Goi Eskola Politeknikoa | Mondragon Unibertsitatea
Course: 2023 / 2024 - Course planning

Mondragon Unibertsitatea
Goi Eskola Politeknikoa
Escuela Politécnica Superior

[MMD102] DIGITAL IMAGE PROCESSING

GENERAL INFORMATION

Studies	MASTER'S DEGREE IN BIOMEDICAL TECHNOLOGIES			**Subject**	?
Semester	1	**Course**	1	**Mention / Field of specialisation**	
Character	COMPULSORY				
Plan	2023	**Modality**	Face-to-face	**Language**	ENGLISH
Credits	4,5	**Hours/week**	3.84	**Total hours**	69.2 class hours + 43.3 non-class hours = **112.5 total hours**

PROFESSORS

MENDICUTE ERRASTI, MIKEL

REQUIRED PREVIOUS KNOWLEDGE

Subjects	**Knowledge**
SIGNAL AND BIOMEDICAL IMAGES PROCESSING	*(No previous knowledge required)*
[!] *Procesamiento de señales biomédicas*	
[!] *Procesamiento de imagen biomédica*	

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
MMRA11 - To develop image processing systems applied to biomedical engineering			x	3,16
MMRA26 - To apply the knowledge acquired and your problem-solving skills in new, little-known or changing environments within broader (or multidisciplinary) contexts related to your area of study		x		1,08
MMRA28 - To communicate your conclusions and the knowledge and ultimate reasons that support them to specialized and non-specialized audiences in a clear and unambiguous way		x		0,26
			Total:	**4,5**

KC: Knowledge or Content / SK: Skills / AB: Abilities

CONTENTS

1. Morphological processing

1.1 Erosion and dilation

1.2 Opening and closing

1.3 Hit and Miss

1.4 Complex morphological operations

1.5 Grayscale morphological operations

2. Image segmentation

2.1 Point, line and border detection

2.2 Gradients and Laplacians

2.3. Canny

2.4. Contour following

3.- Image restoration and reconstruction

4.- Complex practice with real images

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	**Bibliography**
Technical articles	Bankman, I. N., & Morcovescu, S. (2002). Handbook of Medical Imaging. Processing and Analysis. Medical Physics
Slides of the subject	Prince, J. L., & Links, J. M. (2006). Medical imaging signals and systems. Pearson Prentice Hall
Moodle Platform	Rangayyan, R. M. (2004). Biomedical image analysis. CRC press.
Class presentations	Gonzalez, R.C., & Woods, R.E. (2008). Digital Image Processing. Pearson Prentice Hall

Gonzalez, R.C., Woods, R.E., Eddins, S.L. (2009). Digital Image
Processing Using MATLAB. Gatesmark Publishing