COURSE DATA

Data Subject	
Code	34839
Name	Human computer interaction
Cycle	Grade
ECTS Credits	6.0
Academic year	2022 - 2023

Study (s)

Degree	Center	Acad. year	Period
1407 - Degree in Multimedia Engineering	School of Engineering	2	Second term

Subject-matter

Degree	Subject-matter	Character
1407 - Degree in Multimedia Engineering	5 - Desarrollo del Software Multimedia	Obligatory

Coordination

Name	Department
DURA MARTINEZ, ESTHER	240 - Computer Science

SUMMARY

This is a second year course in Computer Science which take place in the first semester. The aim of this course is to provide an overview on computer-interaction systems from a dual perspective.

On one hand we will study the elements related to interactive systems from a computer perspective; starting from the lowest level, ie, the operating system and elements that allow you to create interactive applications to the highest level such as programming tools for graphical user interfaces.

Besides we will address interaction systems from a human side point of view in order to study the factors that have to be considered in the development of interfaces. Also we will focus on how to

develop user interfaces according to usability and accessibility criteria. At the end of the course the student should be able to design, develop and evaluate simple user interfaces.

The overall goals of this course are:

1)To introduce students to the concepts of human-computer interaction, emphasizing the importance of user-centered design, the techniques used in interface design, and their evaluation.

2)To provide students with the concepts of windowing and event-based programming.

3) To teach students to develop graphical user interfaces using programming libraries.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

It is recommended to have attended first year courses on Computer and Programming. This course assumes that students have acquired the programming skills taught in first year courses.

OUTCOMES

1405 - Grado en Ingenieria Multimedia

- B4 - Have basic skills in the use and programming of computers, operating systems, databases and computer software for use in engineering.
- B5- Know the structure, organisation, operation and interconnection of computer systems, the fundamentals of their programming and their application to solve engineering problems.
- I10 - e able to design and evaluate human-computer interfaces that ensure accessibility and usability of computer systems, services and applications.
- MM3 - Be able to implement methodologies, technologies, processes and tools for the professional development of multimedia products in a real context of use by applying the appropriate solutions for each environment.
- MM5 - Know how to apply the theoretical and practical resources to deal with a multimedia application as a whole.

- MM9 - Program correctly in the different specific languages of multimedia systems taking into account time and cost restrictions.
- MM14 - Be able to create multimedia contents for production environments in broadcasting and digital edition.
- MM21 - Communicate effectively, both in writing and verbally, knowledge, procedures, results and ideas related to ICT and specifically to multimedia, and know their socioeconomic impact.
- MM23 - Make proper use of theories, procedures and tools in the professional development of multimedia engineering in a real context (specification, design, implementation, deployment and evaluation of multimedia systems solutions).
- MM24 - Be able to design, develop, evaluate and ensure the accessibility, ergonomics, usability and security of multimedia systems, services and applications and of the information that these manage.
- MM28 - Be able to solve problems with initiative, decision-making and creativity and to communicate and transmit the knowledge, abilities and skills of a multimedia engineer.

LEARNING OUTCOMES

This course aims to achieve the following learning outcomes:

1. To develop graphical user interfaces.
2. To apply techniques to evaluate interfaces.
3. To identify usability issues for interfaces.
4. Demonstrate knowledge of techniques for assessing accessibility.
5. To be able to design interfaces centered on user.

To complement these outcomes, this course also aims that students acquire the following technical and social skills:

-Apply the techniques of user interface design by following the recommended steps in the methodology of interface development as well as involving users in the early stages of the process as necessary.

-Analyze, design interfaces and prototype them
-Demonstrate knowledge of applying various techniques to evaluate interfaces.

-Demonstrate knowledge and use fluently a development tool for graphical user interfaces.
-Understand and apply the techniques of event-driven programming to create interactive applications.
-Be able to communicate effectively both written and oral knowledge related to different stages of design and development of user interfaces.
-Solve problems related to user interface design with initiative, making decisions, in an autonomous and creativity way..
-Teamwork: cooperate, interact, and share the work with other students to solve problems.

DESCRIPTION OF CONTENTS

1. Introduction to human-computer interaction

-Definition
-Historical evolution of Interfaces

2. Architecture of interactive systems.

Windowing Systems

Model-View-Controller Architecture

Event-based programming

3. Concepts for Programming users interfaces

Object-Oriented Architecture for graphical interfaces
Tools for the development of user interfaces.

4. Programming Graphical user interfaces with Java

Java Foundation Classes.
Java 2D
Java Swing

5. Concepts of human-computer interaction

The humans

The computer

The interaction

6. Styles and interaction paradigms

Interaction Styles

Paradigm Styles

7. Design of user-centered computer interfaces

Accessibility

Usability

Evaluation of Interfaces

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Laboratory practices	20,00	100
Classroom practices	10,00	100
Development of group work	3,00	0
Development of individual work	6,00	0
Study and independent work	12,00	0
Readings supplementary material	1,00	0
Preparation of evaluation activities	10,00	0
Preparing lectures	14,00	0
Preparation of practical classes and problem	35,00	0
Resolution of case studies	9,00	0
TOTAL	**150,00**	

TEACHING METHODOLOGY

LECTURES:

The lectures will be based on active lectures where every 20/25 minutes will be introduced in any activity that requires the involvement of students, so that 1) they can do an activity based on the content they have just learnt, 2) recover the level of attention to the next block.

LECTURES PREPARATION:

Students have to prepare the lecture content, following the plan of the course. To do this they will use the literature suggested by the lecturer as well as the materials provided him or/and any other directions provided by the lecturer.

PREPARATION OF PRACTICAL WORK:

To better assimilate the contents of the lectures, practical sessions are conducted in the laboratories. Attendance to practical sessions is mandatory and will be verified by the lecturer in charge of the group. It is considered that a student has assisted to all the compulsory sessions if he or she attends a minium of the 80% of the laboratory sessions. The student also has to justify why he he/she could not attend as long as there is a major reason. Students who are working and cannot attend practical sessions should contact the lecturer before the beginning of the first session. The results of these activities must be submitted to the lecturer in charge of the group during the course and in the terms established by the lecturer. Students are expected to do/prepare some of these activities at home.

TEAM WORK:

A set of problems will be propossed that should be solved in teams of 3 to 6 persons. Each member of the group will be graded both the joint mark of the group as the individual mark of each member.

The e-learnig platform (Aula Virtual) will be used as communication tool between the lecturer and the student. The student will access to all the material used in the lectures, through Aula Virtual, as well as all the problems and exercise that needs to solve.

EVALUATION

For the evaluation of the course the following aspects will be considered.

(C) Continuous assessment, based on participation and the degree of involvement of the student on the teaching-learning process. The attendance on regular basis to on-campus lectures/activities and the realization of the work, will be taken into account. Continuous assessment activities include individual theoretical or practical assignments which will be hand in to the lecturer in “Aula Virtual”. It will also include two written tests: multiple choice or short-answer questions to evaluate some part of the content of this course. Finally there will be a group activity where students will have to develop a written theoretical work and to do an oral poster presentation of this work. The last activity will be a public presentation in group which will de done to spread the results publically.

All these activities will lead to the continuous assessment mark as follows:

C (Note Continuous Assessment) = 0.25 *Individual-Test +0.3 * Assigments + 0.2 * Poster+0,25* Presentaton

Assigments hand in after the due date will be rejected. Also these assigments can not be hand in again for the second summon.

(E) There will be a final individual test consisting of one or more written exams or test of knowledge. These tests will have both theoretical questions and practical problems. It will be mandatory to pass each test to compensate with the other parts and pass the course.

(P) Assessment of laboratory activities. It is mandatory to attend the laboratory sessions. There will be two types of activities in the laboratory sessions: practical activities and the development of a project. Both types of activities are mandatory and can be done in a group made of two persons or individually. For the practical activities the code and the functionality will be evaluated. The project will be defended individually to the lecturer. The mark for this part will be calculated as follows:

P(Laboratory assessment)=mean(mean(practical activities-tests),final-project)

It is mandatory to get a mark of 5 in both parts, practical activities and final project to compensate with the other parts and to pass the course. In case the student fails any of these parts the mark for the laboratory will be calculated as: minimum (practical activities, final project)

If the student gets a mark equal or higher than 5 for all the tests of knowledge in (E) and if he/she gets a mark equal or higher than 5 for the laboratory part (P) the final mark of the course will be calculated in the following way:

Final Grade=0,35*C+0,35*E+0,3*P

Otherwise the final grade will be calculated as:

Final Grade=Minimum(E,P)

In the second summons will be kept note of the continuous assessment (C) and parts (E and P) approved. For unapproved parts (E and P) will be an exam, calculating the final mark as you would at first call.

Any copy among students detected in the continuous assessment (C)(except for Assignments, that can be recovered),, in the final test (E) or in the laboratory assessment (P) involves loosing the matriculation of first and second call in the current course.

Regarding fraudulent activities:

-The lecturer may expel students form the classroom while they are doing an exam if:

1) They don’t guarantee the authencity and privacy of the exercise.

2) They borrow the identity of another student

3) They have the mobile phone or any other unauthorized electronic device or document

-The lecturer can stay with the evidence involved in incidents occurred as they are doing an exam and notify by a written stament to the head of studies of the center.

The lecturer can qualify with a “zero” mark an exam when:

1) There are indications of fraudulent performance in the exam or part of it.

2) They have the mobile phone or any other unauthorized electronic device or document

In addition to all these measures, the lecturer may initiate disciplinary proceedings against the student.

In the event of a closure of the facilities due to the health situation, and if this affects all or part of the classes of the subject, they will be replaced by classes where physical attendance will be replaced by synchronous or asynchronous online classes following the established schedules. .

In the event of a closure of the facilities due to the health situation, and if this affects any of the face-to-face tests of the subject, these will be replaced by tests of a similar nature but in virtual mode through the supported computer tools by the Universitat de València. The evaluation percentages will remain the same as those established in the guide.

In any case, the evaluation of this subject will be done in compliance with the University Regulations in this regard, approved by the Governing Council on 30th May 2017 (ACGUV 108/2017)

REFERENCES

Basic

- Apuntes y transparencias de la asignatura
- Building Interactive Systems. Principles for Human-Computer Interaction. Dan R. Olsen. 2010
- Learning Java. P. Niemyer, J. Knudsen. OReilly Media, Inc. Third Edition, 2005. Accesible online en Safari Books Online http://proquest.safaribooksonline.com/book/programming/java/9780980839609
- Java 2D Graphics. Jonathan Knudsen. OReilly Media, Inc. 1999. Accesible online en Safari Books Online http://proquest.safaribooksonline.com/book/programming/java/1565924843
- User Interface Design for Programmers. J. Spolsky. Apress

Additional

- Human-Computer Interaction. 2nd Ed. A. Dix, J. Finlay, G. Avowd, R.Beale. Prentice-Hall
- Interaction design: Beyond Human-Computer Interaction. J. Preece, Y. Rogers, H. Sharp. J. Willey.
- Universal Usability. Designing computer interfaces for diverse users. Jonathan Lazar.
- Simply Java: An introduction to Java Programming. J. Levenick. Course Technology PTR. Accesible online en Safari Books Online http://proquest.safaribooksonline.com/book/programming/java/9781584504269
- Java: A Beginners Tutorial. Budi Kurniawan. Brainy Software. 2010. Accesible online en Safari Books Online http://proquest.safaribooksonline.com/bo ok/programming/java/9780980839609