



## IDENTIFYING DATA

### Multimedia Technology and Computer Graphics

Subject	Multimedia Technology and Computer Graphics			
Code	V05G300V01932			
Study programme	(*)Grao en Enxeñaría de Tecnoloxías de Telecomunicación			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	Spanish Galician English			
Department				
Coordinator	Fernández Hermida, Xulio			
Lecturers	Fernández Hermida, Xulio			
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General description	Subject mainly based in projects to be done between the classroom and out of it. It consist of works to be done in groups of 2, 3 or 4 studets. It is necessassy to do a presentation and defence of the work in front of the rest of the classmates. It tackles fundamentally the 3D design, the construction of multimedia dynamic web pages and the construction of games.			

## Competencies

Code	
A3	CG3: The knowledge of basic subjects and technologies that capacitates the student to learn new methods and technologies, as well as to give him great versatility to confront and update to new situations
A9	CG9: The ability to work in multidisciplinary groups in a Multilanguage environment and to communicate, in writing and orally, knowledge, procedures, results and ideas related with Telecommunications and Electronics.
A83	(CE74/OP17) The ability to construct, exploit and manage image and synthetic video generation systems and interactive multimedia applications.

## Learning aims

Expected results from this subject	Training and Learning Results
CG3: The knowledge of basic subjects and technologies that capacitates the student to learn new methods and technologies, as well as to give him great versatility to confront and update to new situations	A3
CG9: The ability to work in multidisciplinary groups in a Multilanguage environment and to communicate, in writing and orally, knowledge, procedures, results and ideas related with Telecommunications and Electronics.	A9
(CE74/OP17) The ability to construct, exploit and manage image and synthetic video generation systems and interactive multimedia applications.	A83

## Contents

Topic	
Synthesis of image by computer	Description of the underlying mathematics to the charts by computer. Description of the philosophy of the electronics associated to the cards of graphic processing in the computers

3D Modelling	Getting familiar with software programs for 3D design. Understanding of the differences between different applications and the implications that these differences suppose in what can be done with the designs realised in each program. (Blender, Sketchup, Solid Works, etc.). Texture mapping and material mapping: UV mapping. Formats of files for virtual surroundings and games.
3D Animation	Simple animation of rigid objects (rotation, traslation, scale). Illumination of scenes and obtaining of videos of these scenes. Realistic animation (a ball bouncing) Foundations of the animation with skeletons (animation of complex objects; walk of a person, etc.)
Virtual Reality, Enhanced Reality	Description of applications of virtual reality and enhanced reality. Limitations in the sensorization necessary for applications of virtual reality and enhanced reality.
Video games	Multisubject knowledge in the construction of a video game. Hardware platforms for video games. Software platforms for the creation of video games. Business Model in companies of video games. (Play Station, Xbox, Laptops, Smartphones. Apple store, etc.) Study of different graphic engines for video games (free and non free)

### Planning

	Class hours	Hours outside the classroom	Total hours
Master Session	4	4	8
Practice in computer rooms	26	26	52
Tutored works	7	69	76
Presentations / exhibitions	4	8	12
Short answer tests	1	1	2

\*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

### Methodologies

	Description
Master Session	Only some classes in which the teacher shows concepts and/or explains knowledges interesting to learn and that are not easy to turn into works that can be done by the students.
Practice in computer rooms	Are the main part of the course. In these practices the students use the programs and applications with which, in parallel, they are realising the tutored works that are the main element of learning. The tutored works also give place to the presentations and to the main part of the evaluation.
Tutored works	Are only two or three works along the four month course. They are to be done in groups of 2 to 4 students, in the classroom of practices and out of the classroom. Some presentations are to be done in class in front of the other classmates. They are the fundamental element of the course.
Presentations / exhibitions	To present the work is an important learning object in this subject. Through the shared work done in the classroom while they manage the tutored projects and afterwards the public presentation of the tutored work that has been done, we do the fundamental part of the evaluation. (evaluation that is to be done by the own students).

### Personalized attention

Methodologies	Description
Presentations / exhibitions	Taking advantage of that this is a subject with not too many students, the professor will do an individual follow-up of each student trying to be slope at all times of what his follow-up of the subject is and what his feeling is concerning what it is being done in classes. As a part of the work of the tutored works is being done in the informatic classrooms, these classes are the fundamental point of interaction between the professor and each student. The professor moves around the classroom helping to the groups in the realisation of the projects. If, in any point, all the studens need help, the teacher will do the explanation as in a masterclass. If the help is individual or for several ones, it will be given to the specific students wich need it.
Practice in computer rooms	Taking advantage of that this is a subject with not too many students, the professor will do an individual follow-up of each student trying to be slope at all times of what his follow-up of the subject is and what his feeling is concerning what it is being done in classes. As a part of the work of the tutored works is being done in the informatic classrooms, these classes are the fundamental point of interaction between the professor and each student. The professor moves around the classroom helping to the groups in the realisation of the projects. If, in any point, all the studens need help, the teacher will do the explanation as in a masterclass. If the help is individual or for several ones, it will be given to the specific students wich need it.

Tutored works Taking advantage of that this is a subject with not too many students, the professor will do an individual follow-up of each student trying to be slope at all times of what his follow-up of the subject is and what his feeling is concerning what it is being done in classes. As a part of the work of the tutored works is being done in the informatic classrooms, these classes are the fundamental point of interaction between the professor and each student. The professor moves around the classroom helping to the groups in the realisation of the projects. If, in any point, all the studens need help, the teacher will do the explanation as in a masterclass. If the help is individual or for several ones, it will be given to the specific students wich need it.

<b>Assessment</b>		
	Description	Qualification
Tutored works	These works are done with the supervision of the professor. But also with the 'crossed supervision' of the own students during the times of simultaneous work in the practical classes. Works usually are very good because the students are very motivated with them. The works done in the practical classes are 'the guiding thread' of all the subject. This probe evaluates the competence A83 (CE74/OP17)	60
Presentations / exhibitions	We will evaluate the quality of the work realized and also the quality of the presentation. In order this assessment to be done by the own students (self and crossed assessments) we give them a Rúbric where details on how to assess the different aspects. This probe evaluates the competence A9	30
Short answer tests	This is a test where questions fundamentally go over materials explained in the magistral classes. It also includes questions about basic conceps learnt in the development of the projects. This test could be different for those students that do not follow the Continuous Assessment. This probe evaluates the competence A3 (CG3)	10

### **Other comments on the Evaluation**

Learning is thoght to be automatic for the students who do a continuous following of the classes works and lessons. (It's similar to learning a different language being introduced in a conversation group in that language: It's enough to be there and participate).

We will use some tools to realize some works. We will explain our mates what we are going to do, how we will do it, and finally what we do. With this dynamics we learn to use the tools at the same time that we do a project. We see how our classmates use the tools and how they realize their projects. We can help others and be helped by others. We enjoy doing and learn to value our work also the work of our mates.

And ... well. Finally it's necessary to put a note. But the note has little importance. If we learn, and enjoy, the fundamental profit has already been collected.

Those that did not take advantage of the previous, worry for the note. For them, and for those that did not show the minimum knowledges, we create a Second opportunity and a No Continuous Evaluation in the ending of the academic course.

### **Sources of information**

D. Roland Hess, **Animating with Blender**, Focal Press,

Blender Is the program of Free Software that will be used as the base for the 3D Design and the 3D Animation.

### **Recommendations**

#### **Subjects that are recommended to be taken simultaneously**

Image Processing and Analysis/V05G300V01931

Audiovisual Production/V05G300V01935

#### **Subjects that it is recommended to have taken before**

Fundamentals of Image Processing/V05G300V01632

Imaging Systems/V05G300V01633

Audiovisual Technology/V05G300V01631

Video and Television/V05G300V01533

### **Other comments**

This subject is thought to be done by the method of EVALUATION CONTINUA and with assistance to all the classes. The learning process is being done day to day out and class to class. If it is done this way, the evaluation loses leadership

because the fact of the learning is real and very clear for all: professor and students.

By imperative of educational organisation it is necessary to enable the option of EVALUACIÓN NO CONTINUA. I understand that this is a badly recommended way for the students wishing to take advantage of what they have paid and wishing to LEARN.

In any case, in the method of evaluación no continúa, we will try to give the possibility to the student to undoubtedly demonstrate that they know all what the students that assisted to class learnt during the development of the course.

The students that opt by the evaluación no continúa will equally have to do the works that the other students have done by evaluación continúa. They have to do a presentation of the work done, and answer to the questions that the professor can do in order the student to show that they dominate the tools that have had to use for these works.

They will do also a written examination in which they will answer to questions of the subjects given in the masterclasses and of any subject developed during the course.

The material used in the classes, projects, etc. will be located in FAITIC where it will be going put simultaneously with the development of the classes.

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