

## [MM3101] FUNDAMENTALS OF MEDICINE AND BIOMATERIALS

### GENERAL INFORMATION

<b>Studies</b>	MASTER'S DEGREE IN BIOMEDICAL TECHNOLOGIES		<b>Subject</b>	?
<b>Semester</b>	2	<b>Course</b>	0	<b>Mention / Field of specialisation</b>
<b>Character</b>	COMPL. TRAINING		<b>Language</b>	CASTELLANO
<b>Plan</b>	2023	<b>Modality</b>	Face-to-face	<b>Total hours</b> 25 class hours + 100 non-class hours = <b>125 total hours</b>
<b>Credits</b>	5	<b>Hours/week</b>	1.39	

### PROFESSORS

AGINAGALDE UNANUE, MAIALEN

BURUAGA LAMARAIN, LOREA

### REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	(No previous knowledge required)

### LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
G_R062 - To know the structure and function of animal cells, as well as their life cycle, the mechanisms that regulate them and their alterations in relation to human pathology	x			4,24
G_R063 - To know the properties of biomaterials for correct use in Biomedical Engineering problems	x			0,76
<b>Total:</b>				<b>5</b>

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

### SECONDARY LEARNING RESULTS

**RMM001** To know the function of cellular organelles, differentiate different types of cells and characterize the different types of tissues

#### LEARNING ACTIVITIES

	CH	NCH	TH
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning		20 h.	20 h.
Carrying out exercises and solving problems individually and/or in teams		14 h.	14 h.
Tutoring sessions and monitoring of training activities	8 h.		8 h.

#### EVALUATION SYSTEM

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

W

100%

#### MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

CH - Class hours: 8 h.

NCH - Non-class hours: 34 h.

TH - Total hours: 42 h.

**RMM002** Describe the anatomy and general physiology of the different APPARATUS of the human body, being able to identify and know the different elements that constitute these systems

#### LEARNING ACTIVITIES

	CH	NCH	TH
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning		32 h.	32 h.
Carrying out exercises and solving problems individually and/or in teams		20 h.	20 h.
Tutoring sessions and monitoring of training activities	12 h.		12 h.

#### EVALUATION SYSTEM

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

W

100%

#### MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

**CH - Class hours:** 12 h.  
**NCH - Non-class hours:** 52 h.  
**TH - Total hours:** 64 h.

**MMM010** Describe the anatomy and general physiology of the different APPARATUS of the human body, being able to identify and know the different elements that constitute these systems

#### LEARNING ACTIVITIES

	<i>CH</i>	<i>NCH</i>	<i>TH</i>
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning		10 h.	10 h.
Tutoring sessions and monitoring of training activities	5 h.		5 h.
Self-assessment tests in a context of autonomous and continuous learning		4 h.	4 h.

#### EVALUATION SYSTEM

*W*

Individual written and/or oral tests or individual coding/programming tests

100%

#### MAKE-UP MECHANISMS

Individual written and/or oral tests or individual coding/programming tests

**CH - Class hours:** 5 h.  
**NCH - Non-class hours:** 14 h.  
**TH - Total hours:** 19 h.

## CONTENTS

### Cell biology

- 1.Cell structure.
- 2.Structure of the cytoplasm and organelles.
- 3.Cell nucleus.
- 4.Tissues.

### Anatomy and Physiology

- 1.Generalities
- 2.Anatomy and physiology of the musculoskeletal system.
- 3.Anatomy and physiology of the heart
- 4.Nervous system

### Biomaterials

&bull;M1: Introduction to biomaterials

&bull;M2: Polymeric biomaterials

&bull;M3: Ceramic and metallic biomaterials

&bull;M4: Other biomaterials

&bull;M5: Characterization techniques

&bull;M6: Applications

## LEARNING RESOURCES AND BIBLIOGRAPHY

### Learning resources

Technical articles  
Topic related web quires  
Moodle Platform  
Video projections  
Subject notes

### Bibliography

Biología fundamental y de la salud. Rafael Galán Romero y Rafael Torron teras Santiago  
Biología celular biomédica. Alfonso Calvo González  
Anatomía y Fisiología. 8ª edición. Patton Thibodeau