Course guide
340454 - INDI-I7P23 - Interaction and Interface Design

Last modified: 27/06/2023

Unit in charge:	Vilanova i la Geltrú School of Engineering
Teaching unit:	723 - CS - Department of Computer Science.

Degree:	BACHELOR'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2018). (Compulsory subject).

Academic year: 2023   **ECTS Credits:** 6.0   **Languages:** Catalan

LECTURER

Coordinating lecturer:	BERNAT ORELLANA BECH
Others:	BERNARDINO CASAS FERNÁNDEZ BERNAT ORELLANA BECH

PRIOR SKILLS

See catalan version.

REQUIREMENTS

See catalan version.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. CECO6. Ability to develop and assess interactive and presentation of complex information systems and their application in solving problems of designing human being-computer interaction.

Generical:
GEN. Accessibility: Know and apply criteria of universal design in different products, environment and services.

Transversal:
07 AAT. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.

TEACHING METHODOLOGY

See Catalan version of the syllabus.

LEARNING OBJECTIVES OF THE SUBJECT

1. To know the concept of usability and the assessment of whether an interface of an application or web page is usable.
2. To learn to program interfaces in a high-level programming language using a specific API. Design and implement the usability of a specific interface.
3. To learn the basic concepts of Computer Graphics. Implement simple applications in OpenGL that visualize 3D data.
4. To know the architecture of current GPUs.
5. To be able to program applications with user interfaces different from the usual ones, such as mobile phones or tablets.

STUDY LOAD

Type	Hours	Percentage
Self study	90,0	60.00
Hours small group	30,0	20.00
Hours large group	30,0	20.00

Total learning time: 150 h

CONTENTS

1. Introduction to the interactive systems

Description:
Introduction to the subject.
Basic concepts of interaction, computer graphics, virtual reality and augmented reality.

Specific objectives:
3. Aprender los conceptos básicos de Gráficos por Computador. Implementar aplicaciones sencillas en OpenGL que visualicen datos 3D.

Full-or-part-time: 2h
Theory classes: 2h

2. Processing and visualization of 2D and 3D geometry

Description:
Introduction to Computer Graphics.
Modeling of scenes and objects.
Elements of 2Di 3D geometry processing: meshes of triangles.
Analysis of different data structures for geometry.
Elements of an interactive graphic system.
Basic concepts of 3D visualization.
Camera Model
Display Pipeline.
Visualization using OpenGL.

Specific objectives:
3. To learn the basic concepts of Computer Graphics. Implement simple applications in OpenGL that visualize 3D data.

Related activities:
The following activities are related to this topic: Lab2 and Teo2.

Full-or-part-time: 30h
Theory classes: 14h
Self study : 16h

3. Graphical interaction and user interfaces design

Description:
Introduction to interactive systems.
Person-Computer Interaction.
Introduction to usability.
Basic principles of user design.
Design rules.
Design of graphic interfaces.
Model View Controller.
Usability studies of applications, web pages and mobile devices.

Specific objectives:
1. To know the concept of usability and the assessment of whether an interface of an application or web page is usable.
5. To be able to program applications with user interfaces different from the usual ones, such as mobile phones or tablets.

Related activities:
The following activities are linked to this topic: Lab1, Teo1 and Proj.

Full-or-part-time: 25h
Theory classes: 12h
Self study : 13h

GRADING SYSTEM

See Catalan version of the syllabus.

EXAMINATION RULES.

See Catalan version of the syllabus.

BIBLIOGRAPHY

Basic:
- Nielsen, Jakob; Loranger, Hoa. Prioritizing web usability [on line]. Berkeley, California: New Riders, 2006 [Consultation: 14/02/2024]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=7115336. ISBN 9780321350312.
- Angel, Edward; Shreiner, Dave. Interactive computer graphics : a top-down approach with shader-based OpenGL. 6th ed. Harlow [etc.]: Pearson, 2012. ISBN 9780273752264.
- Watt, Alan H. 3D computer graphics. 3rd ed. Harlow [etc.]: Addison-Wesley, 2000. ISBN 0201398559.
- Schneiderman, Ben [et al.]. Designing the user interface : strategies for effective human-computer interaction [on line]. 6th ed. Boston: Pearson Education Limited, 2017 [Consultation: 14/02/2024]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=5186087. ISBN 9781292153926.
- Angel, Edward; Shreiner, Dave. Interactive computer graphics : a top-down approach with WebGL [on line]. 7th ed. Harlow: Pearson, 2015 [Consultation: 13/02/2024]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=5173996. ISBN 9781292019338.

RESOURCES

Hyperlink:
- http://qt.digia.com- http://www.opengl.org- http://useit.com- http://developer.android.com