad gestures (for navigation and interaction). Consider how users will switch between input methods seamlessly., Develop a prototype for a mobile game that heavily relies on gesture-based interactions (e.g., swiping, tapping, pinching). Test the prototype with potential users to evaluate the intuitiveness and effectiveness of the gesture controls., Brainstorm and prototype a concept for a novel mobile app that leverages emerging technologies or design trends to disrupt an existing market. Present your concept, highlighting its innovative features and potential benefits., Experiment with popular design tools for mobile UI design (e.g., Sketch, Figma, Adobe XD) and create wireframes or mockups for a mobile app interface. Compare the features and usability of different tools based on your experience., Collaborate with a team to design and prototype a mobile app interface using a chosen design tool. Practice version control, collaboration features, and workflow management within the tool to streamline the design process., Develop a responsive web page layout using HTML and CSS that adheres to best practices for mobile UI design. Ensure the layout adjusts seamlessly to different screen sizes and orientations., Implement CSS techniques such as flexbox, grid layout, and media queries to optimize the mobile user experience. Test the layout on various devices and browsers to ensure compatibility and responsiveness., Enhance the mobile user experience by incorporating JavaScript functionalities such as smooth scrolling, lazy loading of images, and form validation. Implement these features using JavaScript libraries or frameworks like jQuery or vanilla JavaScript., Utilize JavaScript to create interactive elements in a mobile web application, such as collapsible menus, tabbed navigation, or carousel sliders. Ensure that these elements enhance usability and engagement without sacrificing performance or accessibility., Analyze and evaluate the user interface of a popular mobile app (e.g., Instagram, Spotify) known for its effective design. Identify and discuss key design elements, layout principles, and interaction patterns that contribute to its success., Conduct a comparative analysis of two competing websites or mobile apps within the same industry. Evaluate their user interfaces based on usability, visual appeal, and alignment with user needs. Determine which interface is more effective and why., Identify and critique common UI design errors in a poorly designed website or mobile app. Examples may include inconsistent navigation, cluttered layouts, confusing terminology, or lack of accessibility features. Propose specific recommendations for improvement., Create a set of mockups or wireframes that illustrate common UI design mistakes (e.g., overly complex forms, ambiguous buttons, insufficient contrast). Present these examples to stakeholders and discuss the potential negative impact on user experience. | 30 |

| Total Hours | 60 |
|---|---|

**Textbook :**

1 Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days, Jake Knapp, Simon & Schuster, 2016

**References:**

1 Human-Computer Interaction, Human-Computer Interaction, Alan Dix, Janet Finlay, Pearson Education, 2004

2 Designing the User Interface: Strategies for Effective Human-Computer Interaction, Designing the User Interface: Strategies for Effective Human-Computer Interaction, Ben Shneiderman, Pearson Education, 2010

3 The Essential Guide to User Interface Design: An Introduction to GUI Design Principles and Techniques, The Essential Guide to User Interface Design: An Introduction to GUI Design Principles and Techniques, Wilbert O. Galitz, Wiley, 2007

**Suggested Theory Distribution:**

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

| Distribution of Theory for course delivery | | | | | |
|---|---|---|---|---|---|
| **Remember / Knowledge** | **Understand** | **Apply** | **Analyze** | **Evaluate** | **Higher order Thinking / Creative** |
| 10.00 | 20.00 | 25.00 | 25.00 | 10.00 | 10.00 |

**Instructional Method:**

1 Board work

2 PPT

3 Demo

**Supplementary Resources:**

1 https://developer.mozilla.org/en-US/

2 https://www.w3schools.com/html/default.asp

3 https://www.freecodecamp.org/

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