Goi Eskola Politeknikoa Escuela Politécnica

		GENE	RAL IN	ORMATION					
		EE IN BIOMEDICAL		Subject ?					
TE Semester 2	ECHNOLOGIES	Course 1		Mention / Field of ???					
Character OF	PTIONAL			specialisation					
Plan 20)23	Modality Face-	to-face	Language CAS					
Credits 3		Hours/week 2.66		Total hours 47.8 hou		3 + 27.2	? non-	class hou	ırs = <u>75</u>
			PROFES	SSORS					
	RAZKIN, MAIDEF								
AZPI-AURRER	KOETXEA NARE		DDEVIC						
	Subjec		PREVIC	OUS KNOWLEDGE	Knowle	adae			
(No sp		subjects required)		(No pr	evious know		requir	ed)	
	-		RNING	RESULTS		-			
ARNING RESULT						кс	sĸ	AB	ECTS
				kills in new, little-known o lated to your area of study			x		0,72
R-28 - To commun	nicate your conc	lusions and the knowled	dge and ult	timate reasons that suppo			x		0,18
		udiences in a clear and u additive manufacturing		bus way y for each biomedical eng	lineering		x		2,1
								Tetal -	3
Knowledge or Conten	nt / SK: Skills / AB: A	bilities						Total:	3
RIMIM129 [1] Disel	ñar productos d	de fabricación aditiva i	mediante	softwares de simulaciói	n.				
LEARNING ACTIV	VITIES				сн	NC	-	тн	
LEARNING ACTIN	VITIES writing of record erience/challeng	de fabricación aditiva i s, reports, presentations es/case studies/experim	s, audiovis	ual material, etc. on			СН 25 h.		25 h.
LEARNING ACTIN Development and projects/work expe ndividually and/or EVALUATION SY	VITIES writing of record erience/challeng in teams /STEM	s, reports, presentations es/case studies/experim	s, audiovis nental inve	ual material, etc. on stigations carried out MAKE-UP MECHANIS	<u>СН</u> 17 h.	9,2	25 h.	26,2	
LEARNING ACTI Development and projects/work expe individually and/or EVALUATION SY Reports on the cor	VITIES writing of record erience/challenge in teams /STEM mpletion of exerces, simulation exerces	s, reports, presentations es/case studies/experim cises, case studies, ercises, laboratory	s, audiovis nental inve	ual material, etc. on stigations carried out	CH 17 h. SMS tion of exerc xercises, lab	9,2 cises, ca	25 h. ase st	26,2 tudies, co	mputer
LEARNING ACTI Development and projects/work experindividually and/or EVALUATION SY Reports on the con computer exercise	VITIES writing of record erience/challenge in teams /STEM mpletion of exern es, simulation exern ojects, challenge 17 h. hours: 9,25 h.	s, reports, presentations es/case studies/experim cises, case studies, ercises, laboratory	s, audiovis nental inve	ual material, etc. on stigations carried out <u>MAKE-UP MECHANIS</u> Reports on the comple exercises, simulation e	CH 17 h. SMS tion of exerc xercises, lab	9,2 cises, ca	25 h. ase st	26,2 tudies, co	mputer
LEARNING ACTI Development and projects/work expendividually and/or EVALUATION SY Reports on the cor computer exercise exercises, term pro- H - Class hours: CH - Non-class h I - Total hours: 2	VITIES writing of record erience/challenge in teams 'STEM mpletion of exerces, simulation ex- ojects, challenge 17 h. bours: 9,25 h. 26,25 h.	s, reports, presentations es/case studies/experim cises, case studies, ercises, laboratory es and problems	s, audiovis iental inve <u>w</u> 100%	ual material, etc. on stigations carried out <u>MAKE-UP MECHANIS</u> Reports on the comple exercises, simulation e	CH 17 h. SMS tion of exerc xercises, lat d problems	9,2 cises, ca boratory	ase st y exer	26,2 tudies, co rcises, ter	mputer m
LEARNING ACTI Development and projects/work expendividually and/or EVALUATION SY Reports on the concomputer exercise exercises, term pro- H - Class hours: CH - Non-class h I - Total hours: 2	VITIES writing of record erience/challenge in teams /STEM mpletion of exerces, simulation exerces, simulation exerces, challenge 17 h. 26,25 h. 26,25 h.	s, reports, presentations es/case studies/experim cises, case studies, ercises, laboratory es and problems	s, audiovis iental inve <u>w</u> 100%	ual material, etc. on stigations carried out MAKE-UP MECHANIS Reports on the comple exercises, simulation e projects, challenges an	CH 17 h. SMS tion of exerc xercises, lat d problems	9,2 cises, ca boratory	ase si y exer	26,2 tudies, co rcises, ter	mputer m
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Course: 2024 / 2025 - Course planning

laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems

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

			СН	NCH	ТН
LEARNING ACTIVITIES Carrying out/resolving projects/challenges/cases, etc. to p interdisciplinary contexts, real and/or simulated, individual			5,5 h.	3,5 h.	9 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANI	SMS		
Individual written and/or oral tests or individual coding/programming tests	40%	Observation (technica	l capacity, at	titude and part	icipation)
Co-assessment	5%				
Prototype / Product	55%				
Comments: If the score of the defense is lower than 5, the evaluation item will be evaluated in its entirety (%100) with of the defense. A co-evaluation system will be implemented adjust the score of the student based on his or her participa- the Project.	the score d to				
CH - Class hours: 5,5 h. NCH - Non-class hours: 3,5 h.					
RMM144 [!] Analiza las variables intervinientes en la estable asumiendo responsabilidades en el equipo de					
TH - Total hours: 9 h. RMM144 [!] Analiza las variables intervinientes en la estable asumiendo responsabilidades en el equipo de LEARNING ACTIVITIES	trabajo, afi	rontando contingencia	s y organiza Сн	ndo y planific	th
TH - Total hours: 9 h. RMM144 [!] Analiza las variables intervinientes en la estable asumiendo responsabilidades en el equipo de	<i>trabajo, afi</i> provide solu	rontando contingencia utions to problems in	s y organiza	ndo y planific	cando tareas.
RMM144 [!] Analiza las variables intervinientes en la estable asumiendo responsabilidades en el equipo de LEARNING ACTIVITIES Carrying out/resolving projects/challenges/cases, etc. to projects/challenges/cases	<i>trabajo, afi</i> provide solu	nontando contingencia utions to problems in teams MAKE-UP MECHANI	s y organiza <u>CH</u> 5,5 h. SMS	ndo y planific NCH 3,5 h.	cando tareas. TH 9 h.
RMM144 [!] Analiza las variables intervinientes en la estable asumiendo responsabilidades en el equipo de LEARNING ACTIVITIES Carrying out/resolving projects/challenges/cases, etc. to pinterdisciplinary contexts, real and/or simulated, individual	<i>trabajo, afi</i> provide solu Ily and/or ir	rontando contingencia utions to problems in teams	s y organiza <u>CH</u> 5,5 h. SMS	ndo y planific NCH 3,5 h.	cando tareas. TH 9 h.
RMM144 [!] Analiza las variables intervinientes en la estable asumiendo responsabilidades en el equipo de LEARNING ACTIVITIES Carrying out/resolving projects/challenges/cases, etc. to printerdisciplinary contexts, real and/or simulated, individual EVALUATION SYSTEM Individual written and/or oral tests or individual	trabajo, afi provide solu Ily and/or ir <u>W</u> 40% 5%	nontando contingencia utions to problems in teams MAKE-UP MECHANI	s y organiza <u>CH</u> 5,5 h. SMS	ndo y planific NCH 3,5 h.	cando tareas. TH 9 h.
RMM144 [!] Analiza las variables intervinientes en la estable asumiendo responsabilidades en el equipo de LEARNING ACTIVITIES Carrying out/resolving projects/challenges/cases, etc. to j interdisciplinary contexts, real and/or simulated, individua EVALUATION SYSTEM Individual written and/or oral tests or individual coding/programming tests Co-assessment Prototype / Product	trabajo, afi provide solu lly and/or ir <u>W</u> 40% 5% 55%	nontando contingencia utions to problems in teams MAKE-UP MECHANI	s y organiza <u>CH</u> 5,5 h. SMS	ndo y planific NCH 3,5 h.	cando tareas. TH 9 h.
RMM144 [!] Analiza las variables intervinientes en la estable asumiendo responsabilidades en el equipo de LEARNING ACTIVITIES Carrying out/resolving projects/challenges/cases, etc. to j interdisciplinary contexts, real and/or simulated, individua EVALUATION SYSTEM Individual written and/or oral tests or individual coding/programming tests Co-assessment Prototype / Product Comments: If the score of the defense is lower than 5, the evaluation item will be evaluated in its entirety (%100) with of the defense. A co-evaluation system will be implemented adjust the score of the student based on his or her participation.	trabajo, afi provide solu lly and/or ir <u>W</u> 40% 55% is the score d to	nontando contingencia utions to problems in teams MAKE-UP MECHANI	s y organiza <u>CH</u> 5,5 h. SMS	ndo y planific NCH 3,5 h.	cando tareas. TH 9 h.
RMM144 [!] Analiza las variables intervinientes en la estable asumiendo responsabilidades en el equipo de LEARNING ACTIVITIES Carrying out/resolving projects/challenges/cases, etc. to j interdisciplinary contexts, real and/or simulated, individua EVALUATION SYSTEM Individual written and/or oral tests or individual coding/programming tests Co-assessment Prototype / Product Comments: If the score of the defense is lower than 5, the effense. A co-evaluation system will be implemented adjust the score of the student based on his or her participathe Project. CH - Class hours: 5,5 h. CH - Non-class hours: 3,5 h.	trabajo, afi provide solu lly and/or ir <u>W</u> 40% 55% is the score d to	nontando contingencia utions to problems in teams MAKE-UP MECHANI	s y organiza <u>CH</u> 5,5 h. SMS	ndo y planific NCH 3,5 h.	cando tareas. TH 9 h.
TH - Total hours: 9 h. RMM144 [!] Analiza las variables intervinientes en la estable asumiendo responsabilidades en el equipo de LEARNING ACTIVITIES Carrying out/resolving projects/challenges/cases, etc. to j interdisciplinary contexts, real and/or simulated, individua EVALUATION SYSTEM Individual written and/or oral tests or individual coding/programming tests Co-assessment Prototype / Product	trabajo, afi provide solu lly and/or ir <u>W</u> 40% 55% is the score d to	nontando contingencia utions to problems in teams MAKE-UP MECHANI	s y organiza <u>CH</u> 5,5 h. SMS	ndo y planific NCH 3,5 h.	cando tareas. TH 9 h.

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EVALUATION SYSTEM		MAKE-UP MECHANISMS				
eports on the completion of exercises, case studies, omputer exercises, simulation exercises, laboratory xercises, term projects, challenges and problems	100%	Reports on the completion of exercises, case studies, compute exercises, simulation exercises, laboratory exercises, term projects, challenges and problems				
H - Class hours: 17 h. CH - Non-class hours: 9,25 h. I - Total hours: 26,25 h.						
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stificando cada una de ellas, y haciendo un uso corr			e manera or	al.		
stificando cada una de ellas, y haciendo un uso corr EARNING ACTIVITIES	ecto del le	enguaje, por escrito y d	e manera ora CH	аl. NCH	тн	
EARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experi	r ecto del le	enguaje, por escrito y de sual material, etc. on	e manera or	al.		
RMM146 [!] Define el problema, el desarrollo de la so stificando cada una de ellas, y haciendo un uso corr LEARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experiendividually and/or in teams EVALUATION SYSTEM	r ecto del le	enguaje, por escrito y de sual material, etc. on	e manera ora CH 1,5 h.	аl. NCH	тн	
stificando cada una de ellas, y haciendo un uso corr EARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experi ndividually and/or in teams	recto del le ns, audiovis mental inve	enguaje, por escrito y de sual material, etc. on estigations carried out	e manera ora CH 1,5 h. SMS	NCH 1 h.	<i>TH</i> 2,5 h.	
EXIFICANDO CADA UNA DE Ellas, y haciendo un uso corr EARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experiendividually and/or in teams EVALUATION SYSTEM Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory	ecto del le ns, audiovis mental inve W	sual material, etc. on estigations carried out	e manera ora CH 1,5 h. SMS	NCH 1 h.	<i>TH</i> 2,5 h.	
EARNING ACTIVITIES Development and writing of records, reports, presentation rojects/work experience/challenges/case studies/experi individually and/or in teams EVALUATION SYSTEM Reports on the completion of exercises, case studies, omputer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems Presentation and defence of exercises, case studies, omputer practical work, simulation practical work, aboratory practical work, term projects, end of degree	recto del le ns, audiovis mental inve <u>w</u> 50%	sual material, etc. on estigations carried out	e manera ora CH 1,5 h. SMS	NCH 1 h.	<i>TH</i> 2,5 h.	

17 h.

9,25 h.

26,25 h.

CONTENTS

1 - 3D personalized printing2 - 3D printing of farmaceutical compounds3 – 4D printing in medicine

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography			
Technical articles	3D Printing in Medicine; Edited by Dr. Deepak M. Kalaskar;			
Class presentations	Woodhead Publishing; eBook ISBN: 9780081007266; Hardcove			
Video projections	ISBN: 9780081007174			