BASIC DETAILS:

Subject:	REALIDAD AUMENTADA
Id.:	31388
Programme:	GRADUADO EN DISEÑO Y DESARROLLO DE VIDEOJUEGOS. 2013 (BOE 28/03/2014)
Module:	PROGRAMACIÓN DE VIDEOJUEGOS
Subject type:	OPTATIVA

Year:	4	**Teaching period:**	Primer Cuatrimestre
Credits:	6	**Total hours:**	150
Classroom activities:	66	**Individual study:**	84
Main teaching language:	Inglés	**Secondary teaching language:**	Castellano
Lecturer:		**Email:**	

PRESENTATION:

This subject provides basic concepts to know, understand and evaluate augmented reality systems, applications, simulators and their impact on video games and user interfaces. Augmented Reality is an emerging technology that is called to create new ways of interaction between human beings and their environment. Proof of this is the growing expansion as an industry and its penetration in most economic sectors.

This subject has an eminently practical nature, basing it on the Learning by doing methodology, where innovative product development concepts are proposed with Augmented Reality design and development technologies.

PROFESSIONAL COMPETENCES ACQUIRED IN THE SUBJECT:

General programme competences	G09	Ability to work with respect for the environment and society through the proper use of technology and its application in promoting a sustainable economy and environment.
Specific programme competences	E31	Ability to perform the evaluation of video games from their different approaches.
Learning outcomes	R01	Understand the basic principles of augmented reality.
	R02	Evaluate current software and hardware augmented reality.
	R03	Identify and describe applications of augmented reality
	R04	Identify and describe factors and social and psychological impact on augmented reality applications.

PRE-REQUISITES:

Have completed, or have validated, the 2D Design and 3D Design course.
Knowledge of object-oriented programming, with knowledge of C # or Java being especially useful.
Basic knowledge of video game engines.
It will be positively valued to be studying Advanced 3D Design.
Competences in initiative and teamwork will be valued.

SUBJECT PROGRAMME:

Subject contents:

1 - XR TECHNOLOGIES INTRODUCTION
1.1 - History and definition of XR
1.2 - Market and Trends of XR
1.3 - Technologies - Basic Vuforia
1.4 - Technologies - Advanced Vuforia
1.5 - Technologies - AR Foundation
1.6 - Technologies - Easy AR

2 - AR PROJECT- IDEATION & DEVELOPMENT
2.1 - Workflow Methodology and Ideation
2.2 - Project Definition
3 - AR PROJECT - PRODUCTION
3.1 - Content Development I - UX/UI+ Markers
3.2 - Content Development II - 3D & Animation
3.3 - Coding I
3.4 - Coding II
3.5 - Test & Launching
3.6 - Virtual Reality / Mixed Reality Workshop
4 - AUGMENTED REALITY
4.1 - FINAL WORK

Subject planning could be modified due unforeseen circumstances (group performance, availability of resources, changes to academic calendar etc.) and should not, therefore, be considered to be definitive.

TEACHING AND LEARNING METHODOLOGIES AND ACTIVITIES:

Teaching and learning methodologies and activities applied:

Theoretical sessions
The teacher will explain, supported by ICT resources (laptop, projector, Internet) and the blackboard the theoretical part of the subject, mainly the doubts that have arisen in the students during the autonomous work. The material used in each session will always be on the PDU in advance so that students can perform a preliminary reading. Students are strongly advised to read the topics to be discussed in class beforehand.
The participation, debate, questions and concerns shown by students related to the subject will be valued, both in face-to-face sessions and in those that take place outside of face-to-face sessions

Practical sessions - Learning based on solving exercises and problems
These problems will be solved by the students as part of their autonomous work outside of class time. In the face-to-face sessions, those problems that the students have found especially interesting or whose difficulty has been a handicap in solving them will be solved

Learning based on solving exercises and problems
A very important part of learning the subject, and the grade, will be achieved with the resolution of a practice to be solved individually by the students. The students will be provided with the statements of the practices and their delivery will be requested in a reasonable time. Partial deliveries of the practice will be made. The correct resolution of this practice will prepare the student to acquire the competences of the subject with great efficiency.
In each topic, or in most of them, each student will be assigned an exercise (or set of them) that must be solved in a stipulated time. The resolution of these exercises will be part of the evaluation whose evaluating instrument is "Observation scales, Problems proposed by the teacher.", With a weight in the grade of 5%

Tutoring sessions
The students will be able to ask the teacher those doubts that have not been resolved during the classes or that have arisen in their time dedicated to autonomous work. You can request a specific extension bibliography on a specific topic and / or any other type of information related to the subject. On the other hand, during these sessions, there will be a follow-up of supervision and orientation of the process to be followed in each of the activities carried out.
The tutorials will be set by mutual agreement with the teacher and students on the dates close to the delivery / publication of this teaching guide.

Work timing
Periodically the teacher will provide the students with time schedules indicating the work to be carried out by the students

Student work load:

Teaching mode	Teaching methods	Estimated hours
Classroom activities	Master classes	32
	Practical work, exercises, problem-solving etc.	8
	Workshops	6
	Laboratory practice	16

Individual study	Assessment activities	4
	Tutorials	3
	Individual study	46
	Individual coursework preparation	30
	Compulsory reading	5
	Total hours:	150

ASSESSMENT SCHEME:

Calculation of final mark:

Written tests:	45	%
Individual coursework:	20	%
Group coursework:	20	%
Final exam:	10	%
Others:	5	%
TOTAL	100	%

*Las observaciones específicas sobre el sistema de evaluación serán comunicadas por escrito a los alumnos al inicio de la materia.

BIBLIOGRAPHY AND DOCUMENTATION:

Basic bibliography:

Alexander Osterwalder | Yves Pigneur | Alan Smith | Gregory Bernarda. Value Proposition Design. Editorial: Deusto 4ª Edición .
Alexander Osterwalder | Yves Pigneur. Business Model Generation. Editorial: DEUSTO S.A. EDICIONES
Ken Robinson. El Elemento. Editorial: DEBOLSILLO
Robert Scoble and Shel Israel | The Fourth Transformation. Editorial: CreateSpace Independent Publishing Platform; 1 edition

Recommended bibliography:

W. Chan Kim | Renée Mauborgne. Blue Ocean Strategy. Editorial: Harvard Business Review
Jesse Schell | The Art of Game Design: A Book of Lenses. Editorial: A K Peters/ CRC Press; 2 edition

Recommended websites:

AR Foundation	https://docs.unity3d.com/Packages/com.unity.xr.arfoundation@4.1/manual/index.html
Artstation	https://www.artstation.com/
Canvanizer	https://canvanizer.com/
EasyAR	https://www.easyar.com/
strategyzer	https://strategyzer.com/
techcrunch	https://techcrunch.com/
Vuforia	https://www.vuforia.com/
xakata	https://www.xataka.com/

* Guía Docente sujeta a modificaciones