

## ANNEX 1.2

### COURSE REGULATIONS

### INDUSTRIAL BIOENGINEERING

### CLASS LM-21

**School: Polytechnic and Base Sciences**

**Department: Chemical, Materials and Industrial Production**

**Regulations in force for the academic year 2023 - 2024**

## STUDY PLAN A.Y. 2023-2024

### KEY

#### Type of Educational Activity (TAF):

**B** = Characterising

**C** = Related or Supplementary

**D** = Optional activities

**E** = Final examination and language knowledge

**F** = Further training activities

1 <sup>st</sup> Year – 1 <sup>st</sup> Semester									
Title Teaching	SSD	Module	ECT S	Hou rs	Type Activities	Course Modalities	TAF	Disciplinary area	Mandatory/ optional
Biochemistry, Cell and Molecular Biology	BIO/10	Biochemistry	6	48	Frontal lesson	In person	C	Related or Supplementary	Mandatory
	BIO/11	Cell and Molecular Biology	6	48	Frontal lesson	In person			
Biomechanics	ICAR/08	single	6	48	Frontal lesson	In person	C	Related or Supplementary	Mandatory
System Analysis for Bioengineering (*)	ING-IND/34	single	6	48	Frontal lesson	In person	B	Characterising	Mandatory

1 <sup>st</sup> Year – 2 <sup>nd</sup> Semester									
Title Teaching	SSD	Module	ECT S	Hou rs	Type Activities	Course Modalities	TAF	Disciplinary area	Mandatory/ optional
Thermodynamics and Transport Phenomena in Living Systems	ING-IND/24	Thermodynamics in Living Systems	6	48	Frontal lesson	In person	C	Related or Supplementary	Mandatory
	ING-IND/24	Transport Phenomena in Living Systems	6	48	Frontal lesson	In person			

Microfluidics and Systems and Synthetic Biology	ING-IND/26	Microfluidics for Lab-On-Chip	6	48	Frontal lesson	In person	C	Related or Supplementary	Mandatory
	ING-IND/34	Systems and Synthetic Biology	6	48	Frontal lesson	In person	B	Characterising	Mandatory

### 2<sup>nd</sup> Year – 1<sup>st</sup> Semester

Title Teaching	SSD	Module	ECTS	Hours	Type Activities	Course Modalities	TAF	Disciplinary area	Mandatory/optional
Diagnostic Devices and Drug Delivery	ING-IND/34	single	9	72	Frontal lesson	In person	B	Characterising	Mandatory
Biomaterials and Tissue Engineering	ING-IND/34	Biomaterials	6	48	Frontal lesson	In person	B	Characterising	Mandatory
	ING-IND/34	Tissue Engineering	6	48	Frontal lesson	In person			
Mechanics in Tissues and Growth	ICAR/09	single	6	48	Frontal lesson	In person	C	Related or Supplementary	Mandatory

### 2<sup>nd</sup> Year – 2<sup>nd</sup> Semester

Title Teaching	SSD	Module	ECTS	Hours	Type Activities	Course Modalities	TAF	Disciplinary area	Mandatory/optional
Biomedical Imaging and Computer Interface for Biological Systems	ING-INF/06	Biomedical Imaging	6	48	Frontal lesson	In person	B	Characterising	Mandatory
	ING-INF/06	Computer Interface for Biological Systems	6	48	Frontal lesson	In person			
Robotics for Bioengineering	ING-INF/04	single	6	48	Frontal lesson	In person	C	Related or Supplementary	Mandatory
Optional Activities (§)			0-12				D	Optional Activities	Optional (Tab A o B)
Internship			3	75	La Laborator y or internshi p	In person	F	Further training activities	Mandatory
Final Exam			12				E		Mandatory

(\*) For students graduated in class L-8 degree from this University, who have taken the exam of "Fundamentals of Dynamic Systems", or "Theory of Systems", or equivalent courses, the teaching of System Analysis for Bioengineering is replaced by the course "Fundamentals of Materials for Biomedicine" in Table B, delivered in the second semester of the first year.

(§) Students graduated in class L-9 degree can choose the activities indicated in table A, which are considered automatically approved. Optional Activities can be brought forward to the first year if indicated in the Study Plan model. Students with a class L-8 degree from this University choose the training activities indicated in table B, delivered in the first semester of the first year. If students have already taken exams equivalent to those indicated, they can refer to Table A.

<b>Table A</b>									
<b>Title Teaching</b>	<b>SSD</b>	<b>Module</b>	<b>ECT S</b>	<b>Hou rs</b>	<b>Type Activities</b>	<b>Course Modalities</b>	<b>TAF</b>	<b>Disciplinary area</b>	<b>Mandatory/ optional</b>
Design of Biomimetic Devices	ING-IND/34	single	6	48	Frontal lesson	In person	D	Optional Activities	Optional
Artificial Organs and Prosthesis	ING-IND/34	single	6	48	Frontal lesson	In person	D	Optional Activities	Optional

<b>Table B</b>									
<b>Title Teaching</b>	<b>SSD</b>	<b>Module</b>	<b>ECT S</b>	<b>Hou rs</b>	<b>Type Activities</b>	<b>Course Modalities</b>	<b>TAF</b>	<b>Disciplinary area</b>	<b>Mandatory/ optional</b>
Advanced Thermodynamics and Transport Phenomena	ING-IND/24	Advanced Thermodynamics	6	48	Frontal lesson	In person	D	Optional Activities	Optional
	ING-IND/24	Advanced Transport Phenomena	6	48	Frontal lesson	In person			
Fundamentals of Materials for Biomedicine	ING-IND/34	single	6	48	Frontal lesson	In person	B	Caratterizz.	Mandatory (see remark*)

### List of prerequisites

Biomechanics is a prerequisite for Mechanics in Tissues and Growth