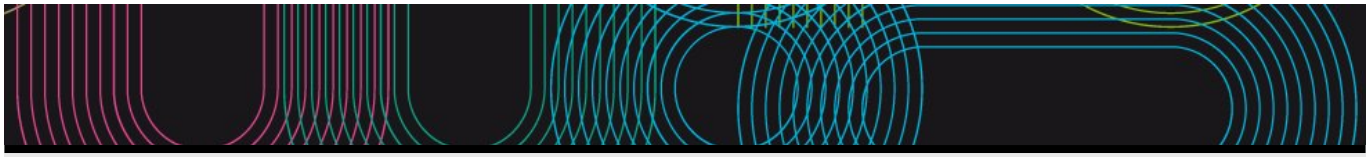

| IDENTIFYING DATA | | | | |
|---|---|---|---|---|
| **Multimedia technology and computer graphics** | | | | |
| Subject | Multimedia technology and computer graphics | | | |
| Code | V05G300V01932 | | | |
| Study programme | (*)Grao en Enxeñaría de Tecnoloxías de Telecomunicación | | | |
| Descriptors | ECTS Credits | Choose | Year | Quadmester |
| | 6 | Optional | 4th | 1st |
| Teaching language | Spanish<br>Galician | | | |
| Department | | | | |
| Coordinator | Fernández Hermida, Xulio | | | |
| Lecturers | Fernández Hermida, Xulio | | | |
| E-mail | xuliofh@uvigo.es | | | |
| Web | http://faitic.uvigo.es | | | |
| 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 necessassry 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 | |
| B3 | 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 |
| B9 | 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. |
| B12 | CG12 The development of discussion ability about technical subjects |
| C74 | (CE74/OP17) The ability to construct, exploit and manage image and synthetic video generation systems and interactive multimedia applications. |
| D3 | CT3 Awareness of the need for long-life training and continuous quality improvement, showing a flexible, open and ethical attitude toward different opinions and situations, particularly on non-discrimination based on sex, race or religion, as well as respect for fundamental rights, accessibility, etc. |
| D4 | CT4 Encourage cooperative work, and skills like communication, organization, planning and acceptance of responsibility in a multilingual and multidisciplinary work environment, which promotes education for equality, peace and respect for fundamental rights. |

| Learning outcomes | | | |
|---|---|---|---|
| Expected results from this subject | Training and Learning Results | | |
| Understand the foundations of the synthesis of image by computer. | B3 | | D3 |
| Apply methods of synthesis of image by computer. | B9 | C74 | D3<br>D4 |
| Apply methods of synthesis of effects of audio by computer. | B12 | C74 | |
| Develop multimedia applications. | B12 | C74 | D4 |

| Contents | |
|---|---|
| Topic | |
| Synthesis of image by computer | Description of the underlying mathematics to the charts by computer.<br>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.<br>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.).<br>Texture mapping and material mapping: UV mapping.<br>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)<br>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.<br>Limitations in the sensorization necessary for applications of virtual reality and enhanced reality. |
| Video games | Multisubject knowledge in the construction of a video game.<br>Hardware platforms for video games. Software platforms for the creation of video games.<br>Business Model in companies of video games. (Play Station, Xbox, Laptops, Smartphones. Apple store, etc.)<br>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 curse. 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.<br>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. |

## Assessment

| | Description | Qualification | Training and Learning Results |
|---|---|---|---|
| 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. | 50 | B12 C74 D3 D4 |
| 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. | 25 | B9 |
| 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.<br>This test will be different for those students that do not follow the Continuous Assessment. | 25 | B3 C74 |

## 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.The evaluation leans a lot in the assessments and auto assessments that, by groups, the own students do of the works and presentations of their mates and of his own work.

For those students that do not follow the continuous assessment, and for which who did not show the minimun knowledges to pass, there is an only assessment in the end of the academic course. This examination has two parts, of equal weight, in the final note: a written part that includes every possible content of the subject, and an oral part about the additional works that previously have had to present. To pass the exam it is necessary to obtain, at least, 4 points in each part and 5 points in the final note.

## 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.

Unity 3D, and its integration with Blender, is a free program that will use as the basis for 3D animation and creation of games.

## 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 learning process is real and very clear for all: professor and students.
The students that opt by the evaluación no contínua will equally have to do the works that the other students have done by evaluación contínua. They have to do a presentation of the work done, and answer to the questions the professor can do in order the student to show that they dominate the tools that they have had to use for these works.
They will also do 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.