# Universida<sub>de</sub>Vigo

## Subject Guide 2017 / 2018

						de 2017 / 2018		
	ING DATA							
	ntals of Image Processing							
Subject	Fundamentals of							
Code	Image Processing V05G300V01632							
Study	Degree in							
	e Telecommunications							
programm	Technologies							
	Engineering							
Descriptor	s ECTS Credits		Choose	Year		Quadme	ster	
	6		Optional	3rd		2nd		
Feaching	Spanish							
anguage								
Departme								
	or Martín Herrero, Julio							
Lecturers	Martín Herrero, Julio							
E-mail	julio@uvigo.es							
Web General	http://faitic.uvigo.es Introduces to the student the basics of o	digital imago n	racaccina					
descriptio		ulgital illiage p	locessing					
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Торіс	
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.

Planning			
	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.

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

Personalized attention			
Methodologies	Description		
Practice in computer rooms	Implementation of image processing methods within an image processing and visualization framework with graphic user interface, programming in C and C++.		
Tutored works	Construction of an image processing chain able to fulfill a high level task by means of a succession of low level methods chosen and tuned by the students from among those explained along the course.		

	Description	Qualification	Tra	ining a	and
			Learr	ning Re	esults
Practice in computer	Personalised monitoring of the student's work in the laboratory, with	50	B3	C34	D2
rooms	feedback. All teaching aims specified in the corresponding section of this	5	B4	C38	D3
	guide are evaluated.		B10		
Tutored works	Assessment of the work done, its contents and its presentation, and the	50	B3	C34	D2
	knowledge about it that each student individually has. All teaching aims		B4	C38	D3
	specified in the corresponding section of this guide are evaluated.		B10		
Practical tests, real	Real programming and problem solving. All teaching aims specified in	0	B3	C34	D2
task execution and /	the corresponding section of this guide are evaluated.		B4	C38	D3
or simulated.			B10		

### Other comments on the Evaluation

The assistance to class under continuous evaluation is compulsory, unless exceptional circumstances concur. Continuous evaluation is used for assessment, based in the work of the student in the classroom and at home. There is a final exam in the official date marked by the Board of School in May, for those students that have not passed the continuous evaluation. This final exam will be marked between 0 and 10 points. It covers all the subjects seen during the semester. To approve, the student has to obtain, at least, five points. Students wishing to improve their continuous evaluation marks can also attend the final exam: in this case the mark of this exam will be the final mark. The students that have passed the continuous evaluation and are satisfied with their mark do not need to attend the final exam. Along the semester the students will before the final exam. 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 exam, for those students that have not passed neither the continuous evaluation neither the final exam in May. The final mark will be the mark of the extraordinary final exam in both

cases. This extraordinary final exam will be marked between 0 and 10 points, and covers all the subjects. To approve, the student has to obtain, at least, five points.

Note that there are two final exams, but both correspond to a single and the same call ("convocatoria").

## Sources of information

Basic Bibliography

Rafael C. Gonzalez, Richard E. Woods, Digital Image Processing, 3ª, Prentice Hall,

Complementary Bibliography

Robert Laganière, **OpenCV Computer Vision Application Programming Cookbook**, Packt Publishing, 2014 Jasmin Blanchette, Mark Summerfield, **C++ GUI Programming with Qt 4**, Prentice Hall, 2008

#### Recommendations

Subjects that continue the syllabus

Image processing and analysis/V05G300V01931

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

Imaging Systems/V05G300V01633

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

Programming I/V05G300V01205 Fundamentals of Sound and Image/V05G300V01405 Digital Signal Processing/V05G300V01304