

[MMA101] BIOMEDICAL IMAGING

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	3	Hours/week	2.54	Total hours	45.8 class hours + 29.2 non-class hours = 75 total hours

PROFESSORS

ROMERO BASCONES, DAVID

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
SIGNAL AND BIOMEDICAL IMAGES PROCESSING Biomedical imageprocessing	Fundamentals of image processing

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
MMRA04 - To choose technical imaging solutions used in different medical specialties, collaborating in the taking of		x		2,1
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		0,72
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		0,18
			Total:	3

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

CONTENTS

1. Nature of biomedical Images
 - 1.1. Introduction
 - 1.2. Biomedical image modalities
2. Preprocessing fundamentals
 - 2.1. Basic techniques
 - 2.2. Quality and information content
3. Compression, storage and communications
 - 3.1. PACS
 - 3.2. Dicom
 - 3.3. HL7

4. Advanced preprocessing

4.1. Spatial filtering

4.2. Frequency filtering: (2DFFT, smoothing, sharpening)

4.3. Image restoration

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Technical articles
Moodle Platform
Slides of the subject
Computer practical training

Bibliography

Bankman, I. N., & Morcovescu, S. (2002). Handbook of Medical Imaging. Processing and Analysis. Medical Physics
Prince, J. L., & Links, J. M. (2006). Medical imaging signals and systems. Pearson Prentice Hall
Rangayyan, R. M. (2004). Biomedical image analysis. CRC press
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