

COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	ELECTRICAL AND COMPUTER ENGINEERING DEPT.		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	ECE_K730	SEMESTER	7
COURSE TITLE	Interaction Design		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
Lectures		3	
Seminars / Practice exercises		1	
Laboratory			
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (4).</i>		4	5
COURSE TYPE <i>general background, special background, specialised, general knowledge, skills development</i>	General Knowledge, Skills Development		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek and English for Erasmus		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	https://www.ece.uop.gr/		

(2) LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i> <p>At the end of the course the student will:</p> <ul style="list-style-type: none"> • has understood the basic concepts and theoretical background of Human-Computer Interaction • be able to enumerate easy-to-use design principles and describe modern interaction modes and their basic operating principles • Understand the conditions for accessible interaction design and positive user experience • Be able to describe intelligent interface development techniques that adapt user characteristics (adaptive interfaces). • apply analytical and experimental evaluation techniques and will be aware of the basic methods of statistical analysis used in experimental usability assessment techniques. • Understand the possibilities of data analysis to improve the effectiveness of a web site.. <p>At the end of the course the student will have developed the following skills:</p>
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- The ability to design easy-to-use interfaces and prototypes
- Selection of appropriate interactive system evaluation techniques and their implementation for the redesign
- Application of statistical analysis
- Specify web application attributes that affect search engine indexing
- Interpret analytics data to identify usability problems and improve the user experience.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>	<i>.....</i>
<i>Production of new research ideas</i>	<i>Others...</i>
	<i>.....</i>

- Search, analysis and synthesis of data and information, using the necessary technologies
- Decision-making, autonomous and teamwork
- Respect for diversity and multiculturalism
- Working in an interdisciplinary environment
- Criticism and self-criticism
- Promoting free, creative and inductive thinking

(3) SYLLABUS

The Human Computer Interaction is a key reference point in the design and implementation of any application, from a simple icon to integrated information systems, weapons systems, navigation systems, etc. For all other sciences it can be seen as a specialization although it can provide important information. For the system designer it is an essential part of the design process. In this respect, HCI includes the design, implementation and evaluation of interactive systems based on the tasks and work of users.

Human-Computer Interaction is the cognitive area of computing that studies the design, development and evaluation of interactive computer systems (i.e. systems that interact with their users (ACM SIGCHI, "Curriculum for Human-Computer Interaction", Special Interest Group on Computer-Human Interaction Curriculum Development Group, New York, 1992).

However, when we talk about human-computer interaction, we do not necessarily have a single user with a personal computer in mind. "User" can mean a specific user, a group of users who collaborate, or a number of users in an organization that everyone is engaged in some part of a task or process. The user is anyone who tries to complete a task using the technology. "Computer" means any technology that varies from conventional personal computer to a large-scale computer system, a system control process or a built-in system. The system can contain non-computational pieces including other people. "Interaction" means any communication between a user and a computer, regardless of whether it is direct or indirect. Direct interaction is related to dialogue, feedback and control throughout the execution of a task. Indirect interaction may refer to background or batch processing. The important thing and the audience in all the above scenarios is that the user needs to interact with the computer in order to achieve something.

In the context of the course, reference is made to cognitive concepts related to man, such as the way he thinks, remembers, looks at and reacts. Basic principles of system usability and design instructions for applications are also presented. Finally, reference is made to evaluation methodologies, both in the design and implementation phase of systems.

The course is developed into 13 section. Presentation Links at:

https://openeclass.teimes.gr/modules/course_description/?course=CIED175

Section Title	Literature
1. Introduction to the Human Communication – Computer Definition, Historical Review, Interaction Techniques,	Helen Sharp, Jennifer Preece, et al. (2019). "Interaction Design: Beyond Human-Computer Interaction" 5 edition, Wiley.
2. Basic Principles of Efficient Use Design, Application Usability	Helen Sharp, Jennifer Preece, et al. (2019). "Interaction Design: Beyond Human-Computer Interaction" 5 edition, Wiley.
3. Cognitive Reports, Visual Perception, G-ColorModels, Human Processor Model, User Interaction Model - Norman System., Distributed Cognitive Models	Web UI Design for the Human Eye Principles of Visual Consistency https://www.uxpin.com/studio/ebooks/visual-consistency-web-ui-design-elements/
4. Representation of knowledge and mental models, Attention and memory	The Visual Storyteller's Guide to Web UI Design https://www.uxpin.com/studio/ebooks/visual-storytelling-web-ui-design/
5. Principles of Interactive Systems Design, Design Guidelines	Interaction Design Unlocked Vol.1: Designing the Details https://www.uxpin.com/studio/ebooks/interaction-design-unlocked-vol-1-elements/
6. Icon Design	Icon Design: Graphic Icons in Computer Interface Design by Steve Caplin Watson-Guption Pubns The Icon Handbook, by JonHicks, Published Five Simple Steps
7. Design on the Web	Responsive Web Design Best Practices https://www.uxpin.com/studio/ebooks/responsive-web-design-best-practices/
8. Evaluating Design Factors determining technical evaluation, Ways to Conduct an evaluation	Jonathan Lazar, Jinjuan Heidi Feng, Harry Hochheiser (2017). "Research Methods in Human-Computer Interaction" 2nd Edition, Morgan Kaufmann.
9. Laboratory Studies, Field Studies, System Design Evaluation Techniques, Cognitive walkthrough, Eurenic Evaluation, Review - Based Evaluation, Evaluation based on Model	Jonathan Lazar, Jinjuan Heidi Feng, Harry Hochheiser (2017). "Research Methods in Human-Computer Interaction" 2nd Edition, Morgan Kaufmann.
10. Evaluating the Implementation of Evaluation Techniques of an Implemented System, Empirical Methods of Experimental Evaluation, Observation Methods, "Think aloud" and Collaborative Evaluation, Analysis of a Protocol, Automatic Protocol Analysis Tools, Post - Task Walkthrough, Query Techniques, Interviews, Questionnaires	Koutsampasis, P., 2015. Evaluation of user-focused interactive systems. [electronic video] Athens: Association of Greek Academic Libraries. Available at: http://hdl.handle.net/11419/2765

11. GOMS Model Family, Model-based evaluation – GOMS, Family models – GOMS, Applying GOMS analysis to design, Design information provided by GOMS models, Information not provided by GOMS models, Keystroke - Level Model (KML), Card, Moran & Newell GOMS (GMN - GOMS), Natural GOMS Language (NGOMSL), Cognitive - Perceptual - Motor GOMS (CPM - GOMS)	Helen Sharp, Jennifer Preece, et al. (2019). "Interaction Design: Beyond Human-Computer Interaction" 5 edition, Wiley.
12. Web Design, Usability and Internet Design, Internet Navigation Design	Storytelling in Web UI Design https://www.uxpin.com/studio/ebooks/storytelling-web-ui-design-immersive-interactions/
13. Design for All - Design for Disabled, Accessibility, Design Guidelines for People with Disabilities and Seniors	Content Wireframing for Responsive Design, https://www.uxpin.com/studio/ebooks/content-wireframes-responsive-design/

The numbering refers to the corresponding week of the course.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	ICT is used to communicate with students and make available educational material, mainly through the eclass platform (announcements, lecture slides and other educational material, posting and submitting papers, user groups, discussions, emails, exercises, glossary, multimedia), as well as conventional e-mail.	
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	Activity	Semester Workload
	Lectures	39
	Preparation of operations	20
	Bibliography study and analysis	26
	Unguided study	20
	Project	20
	Course Total (25 hours of workload per credit unit)	125
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice</i>	Written examination (70% of the final grade) including: <ul style="list-style-type: none"> ▪ Exercises ▪ Multiple choice questions ▪ Short answer questions 	

<p><i>questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Project (30% of final grade)</p> <p>The examination material and the evaluation process are communicated to the students in the lecture hall and in the e-class.</p>
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(5) ATTACHED BIBLIOGRAPHY

- Jonathan Lazar, Jinjuan Heidi Feng, Harry Hochheiser (2017). "Research Methods in Human-Computer Interaction" 2nd Edition, Morgan Kaufmann.
- Helen Sharp, Jennifer Preece, et al. (2019). "Interaction Design: Beyond Human-Computer Interaction" 5 edition, Wiley.
- Storytelling in Web UI Design <https://www.uxpin.com/studio/ebooks/storytelling-web-ui-design-immersive-interactions/>
- Koutsampasis, P., 2015. Evaluation of user-focused interactive systems. [electronic video] Athens: Association of Greek Academic Libraries. Available at: <http://hdl.handle.net/11419/2765>
- Responsive Web Design Best Practices <https://www.uxpin.com/studio/ebooks/responsive-web-design-best-practices/>
- Content Wireframing for Responsive Design, <https://www.uxpin.com/studio/ebooks/content-wireframes-responsive-design/>
- Mike Grigsby (2018). "Marketing Analytics: A Practical Guide to Improving Consumer Insights Using Data Techniques" 2nd Edition, Kogan Page.
- Icon Design: Graphic Icons in Computer Interface Design by Steve Caplin Watson-Guption Pubns
- Web UI Design for the Human Eye Principles of Visual Consistency <https://www.uxpin.com/studio/ebooks/visual-consistency-web-ui-design-elements/>
- The Icon Handbook, by JonHicks, Published Five Simple Steps
- Interaction Design Unlocked Vol.1: Designing the Details <https://www.uxpin.com/studio/ebooks/interaction-design-unlocked-vol-1-elements/>
- The Visual Storyteller's Guide to Web UI Design <https://www.uxpin.com/studio/ebooks/visual-storytelling-web-ui-design/>

The bibliography will be updated on a bi-monthly basis with new resources on internet