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

Mondragon Unibertsitatea
Goi Eskola Politeknikoa
Escuela Politécnica Superior

[MMA104] MICROFLUIDICS AND NUMERICAL SIMULATION

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** 2.63	**Total hours**	47.3 class hours + 27.7 non-class hours = **75 total hours**	

PROFESSORS

MARTIN MAYOR, ALAIN

LAPEIRA AZCUE, ESTELA

REQUIRED PREVIOUS KNOWLEDGE

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

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
MMRA17 - Designing microdevices for different applications and running numerical simulations in line with suitable modelling patterns		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.- MICROFLUIDICS

1.1 - Introduction to microfluidics

1.2 - Relevant dimensionless numbers

1.2 - Flow control mechanisms

1.3.- Transport phenomena

1.4 - Other handling mechanisms: Mixing and separation

1.5.- Manufacturing techniques for microfluidic microdevices.

1.6.- Applications in biomedicine

2.- ADVANCED COMPUTATIONAL FLUID DYNAMICS (CFD)

2.1.- Guidelines for correct modeling

2.2.- CFD modeling in microdevices and biological systems

LEARNING RESOURCES AND BIBLIOGRAPHY	
Learning resources	**Bibliography**
Subject notes	Çengel,Yunus A. Fluid mechanics : fundamentals and applications, 1st ed, McGraw-Hill ISBN 0–07–247236–7
Technical articles	
Moodle Platform	
Lab practical training	
Class presentations	