MA105] ADVANCED TECHNIQUES IN TISSUE ENGINEERING AND REGENERATIVE MEDIC

GENERAL INFORMATION

Studies	MASTER'S DEGREE IN BIOMEDICAL TECHNOLOGIES			**Subject**	?
Semester	1	**Course**	1	**Mention / Field of specialisation**	???
Character	OPTIONAL				
Plan	2023	**Modality**	Face-to-face	**Language**	ENGLISH
Credits	3	**Hours/week**	2.58	**Total hours**	46.5 class hours + 28.5 non-class hours = **75 total hours**

PROFESSORS

ZABALA EGUREN, ALAITZ

BURUAGA LAMARAIN, LOREA

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
FUNDAMENTALS OF MEDICINE AND BIOMATERIALS	*(No previous knowledge required)*

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
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
MM18-2 - Understanding the techniques and uses of tissue engineering and regenerative medicine in accordance with the professional codes and ethics of engineering			x	2,1
			Total:	3

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

SECONDARY LEARNING RESULTS

RMM138 **[!]** ***Conocer las tecnologías avanzadas para desarrollar soluciones optimizadas de ingeniería tisular y sus aplicaciones***

LEARNING ACTIVITIES	CH	NCH	TH
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	16,4 h.	9,85 h.	26,25 h.
Practical work in workshops and/or laboratories, individually and/or in teams	8,3 h.	4,95 h.	13,25 h.
Seminars, debates and/or workshops to deepen and/or share experiences.	8 h.	5 h.	13 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	67%
Individual written and/or oral tests or individual coding/programming tests	33%

Comments: If the score of the exam is lower than 4, this evaluation item will be evaluated in its entirety (%100) with the score of the exam.

MAKE-UP MECHANISMS

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

Comments: If the score of the exam is lower than 5, it Will be mandatory to repeat the exam

CH - Class hours: 32,7 h.
NCH - Non-class hours: 19,8 h.
TH - Total hours: 52,5 h.

RMM147 **[!]** ***Define los objetivos, realiza la planificación para su consecución y su seguimiento sistemático coordinando su trabajo con los demás miembros del equipo.***

LEARNING ACTIVITIES	CH	NCH	TH
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out	1,3 h.	,7 h.	2 h.

individually and/or in teams

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	50%	Observation (technical capacity, attitude and participation)
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	50%	

CH - Class hours: 1,3 h.
NCH - Non-class hours: ,7 h.
TH - Total hours: 2 h.

RMM145 **[!]** ***Conoce y es capaz de aplicar las herramientas de resolución de problemas en el campo de la Ingeniería Biomédica con iniciativa, toma de decisiones, creatividad y razonamiento crítico.***

LEARNING ACTIVITIES	CH	NCH	TH
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	5,5 h.	3,5 h.	9 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and/or oral tests or individual coding/programming tests	40%	Observation (technical capacity, attitude and participation)
Co-assessment	5%	
Prototype / Product	55%	

Comments: If the score of the defense is lower than 5, this evaluation item will be evaluated in its entirety (%100) with the score of the defense. A co-evaluation system will be implemented to adjust the score of the student based on his or her participation in the Project.

CH - Class hours: 5,5 h.
NCH - Non-class hours: 3,5 h.
TH - Total hours: 9 h.

RMM144 **[!]** ***Analiza las variables intervinientes en la solución de los problemas y plantea acciones para lograr una situación estable asumiendo responsabilidades en el equipo de trabajo, afrontando contingencias y organizando y planificando tareas.***

LEARNING ACTIVITIES	CH	NCH	TH
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	5,5 h.	3,5 h.	9 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and/or oral tests or individual coding/programming tests	40%	Observation (technical capacity, attitude and participation)
Co-assessment	5%	
Prototype / Product	55%	

Comments: If the score of the defense is lower than 5, this evaluation item will be evaluated in its entirety (%100) with the score of the defense. A co-evaluation system will be implemented to adjust the score of the student based on his or her participation in the Project.

CH - Class hours: 5,5 h.
NCH - Non-class hours: 3,5 h.
TH - Total hours: 9 h.

RMM146 **[!]** ***Define el problema, el desarrollo de la solución, así como las conclusiones de manera eficaz, argumentando y justificando cada una de ellas, y haciendo un uso correcto del lenguaje, por escrito y de manera oral.***

LEARNING ACTIVITIES	CH	NCH	TH
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams	1,5 h.	1 h.	2,5 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	50%
Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems	50%

MAKE-UP MECHANISMS

Observation (technical capacity, attitude and participation)

CH - Class hours: 1,5 h.
NCH - Non-class hours: 1 h.
TH - Total hours: 2,5 h.

CONTENTS

L1-Surface modification of polymers

L2-Characterization Techniques

L3-Bioreactors for tissue Engineering

P2- Practical sessions on hybridized 3D printing+electrospinning technology

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Subject notes
Technical articles
Presentations by external Lecturers
Lab practical training
Video projections

Bibliography

Zink M: in ‘Thin films and coatings in biology’, (ed. Nazarpour S), 11–67; 2013, Dordrecht, Netherlands, Springer.
https://doi.org/10.2174/156802608783790893