

BASIC DETAILS:

Subject:	INTRODUCCIÓN A LA INFORMÁTICA GRÁFICA		
Id.:	30075		
Programme:	GRADUADO EN INGENIERÍA INFORMÁTICA. PLAN 2008 (BOE 15/12/2008)		
Module:	INFORMATICA GRAFICA		
Subject type:	OPTATIVA		
Year:	3	Teaching period:	Segundo Cuatrimestre
Credits:	3	Total hours:	75
Classroom activities:	34	Individual study:	41
Main teaching language:	Inglés	Secondary teaching language:	Castellano
Lecturer:	BLASCO LATORRE, DANIEL (T)	Email:	dblasco@usj.es

PRESENTATION:

The subject covers a summarized approach to the general introduction presented in the Video Games Degree Computer Graphics subject: Primary computer graphics concepts, 2D/ 3D image management, a hardware/ software fundamentals overview and basic programming.

Such fundamentals are meant to achieve a better understanding of the computer graphics area basics, libraries and related engines.

PROFESSIONAL COMPETENCES ACQUIRED IN THE SUBJECT:

General programme competences	G02	Innovative capacity to propose and find new and efficient ways to undertake any task and/ or function within the professional environment - highly motivated by quality.
	G04	Capacity to always commit to working responsibly - creating a strong sense of duty and fulfilment of obligations.
	G06	Capacity to analyse and find a solution to complex problems or unforeseen situations which may arise while working in any type of socio-economic organisation.
	G13	Capacity to use individual learning strategies aimed at continuous improvement in professional life and to begin further studies independently.
	G15	Capacity to structure reality by means of linking objects, situations and concepts through logical mathematical reasoning.
Specific programme competences	E02	Capacity to apply the intrinsic engineering principles based on mathematics and a combination of scientific disciplines.
	E04	Capacity to maintain an open mind to innovation and creativity within the framework of the engineering profession.
	E07	Capacity to work effectively in project teams, where appropriate assuming executive responsibilities, and consider the human, technological and financial sides.
	E09	Capacity to maintain professional competences through independent learning and continuous improvement.
	E11	Capacity to remain up-to-date in the technological and business worlds in the area of information and communication technologies.
	E13	Capacity to identify, assess and use current and emerging technologies, considering how they apply in terms of individual or organisational needs.
	E22	Capacity to undertake implementation tasks which require a high degree of technical awareness in different spheres (programming, configuration of hardware and communications equipment, etc.).
Learning outcomes	R01	Distinguir las capacidades de los diferentes niveles de software de gráficos y describir la pertinencia de cada uno
	R02	Crear imágenes mediante una API estándar de gráficos
	R03	Utilizar las facilidades que ofrece una API estándar para expresar transformaciones básicas, tales como escala, rotación y traslación
	R04	Explicar las diferentes técnicas utilizadas en el software de gráficos y criticar una imagen renderizada

PRE-REQUISITES:

The pre-requisites include object oriented programming knowledge in C++ and basic calculus, linear

algebra and algorithmics.

SUBJECT PROGRAMME:

Subject contents:

1 - General Introduction
1.1 - Computer Graphics Initial Overview and Basic Mathematics Review
2 - Image Representation
2.1 - Image Nature, Format and Manipulation
3 - Scene Rendering
3.1 - Visualization and Lighting
4 - Hardware Evolution Overview Appendix
4.1 - Basic Principles

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:

Theory/ Practice Sessions:

During these sessions, the contents featured in the subject will be exposed using resources like whiteboards, slideshows, etc., to show examples and illustrate properly the different sections. Additionally, active involvement will be encouraged through theoretical or real life case discussion. These sessions will be supported by different exercises.

Individual/ Team Exercises:

A significant part of the overall score will depend on individual exercises dealing with the different sections studied. These exercises will involve programming or tool usage and they are meant not to be independent, but interrelated, as new content is presented/ added in the course. Each exercise will consist of a set of instructions and certain results to be delivered before a specific date. Apart from individual work, a group activity will be developed forming teams and under similar conditions.

Presentations/ Individual Report Tests:

The main purpose of presentations is evaluating the knowledge acquired and underlying the processes and cases studied and explored in both lectures and exercises.

Tutorials:

The students will take part, on demand, in tutorials to be conducted on Wednesdays at 11:00 AM, but schedules may vary according to particular necessities or circumstances. The main goal pursued is to clear up doubts, and help students strengthen the knowledge and skills to be acquired. Just like with other subjects, the PDU is a useful communication tool to ask for/ share information on the course.

Student work load:

Teaching mode	Teaching methods	Estimated hours
Classroom activities	Master classes	8
	Practical exercises	6
	Practical work, exercises, problem-solving etc.	4
	Debates	2
	Coursework presentations	2

	Films, videos, documentaries etc.	1
	Laboratory practice	9
	Assessment activities	2
Individual study	Tutorials	2
	Individual study	10
	Individual coursework preparation	15
	Group coursework preparation	10
	Research work	2
	Recommended reading	2
	Total hours:	75

ASSESSMENT SCHEME:

Calculation of final mark:

Individual coursework:	30 %
Group coursework:	30 %
Final exam:	20 %
Daily Observation:	10 %
Individual Report Test:	10 %
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:

HEARN, Donald, BAKER M. Pauline, CARITHERS, Warren R. Computer Graphics with OpenGL. Fourth Edition. London: Pearson, 2011.

HILL, F. S., STEPHEN, M. Kelley. Computer Graphics using OpenGL. Third Edition. New Jersey. Pearson, 2007.

Recommended bibliography:

HUGHES, John F., VAN DAM, Andries, MCGUIRE, Morgan, SKLAR, David.F, FOLEY, James D., FEINER, Steven K., AKELEY, Kurt. Computer Graphics. Principles and Practice. Third Edition. Madrid: Addison-Wesley, 2013.

Recommended websites:

OpenGL	https://www.opengl.org/
Unity Technologies	https://unity3d.com/es