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**Department of** …Computer Science and IT…

**College of** …………Science………………….

**University of** ……Salahaddin…………….

**Subject: …**Human-Computer Interaction

**Course Book –** Year 4th

Beeza Abdulsatar Asim **MSc**

**Academic Year:** 2021/2022

**Course Book**

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| **1. Course name** | Human-Computer Interaction |
| **2. Lecturer in charge** | Beeza Abdulsatar Asim |
| **3. Department/ College** | Computer Science/ College of Science |
| **4. Contact** | e-mail: beeza.asim@su.edu.krd |
| **5. Time (in hours) per week**  | Theory: 2 Practical: 2  |
| **6. Office hours** | 4 |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | - Acquired a BSc from College of Engineering- Department of Software Engineering in Salahaddin University in 2009- Graduated with a MSc in Human-Computer Interaction from the University of Nottingham in 2012.- I have been working in the Department of Computer Science as an assistant lecturer since July 2013. |
| **9. Keywords** | Interaction Design, Ubiquitous computing, Interface Design, Usability, User experience |
| **10. Course overview:** Human-Computer Interaction is gaining importance in the field of computer science because computers have become essential parts of everyday life. Hence, it is critical that every computer science student understand the basics of HCI so that he/she will be able to design and build usable software in the future. Gaining an understanding of HCI and SE methods is very important in the 21st Century technology industry because the vast majority of software must be based on an understanding of users and their requirements.This course covers the history of HCI and software engineering. Classical software engineering models will be covered, followed by the most recent and most used models in our age. In the following lectures, the pillars of HCI will be discussed with focus on important notions such as usability, user experience, and eliciting requirements from users. Later on, the focus will shift to dealing with the data gathered from users. The practical part of the module supplements the topics covered in the theoretical lectures. In practical lectures the student is gains knowledge in statistical methods to analyse the data gathered from users and how to interpret the data after analysing them. A knowledge in statistics is essential for those who choose to pursue a career in HCI after graduation because they should be able to produce robust reports after each experiment they conduct on the software in question.   |
| **11. Course objective:**This module aims to prepare students for what awaits them should they decide to enter the technology industry. This industry is a new one in Kurdistan and unfortunately depends on foreign expertise. The reason is that by the time they graduate, students are still ignorant about what the job market needs. Although mathematical foundations are very important in computer science, still more important is a hands-on approach where we familiarise our students with industry. The goal of this course is to show students that there is more to computer science than mathematical foundations and hardcoding, the industry in Kurdistan is in dire need for people who understand the basics of interaction design. Especially that much of the software designed here lack the very fundamentals of what makes a software usable. |
| **12. Student's obligation**- Students must attend weekly theoretical and practical lectures.- A report will be expected for the theoretical part.- Students must carry out a group project in the practical part where they gather evaluation data for a prototype of their design and analyse them using statistical methods. - Students must also attend two exams during the course: one theoretical and the other practical.  |
| **13. Forms of teaching**- Weekly handouts will be uploaded online for both theoretical and practical lectures along with reading material. - A projector will be used in the class, as well as a whiteboard, to convey the necessary information to students. - There may be group discussions in class should the topic in question need such discussions.  |
| **14. Assessment scheme**Theoretical exams: 13%Practical exams: 30%Theoretical quizzes: 2%Practical lab assignments: 5%Final theoretical exam: 50%‌ |
| **15. Student learning outcome:**As mentioned above, the importance of human-computer interaction has been on the rise for the past 20 years. Now, it is more important than ever with the emergence of mobile technology, augmented reality, online banking, video games, etc. By the end of the course, the student must show familiarity with the following:* The most common HCI approaches.
* Methods for understanding users and how to apply them in real life.
* Designing for usability and user experience.
* Software usability testing and analysing data gained from user experiments.
* Appreciating the importance of collaborative software and state of the art technologies such as crowdsourcing and ubiquitous computing.
* The future of HCI

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| **16. Course Reading List and References‌:*** Dix, A., Finlay, J., Abowd, G. D., Beale, R. (2004): *Human Computer Interaction*. 3rd Edition. Pearson Education Limited: Essex.
* Sharp, S., Rogers, Y., Preece, J (2007): *Interaction Design: Beyond Human-Computer Interaction*. 2nd edn. John Wiley & Sons.
* Shneiderman, B., Plaisant, C. (2004): *Designing the User Interface: Strategies for Effective Human-Computer Interaction*. 4th edn. Addison Wesley
* Any other relevant book, journal, or website.
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| **17. The Topics:** | **Lecturer's name** |
| 1. Course overview: The module’s structure will be explained in this lecture. The importance of the module, its objectives and outcomes will be covered. Plus, a short history of HCI and SE will be mentioned.
2. Human-Computer Interaction: Understanding the human:The physical and cognitive attributes of humans will be covered so that they be taken into account during design.
3. Human-Computer Interaction: Understanding the human (contd.)
4. Human-Computer Interaction: Understanding the Computer: The parts and types of computers will be discussed
5. Understanding Users and Designing for Usability:

This lecture will cover the notion of usability and its importance in designing software.1. Understanding Users and Designing for Usability (contd.)
2. Affective Design: This lecture discusses the pillars of successful design and the importance of affective (emotional) design and aesthetics in software development.
3. Requirements Elicitation: A number of requirements elicitation techniques such as cognitive task analysis, surveys, and ethnography will be covered.
4. Requirements Elicitation (contd.)
5. Designing the Interface: Prototyping, storyboards, and user scenarios will be discussed.
6. Usability Tests: Lab experiments, and field studies.
7. Usability Tests (contd.)
8. End of term revision lecture
9. Analytical evaluation: Analytical techniques such as walkthroughs and heuristic evaluation will be covered.
10. Interface Types: Augmented reality, virtual reality, surface and tabletop interfaces, multimodal and tangible interfaces, natural language and speech-based interfaces.
11. Design for collaboration: Ubiquitous and mobile computing.
12. Design for collaboration (contd.)
13. Social networking sites and crowdsourcing: The impact of social media sites and the opportunities they offer will be discussed.
14. Design Issues: Quality of service, the balance between functionality and style, user manuals, etc. will be covered.

20– 22) Design issues: quality of service, user manuals, online help tutorials, information search and visualization. 23 – 25) Mobile HCI26) HCI for game design 27 - 28) In-class assignments and revision  | Beeza Asim  |
| **18. Practical Topics (If there is any)** |  |
| * 1. An introduction to statistics: frequencies, data types, descriptive statistics, measures of central tendency, measures of dispersion, data types.
1. Frequencies and descriptive statistics with SPSS.
2. Choosing the right statistical test for finding differences: one independent variable (independent samples t-test)
3. Choosing the right statistical test for finding differences: one independent variable (paired samples t-test)
4. Choosing the right statistical test for finding differences: one independent variable (Mann-Whitney U test)
5. Choosing the right statistical test for finding differences: one independent variable (Wilcoxon test)
6. Creating prototypes which must be analysed using a between-subjects design.
7. Statistically analysing the data gathered for the prototypes created in the previous weeks
8. Data transformation for normalisation.
9. Choosing the right statistical test for finding differences- one independent variable (one-way ANOVA (between))
10. Choosing the right statistical test for finding differences- one independent variable (one-way ANOVA (within)).
11. Choosing the right statistical test for finding differences- one independent variable (Friedman test).
12. Choosing the right statistical test for finding differences- one independent variable (Kruskal-Wallis test).
13. End of term revision lecture

17– 19) Charts and graphs 20– 22) Chi square and linear regression 21– 22) Correlations * 1. Data importing, recoding, ranking, excluding, and other tools

26-27) Various topics and exercise solving 28) End of term revision lecture  | Beeza Asim  |
| **19. Examinations:*****1. Compositional:*** What are the three pillars of a successful design?Answer: For design to be successful, you need all the three pillars: theories and models (which are guidelines that have been created by decades of academic research and user studies), Algorithms and prototypes (coding languages and software tools to make prototypes), and controlled experiments (these includes user studies among which are the techniques we studied in lecture 6 and expert reviews, which means HCI experts review the interface and rate it based on certain guidelines). ***2.******True or false type of exams:***Choose (True) or (False) for each of the following questions. If the statement is false, correct only the **underlined** word(s).With interface metaphors, the designers take ideas from everyday objects for designing the interface.Answer: True.***3. Multiple choices:***The following model is not suitable for small projects 1. The waterfall model
2. The big bang model
3. The V-model
4. The spiral model

Answer: D. |
| **20. Extra notes:** |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ**   |