هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد
NCAAA

2024
TP-153

# Course Specification
## (Bachelor)

| | |
|---|---|
| **Course Title:** | Human Computer Interaction |
| **Course Code:** | ITEC-321 |
| **Program:** | Bachelor in Information Technology (BIT) |
| **Department:** | Computer Science |
| **College:** | College of Engineering and Computer Science |
| **Institution:** | Jazan University |
| **Version:** | 1 |
| **Last Revision Date:** | August 18, 2024 |

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شطر الطالبات
Faculty of Engineering and Computer Science

## Table of Contents

## A. General information about the course:

### 1. Course Identification

**1. Credit hours: ( ...3... )**

**2. Course type**

| | | | | | |
|---|---|---|---|---|---|
| A. | ☒ University | ☒ College | ☒ Department | ☒ Track | ☐Others |
| B. | ☒ Required | | ☐Elective | | |

**3. Level/year at which this course is offered: ( ..5/3..)**

**4. Course General Description:**

This course provides a comprehensive, authoritative introduction to the dynamic field of human-computer interaction (HCI). Students will learn practical principles and guidelines needed to develop high quality interface designs–ones that users can understand, predict, and control. It covers theoretical foundations, and design processes such as expert reviews and usability testing. Numerous examples of direct manipulation, menu selection, and form fill-in give students an understanding of excellence in design. It also provides updates on current HCI topics with balanced emphasis on mobile devices, Web, and desktop platforms.

**5. Pre-requirements for this course (if any): NIL**

**6. Co-requisites for this course (if any): NIL**

**7. Course Main Objective(s):**

The main objective is to impart students with:

- What is usability? And, how to measure the usability of an interface?
- How are guidelines, principles and theories used for better interface design?
- Differentiate various interaction methods and how direct manipulation different from other interaction methods.
- How teleportation & virtual environments influence the direct manipulation technologies?
- How speech and display technologies improved auditory and visual interactions respectively?
- Different aspects on collaboration and social media interactions.
- How quality of service obtained through interactive technologies?
- How to visualize data in different forms?

### 2. Teaching mode

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 1 | Traditional classroom | 64 | 100 |
| 2 | E-learning | -- | -- |
| 3 | Hybrid<br>• Traditional classroom<br>• E-learning | -- | -- |

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 4 | Distance learning | -- | -- |

### 3. Contact Hours (based on the academic semester)

| No | Activity | Contact Hours |
|---|---|---|
| 1. | **Lectures** | 30 |
| 2. | **Laboratory/Studio** | 30 |
| 3. | **Field** | -- |
| 4. | **Tutorial** | -- |
| 5. | **Others (Revision + Final Lab or Case-Study Exam)** | 04 |
| **Total** | | 64 |

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| **1.0** | **Knowledge and understanding** | | | |
| 1.1 | **Define** and **Identify** how the usability are obtained using various methods. | **K1** | Visual & Verbal [Lectures / Presentations] with Inductive / deductive organization. | Exams |
| 1.2 | **Identify** the guidelines, principles & theories of interaction. | **K2** | Visual & Verbal [Lectures / Presentations] with Inductive / deductive organization. | Exams |
| **2.0** | **Skills** | | | |
| 2.1 | **Compare** various interaction styles and their impact in computing environments. | **S1** | Brainstorming and Report Writing | Exams<br>Assignment |
| 2.2 | **Evaluate** various methods of collaboration & Social media interaction. | **S2** | Visual & Verbal [Lectures / Presentations] with Inductive / deductive | Exams<br>Assignme |

| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| | | | organization.Brainstorming and Report Writing | |
| 2.3 | Evaluate the quality of services & user productivity techniques and the information visualization for effective information assimilation. | **S2** | Visual & Verbal [Lectures / Presentations] with Inductive / deductive organization. | Exams |
| **3.0** | **Values, autonomy, and responsibility** | | | |
| 3.1 | Demonstrate the cases of usability problems in Human-Computer Interaction. | V1 | Case Studies | Study cases of usability problems in Human-Computer Interaction |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1. | **Chap-1:Usability and interactive systems:**<br>1. Introduction to HCI<br>2. Facilities upon users<br>3. Impact on various professionals<br>4. Challenges for Designers | 2T |
| | **Case Study Introduction** | 2L |
| 2. | 5. Usability Goals and Measures<br>6. Usability motivations:<br>7. Universal usability | 2T |
| | **Case study Teams Formation – Selection of Topics** | 2L |
| 3. | **Chap-2: Guidelines, Principles and Theories:**<br>1. Guidelines :Navigating the interface, accessibility guidelines, Organizing the display<br>2. Principles :Determine Users' skill levels, Identify the task, Choose an interaction style | 2T |
| | **Case study Teams Formation – Selection of Topics** | 2L |
| 4. | **Chap-2: Guidelines, Principles and Theories:**<br>3. Issues faced in user interface design<br>4. Usage of Guidelines, principles, and theories for the interface designers<br>5. The eight golden rules of interface design<br>6. Theory: Types of theories<br>7. Consistency theory | 2T |

| | | |
|---|---|---|
| | **Case Study : Gain an overview of the Case** | 2L |
| **5.** | **Chap-3: Direct Manipulation:**<br>1. What is Direct Manipulation?<br>2. Examples of Direct Manipulation:<br>a. Spatial data management<br>b. Video games<br>c. CAD | 2T |
| | **Case Study : Specify objectives of the Case Study** | 2L |
| **6.** | **Chap-3: Direct Manipulation:**<br>3. Principles of direct manipulation<br>4. 3D interfaces<br>5. Tele operation<br>6. Advantages and disadvantages of Direct manipulation | 2T |
| | **Case study : Determine the Major Causes** | 2L |
| **7.** | **Chap-4: Virtual Environments:**<br>1. Introduction to Virtual reality<br>2. Artificial reality<br>3. Telepresence<br>4. Augmented reality<br>5. Virtual environment technologies | 2T |
| | **Case study : Determine the Major Causes** | 2L |
| **8.** | **Chap-5: Interaction devices**:<br>Displays<br>1. Characteristics<br>2. Display technology<br>3. Large displays | 2T |
| | **Case study: Develop Possible Solutions for the Cases** | 2L |
| **9** | 4. Hands-up & Head mounted displays<br>5. Mobile device displays | |
| | **Case study: Develop Possible Solutions for the Cases** | 2L |
| **10.** | **Chap-6: Collaboration and Social Media Participation**<br>1. Goals of collaboration & participation<br>2. Time/space four-quadrant model | 2T |
| | **Case study: Develop Possible Solutions for the Cases** | 2L |
| **11.** | **3.** Asynchronous distributed interfaces | |
| | **Case study: Develop Possible Solutions for the Cases** | 2L |



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|---|---|---|
| 12. | **Chap-6: Collaboration and Social Media Participation**<br>4. Synchronous distributed interfaces<br>5. Face to face interfaces | 2T |
| 13. | **Case study: Formulate Recommendations and Conclusion** | 2L |
| 14. | **Chap-7: Quality of Service & Information Visualization**<br>1. Introduction<br>2. Models of Response Time Impacts<br>3. Expectations and Attitudes<br>4. User Productivity<br>5. Frustrating Experiences | 2T |
| | **Case study: Evaluate the Solutions** | 2L |
| 15. | 6. Information visualization - Introduction<br>7. The seven Data type s<br>8. The seven basic tasks<br>Challenges for information visualization | 2T |
| | **Case study: Preparation of Presentation** | 2L |
| 16. | **Revision / Case study evaluation** (Lab Examination Weeks) | 4T |
| **Total** | | **64** |

## D. Students Assessment Activities

| No | Assessment Activities * | Assessment timing (in week no) | Percentage of Total Assessment Score |
|---|---|---|---|
| 1. | Mid-term Exam -1 | 7th, 8th Week | 15% |
| 2. | Assignment-1 | 10th Week | 10% |
| 3. | Assignment-2 | 11th Week | 15% |
| 4. | Case Study Presentation and Evaluation<br>Weekly progress 10%<br>Document 5%<br>Presentation 5% | 13th Week | 20% |
| 5. | Final Exam | 14th-17th Week | 40% |

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

## E. Learning Resources and Facilities

### 1. References and Learning Resources

| | |
|---|---|
| **Essential References** | Ben Shneiderman, Catherine Plaisant, Maxine Cohen, Steven Jacobs, Designing the User Interface: Pearson New International Edition: Strategies for Effective Human-Computer Interaction, 6/E, Pearson, 2016 |
| **Supportive References** | • Yvonne Rogers, Helen Sharp and Jenny Preece, Interaction Design: Beyond Human-Computer Interaction, John Wiley & Sons, 5/e, 2019, ISBN-10: 0470665769<br>• Julie A Jacko, The Human-computer Handbook, Fundamentals, Evolving technologies, and Emerging technologies, 2012, Third Edition, CRC Press<br>The Encyclopedia of Human-Computer Interaction, 2/e, Online resource: http://www.interaction-design.org/books/hci.html |
| **Electronic Materials** | For teaching & learning resources :<br>http://www.hcibook.com/e3/plain/<br>http://www.interaction-design.org/books/hci.html |
| **Other Learning Materials** | — |

### 2. Required Facilities and equipment

| Items | Resources |
|---|---|
| **Facilities**<br>(Classrooms, laboratories, exhibition rooms, simulation rooms, etc.) | Classroom |
| **Technology equipment**<br>(projector, smart board, software) | Projector, Smart Board, Office tools |
| **Other equipment**<br>(depending on the nature of the specialty) | Classroom |

## F. Assessment of Course Quality

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---|---|
| Effectiveness of teaching | Students | Indirect |
| Effectiveness of Students assessment | CEO / Track Leaders | Direct |
| Quality of learning resources | CEO / Track Leaders | Direct |
| The extent to which CLOs have been achieved | HOD/QAU | Direct |
| Other | | |

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

## G. Specification Approval

| | |
|---|---|
| **COUNCIL /COMMITTEE** | **DEPARTMENT COUNCIL** |
| **REFERENCE NO.** | **ENGCSCS2406** |
| **DATE** | **19/09/2024** |