



## IDENTIFYING DATA

### (\*)Fundamentos de procesado de imaxe

Subject	(*)Fundamentos de procesado de imaxe			
Code	V05G300V01632			
Study programme	(*)Grao en Enxeñaría de Tecnoloxías de Telecomunicación			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	3rd	2nd
Teaching language	Spanish			
Department				
Coordinator	Martín Herrero, Julio			
Lecturers	Martín Herrero, Julio			
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Web	http://fatic.uvigo.es			
General description	(*)Se introduce al alumno en las técnicas básicas del procesado digital de imágenes			

## 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
A4	CG4: The ability to solve problems with initiative, to make creative decisions and to communicate and transmit knowledge and skills, understanding the ethical and professional responsibility of the Technical Telecommunication Engineer activity.
A43	CE34/SI1 The ability to construct, exploit and manage telecommunication services and applications, such as receiving, digital and analogical treatment, codification, transporting and representation, processing, storage, reproduction, management and presentation of audiovisual and multimedia information services.
A47	CE38/SI5 The ability to create, modify, manage, broadcast and distribute multimedia contents taking into account the use and accessibility criteria to audiovisual, broadcasting and interactive services.
B1	The ability for critical reading of scientific papers and docs.

## Learning aims

Expected results from this subject	Training and Learning Results
Understand the nature and organisation of digital images	A43
Learn to process digital images	A47
Learn how to program a computer to process a digital image	A3
Understand how the fundamental technics of image processing work	A4
Apply fundamental processing technics to solve specific problems with images or groups of images	A4
CG10 Capacity to do critical reading of scientific documents	B1

## Contents

Topic	
Basic preprocessing.	Histogram. Brightness and contrast.
Global and local operators.	Linear and nonlinear filters.
Binary and greyscale mathematical morphology.	Erosion. Dilatation. Opening. Closing.
Geometrical transformations. Image transforms.	Affine transformations.
Image compression.	JPEG. JPEG 2000.
Image restoration.	Linear and nonlinear filters.

<b>Planning</b>			
	Class hours	Hours outside the classroom	Total hours
Practice in computer rooms	12	23.5	35.5
Tutored works	7	43	50
Master Session	21	41.5	62.5
Practical tests, real task execution and / or simulated.	2	0	2

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

<b>Methodologies</b>	
	Description
Practice in computer rooms	Handling and tuning analytic tools and algorithms, identifying which ones to use in different scenarios.
Tutored works	Groupwork developing the contents dealt with in the classroom, with personalised attention.
Master Session	Plenary talks by the teacher on central topics, promoting critical discussion of concepts.

<b>Personalized attention</b>	
Methodologies	Description
Practice in computer rooms	Tutoring meetings will be used to solve doubts. These meetings will be: * Individually or in small groups. * Except where otherwise indicated, by previous appointment with the teacher. Appointments can be requested verbally or by email, preferably at the times and location reserved officially.
Tutored works	Tutoring meetings will be used to solve doubts. These meetings will be: * Individually or in small groups. * Except where otherwise indicated, by previous appointment with the teacher. Appointments can be requested verbally or by email, preferably at the times and location reserved officially.

<b>Assessment</b>		
	Description	Qualification
Practice in computer rooms	Personalised follow-up of the work of the student in the classroom, with feedback.	50
Tutored works	Assessment of the work done, its content and its presentation.	50
Practical tests, real task execution and / or simulated.	Real programming and problem solving	0

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

The assistance to class under continuous evaluation is compulsory, unless exceptional circumstances concur. Continuous evaluation is used for evaluation, based in the work of the student in the classroom and at home. There is a final examination in the official date marked by the Board of School in May, for those students that have not passed the continuous evaluation. This final examination will be marked between 0 and 10 points. It includes all the subjects seen during the semester. To approve, the student has to obtain, at least, five points. Students wishing to improve their marks of continuous evaluation can also attend the final examination: in this case the mark of this examination will be the final note. The students that have passed the continuous evaluation and are satisfied with their note do not need to attend the final examination. Along the semester the students will receive information on their progress in the continuous evaluation, and the final note of continuous evaluation will be communicated to the students in the last class, before the final examination. The delivery of the personal work the last week of class will imply the official participation in continuous evaluation.

The extraordinary evaluation of July will be an extraordinary final examination, for those students that have not passed neither the continuous evaluation neither the final examination of May. The final mark will be the mark of the extraordinary final examination in both cases. This extraordinary final examination will be marked between 0 and 10 points, and includes all the subjects. To approve, the student has to obtain, at least, five points.

Notice that there are two final examinations, but both correspond to the same cycle.

### **Sources of information**

Rafael C. Gonzalez, Richard E. Woods, **Digital Image Processing**, 3<sup>a</sup>,

Robert Laganière, **OpenCV 2 Computer Vision Application Programming Cookbook**, 2011,

Jasmin Blanchette, Mark Summerfield, **C++ GUI Programming with Qt 4**, 2008,

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**Recommendations**

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**Subjects that continue the syllabus**

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(\*)Procesado e análise de imaxe/V05G300V01931

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

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(\*)Sistemas de imaxe/V05G300V01633

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

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(\*)Programación I/V05G300V01205

(\*)Fundamentos de son e imaxe/V05G300V01405

(\*)Procesado dixital de sinais/V05G300V01304

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