UX, UI & HUMAN-COMPUTER INTERACTION

Grado en Computación e Inteligencia Artificial / Bachelor in Computer Science and Artificial Intelligence BCSAI SEP-2025
UXUI-CSAI.4.M.A

Area Computer Science
Number of sessions: 30
Academic year: 25-26
Degree course: FOURTH
Number of credits: 6.0
Semester: 2º
Category: COMPULSORY
Language: English

Professor: **ROBERT DAVID POLDING**

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Dr. Polding holds a Ph.D. and MSc in Information Systems from The University of Sheffield, with a primary focus on user experience design, development methodologies, and online marketing strategies for modern apps. His research centers on customer centricity and user-centered software design, developing models to help organizations align strategies with customer needs, resulting in multiple publications in esteemed journals. He has also worked in natural language processing and language model research over the last decade.

His interests have spanned e-commerce, web applications, mobile apps, RFID technology, and big data, providing a multifaceted approach to research and problem-solving. As the CTO and founder of Linotek, he created digital tour guides for museums, combining technology with user-centered solutions. His professional experience includes roles in software development, network design, and project management, as well as leadership in educational administration.

Dr. Polding has worked with organizations like British Telecom, Indra, Greenpeace, and the Spanish Army, broadening his expertise across various operational strategies. Currently, he serves as an assistant vice dean and lecturer, teaching subjects such as digital anthropology, database design, information systems modeling, project management, data science, and big data analysis.

Office Hours

Office hours will be on request. Please contact at:

Please find a time here: https://calendly.com/robert-polding/30-minute-meeting

My office is located in the Tower at room 04.17.

SUBJECT DESCRIPTION

This course introduces students to the fundamentals of Human-Computer Interaction (HCI), focusing on understanding user needs, designing user-friendly interfaces, and conducting user research. Students will gain practical experience through hands-on assignments, projects and a final exam.

LEARNING OBJECTIVES

- Understand the foundations of HCI, including its history and interdisciplinary nature.
- Identify and explain user-centered design principles and how to implement them.
- Create user personas and scenarios to inform interface design.
- Design and run usability evaluations using various methods.
- Design and prototype user-friendly interfaces.
- Understad the importance of accessibility and inclusive design in HCI.
- Explore emerging trends in HCI and understand ethical considerations.
- Analyze real-world HCI case studies, and how to work in cross-functional teams.
- Collaborate in user-centered design projects and effectively communicate results.
- Reflect on personal and professional growth as an HCI practitioner and explore potential career paths in HCI-related fields.

TEACHING METHODOLOGY

IE University teaching method is defined by its collaborative, active, and applied nature. Students actively participate in the whole process to build their knowledge and sharpen their skills. Professor's main role is to lead and guide students to achieve the learning objectives of the course. This is done by engaging in a diverse range of teaching techniques and different types of learning activities such as the following:

Learning Activity	**Weighting**	**Estimated time a student should dedicate to prepare for and participate in**
Lectures	13.3 %	20.0 hours
Discussions	6.7 %	10.0 hours
Exercises in class, Asynchronous sessions, Field Work	30.0 %	45.0 hours
Group work	30.0 %	45.0 hours
Individual studying	20.0 %	30.0 hours
TOTAL	100.0 %	150.0 hours

AI POLICY

AI is permitted but must be acknowledged when used (with quotation and citation) as with any other source. The report should be your own work, and should not be AI generated.

PROGRAM

SESSION 1 (LIVE IN-PERSON)

Introduction to HCI - Sessions 1

- Overview of course
- Overview of HCI
- Historical perspectives
- Importance of HCI in modern technology

Assignment Personal reflection on a frustrating user experience

Suggested readings

1. Chapter 1-2 of The Elements of User Experience by Jesse Garrett

SESSION 2 (LIVE IN-PERSON)

Developing a Strategy - Session 2

- User Experience and the Web
- Introduction to Strategy
    - Objectives
    - Target Audience
    - Success Metrics

Assignment Personal reflection on a frustrating user experience

Suggested readings

1. Chapter 3 of The Elements of User Experience by Jesse Garrett

SESSION 3 (LIVE IN-PERSON)

Strategy Part 2

- User personas and scenarios
- Conducting user interviews and surveys

Assignment Create a user persona based on a real or fictional user

Suggested Readings

1. Chapter 3 of The Elements of User Experience by Jesse Garrett

SESSION 4 (LIVE IN-PERSON)

Scope

- Requirement Analysis
- Working out what you want to build

Assignment Research possible CMSs for your project

Suggested Readings

1. Chapter 4 of The Elements of User Experience by Jesse Garrett

SESSION 5 (LIVE IN-PERSON)

Scope Part 2

- Requirements analysis
- Prioritizing Requirements

Assignment Do the requirements analysis

Suggested Readings

1. Chapter 4 of The Elements of User Experience by Jesse Garrett

SESSION 6 (LIVE IN-PERSON)

Skeleton - Metaphor and Familiarity

- How to build apps that don't frustrate users
- Using familiarity to our advantage

Assignment Brainstorm ways to use metaphor and make the user experience easier for the user

Suggested Readings

1. Chapter 4 of The Elements of User Experience by Jesse Garrett

SESSION 7 (LIVE IN-PERSON)

The Structure

- Interaction Design
- Error Handling

Assignment Document how you can help the user and possible ways they can make mistakes

Suggested readings

1. Chapter 5 of The Elements of User Experience by Jesse Garrett

SESSION 8 (LIVE IN-PERSON)

Structure Part 2

- Information Design
- Architecture Diagrams
- Meta-data descriptions

Assignment Create the architecture designs and meta-data descriptions

Suggested readings

1. Chapter 5 of The Elements of User Experience by Jesse Garrett

SESSION 9 (LIVE IN-PERSON)

The Skeleton - Metaphor

- Making apps that people enjoy
- Familiarity
- Using metaphor to aid the CX

Assignment Brainstorm and document ways the user experience will be improved through familiarity and metaphor

Suggested Readings

1. Chapter 6 of The Elements of User Experience by Jesse Garrett

SESSION 10 (LIVE IN-PERSON)

Prototyping and Wireframing - Session 9 and 10

- The importance of prototyping and the product design lifecycle
- Prototyping tools and techniques
- Low-fidelity and high-fidelity prototypes

Assignment Create a paper wireframe prototype of a mobile app

Suggested Readings

1. Chapter 6 of The Elements of User Experience by Jesse Garrett

SESSION 11 (LIVE IN-PERSON)

User Research: Overview - Sessions 11 and 12

- What is and what isn't UX research?
- Importance of UX research in product design lifecycle
- Quantitative Methods vs. Qualitative Methods

Assignment Design a research project and corresponding methodology based on a user problem

Suggested Readings

1. Rocket Surgery Made Easy by Steve Krug
2. When to Use Which User-Experience Research Methods by the Nielsen Norman Group.
3. Quantitative User-Research Methodologies: An Overview by the Nielsen Norman Group.
4. Observing the User Experience: A Practitioner's Guide to User Research by Elizabeth Goodman, Mike Kuniavsky, and Andrea Moed.
5. Quantitative User Experience Research by Chris Chapman, and Kerry Rodden.
6. Measuring the User Experience by Bill Albert and Tom Tullis

SESSION 12 (LIVE IN-PERSON)

User Research: Overview - Sessions 11 and 12

- What is and what isn't UX research?
- Importance of UX research in product design lifecycle
- Quantitative Methods vs. Qualitative Methods

Assignment Design a research project and corresponding methodology based on a user problem

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6. Measuring the User Experience by Bill Albert and Tom Tullis

SESSION 13 (LIVE IN-PERSON)

User Research: Usability Testing, UI Evaluation, and User Surveys - Sessions 13 and 14

- Heuristic evaluation and expert reviews
- Usability tests and cognitive walkthroughs
- User surveys

Assignment Design a research instrument (survey questionnaire, usability test script, heuristic guide) and collect data in a pilot study.

Suggested readings

1. Rocket Surgery Made Easy by Steve Krug
2. When to Use Which User-Experience Research Methods by the Nielsen Norman Group.
3. Quantitative User-Research Methodologies: An Overview by the Nielsen Norman Group.
4. Observing the User Experience: A Practitioner's Guide to User Research by Elizabeth Goodman, Mike Kuniavsky, and Andrea Moed.
5. Quantitative User Experience Research by Chris Chapman, and Kerry Rodden.
6. Measuring the User Experience by Bill Albert and Tom Tullis.

SESSION 14 (LIVE IN-PERSON)

User Research: Usability Testing, UI Evaluation, and User Surveys - Sessions 13 and 14

- Heuristic evaluation and expert reviews
- Usability tests and cognitive walkthroughs
- User surveys

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5. Quantitative User Experience Research by Chris Chapman, and Kerry Rodden.
6. Measuring the User Experience by Bill Albert and Tom Tullis.

SESSION 15 (LIVE IN-PERSON)

Accessibility and Inclusive Design - Sessions 15 and 16

- Principles of accessibility
- Assistive technologies
- Inclusive design practices

Assignment Analyze the accessibility of a website or application

Suggested Readings

1. "A Web for Everyone" by Sarah Horton and Whitney Quesenbery (Chapters 1-2)
2. Research Methods in Human Computer Interaction. Chapter 16 - Working with research participants with disabilities by Jonathan Lazar

SESSION 16 (LIVE IN-PERSON)

Accessibility and Inclusive Design - Sessions 15 and 16

- Principles of accessibility
- Assistive technologies

- Inclusive design practices

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Suggested Readings

1. "A Web for Everyone" by Sarah Horton and Whitney Quesenbery (Chapters 1-2)
2. Research Methods in Human Computer Interaction. Chapter 16 - Working with research participants with disabilities by Jonathan Lazar

SESSION 17 (LIVE IN-PERSON)

Mobile and Multi-Platform Design - Sessions 17 and 18

- Design considerations for mobile and multi-platform applications
- Responsive design
- Mobile UX best practices

Assignment Design a prototype for a multimodal application (mobile device, AR/VR, web)

Suggested Readings

1. "Mobile Design Pattern Gallery" by Theresa Neil (Chapters on relevant patterns)
2. The Handbook of Multimodal-Multisensor Interfaces, Volume 1: Foundations, User Modeling, and Common Modality Combinations
3. Design of Multimodal Mobile Interfaces
4. Design Beyond Devices Creating Multimodal, Cross-Device Experiences

SESSION 18 (LIVE IN-PERSON)

Mobile and Multi-Platform Design - Sessions 17 and 18

- Design considerations for mobile and multi-platform applications
- Responsive design
- Mobile UX best practices

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Suggested Readings

1. "Mobile Design Pattern Gallery" by Theresa Neil (Chapters on relevant patterns)
2. The Handbook of Multimodal-Multisensor Interfaces, Volume 1: Foundations, User Modeling, and Common Modality Combinations
3. Design of Multimodal Mobile Interfaces
4. Design Beyond Devices Creating Multimodal, Cross-Device Experiences

SESSION 19 (LIVE IN-PERSON)

User-Centered Design Project - Sessions 19 and 20

- Group project kickoff
- Designing and prototyping a user-centered project
- Regular project check-ins

Assignment Start working on the group user-centered design project

Suggested Readings TBD

SESSION 20 (LIVE IN-PERSON)

User-Centered Design Project - Sessions 19 and 20

- Group project kickoff
- Designing and prototyping a user-centered project
- Regular project check-ins

Assignment Start working on the group user-centered design project

Suggested Readings TBD

SESSION 21 (LIVE IN-PERSON)

User-Centered Design Project (Continued) - Sessions 21 and 22

- Project development and refinement
- Regular project check-ins

Assignment Continue working on the group user-centered design project

Suggested Readings TBD

SESSION 22 (LIVE IN-PERSON)

User-Centered Design Project (Continued) - Sessions 21 and 22

- Project development and refinement
- Regular project check-ins

Assignment Continue working on the group user-centered design project

Suggested Readings TBD

SESSION 23 (LIVE IN-PERSON)

User-Centered Design Project (Presentation) - Sessions 23 and 24

- Finalizing and presenting the group project
- Class discussion

Assignment Present the group project to the class

Suggested Readings TBD

SESSION 24 (LIVE IN-PERSON)

User-Centered Design Project (Presentation) - Sessions 23 and 24

- Finalizing and presenting the group project
- Class discussion

Assignment Present the group project to the class

Suggested Readings TBD

SESSION 25 (LIVE IN-PERSON)

Future Trends in HCI - Sessions 25 and 26

- Emerging technologies (e.g., VR, GenAI)
- Ethical considerations in HCI
- HCI research and innovation

Assignment Write a reflection paper on the ethical considerations in HCI

Suggested Readings TBD

SESSION 26 (LIVE IN-PERSON)

Future Trends in HCI - Sessions 25 and 26

- Emerging technologies (e.g., VR, GenAI)
- Ethical considerations in HCI
- HCI research and innovation

Assignment Write a reflection paper on the ethical considerations in HCI

Suggested Readings TBD

SESSION 27 (LIVE IN-PERSON)

HCI Industry Case Studies - Session 27 and 28

- Working with cross-functional teams
- Analyzing real-world HCI success stories and failures
- Guest speakers from industry: TBD

Assignment Analyze and present a HCI case study of your choice

Suggested Readings

1. Case studies from HCI journals and books

SESSION 28 (LIVE IN-PERSON)

HCI Industry Case Studies - Session 27 and 28

- Working with cross-functional teams
- Analyzing real-world HCI success stories and failures
- Guest speakers from industry: TBD

Assignment Analyze and present a HCI case study of your choice

Suggested Readings

1. Case studies from HCI journals and books

SESSION 29 (LIVE IN-PERSON)

Course Wrap-Up and Final Exam - Session 29

- Review of key concepts and takeaways
- Prepare for final exam

Assignment Review for final exam

Suggested Readings Review course materials, notes, and textbooks

SESSION 30 (LIVE IN-PERSON)

Course Wrap-Up and Final Exam - Session 30

- Final exam on course material
- Course retro: lookback on lessons learned

Assignment Complete final exam, course retro

Suggested Readings Review course materials, notes, and textbooks

EVALUATION CRITERIA

criteria	percentage	Learning Objectives	Comments
Final Exam	30 %		Final exam covering all course material. Week 30.
Group Presentation	15 %		Group project presentation. Week 24.
Individual work	30 %		Weekly assignments.
Group Work	15 %		Group project delivery. Week 24.
Class Participation	10 %		Active participation in sessions and submission of exercises..

RE-SIT / RE-TAKE POLICY

Each student has four chances to pass any given course distributed over two consecutive academic years: ordinary call exams and extraordinary call exams (re-sits) in June/July.

Students who do not comply with the 80% attendance rule during the semester will fail both calls for this Academic Year (ordinary and extraordinary) and have to re-take the course (i.e., re-enroll) in the next Academic Year.

Evaluation criteria:

- Students failing the course in the ordinary call (during the semester) will have to re-sit the exam in June / July (except those not complying with the attendance rule, who will not have that opportunity and must directly re-enroll in the course on the next Academic Year).
- The extraordinary call exams in June / July (re-sits) require your physical presence at the campus you are enrolled in (Segovia or Madrid). There is no possibility to change the date, location or format of any exam, under any circumstances. Dates and location of the June / July re-sit exams will be posted in advance. Please take this into consideration when planning your summer.
- The June / July re-sit exam will consist of a comprehensive exam. Your final grade for the course will depend on the performance in this exam only; continuous evaluation over the semester will not be taken into consideration. Students will have to achieve the minimum passing grade of 5 and can obtain a maximum grade of 8.0 (out of 10.0) – i.e., “notable” in the in the re-sit exam.
- Retakers: Students who failed the subject on a previous Academic Year and are now re-enrolled as re-takers in a course will be needed to check the syllabus of the assigned professor, as well as contact the professor individually, regarding the specific evaluation criteria for them as retakers in the course during that semester (ordinary call of that Academic Year). The maximum grade that may be obtained in the retake exam (3rd call) is 10.0.
- After ordinary and extraordinary call exams are graded by the professor, you will have a possibility to attend a review session for that exam and course grade. Please be available to attend the session in order to clarify any concerns you might have regarding your exam. Your professor will inform you about the time and place of the review session. Any grade

appeals require that the student attended the review session prior to appealing.

Students failing more than 18 ECTS credits in the academic year after the June-July re-sits will be asked to leave the Program. Please, make sure to prepare yourself well for the exams in order to pass your failed subjects.

In case you decide to skip the opportunity to re-sit for an exam during the June / July extraordinary call, you will need to enroll in that course again for the next Academic Year as a re-taker and pay the corresponding extra cost. As you know, students have a total of four allowed calls to pass a given subject or course, in order to remain in the program.

BEHAVIOR RULES

Please, check the University's Code of Conduct here. The Program Director may provide further indications.

ATTENDANCE POLICY

Please, check the University's Attendance Policy here. The Program Director may provide further indications.

ETHICAL POLICY

Please, check the University's Ethics Code here. The Program Director may provide further indications.