

Course: 2024 / 2025 - Course planning

Goi Eskola Politeknikoa Escuela Politécnic

			יבת [כנ	P LEARNING					
		GENE	ERAL IN	ORMATION					
Studies	MASTER'S DEG	REE IN BIOMEDICAL S		Subject 2	?				
Semester	2 OPTIONAL	Course 1		Mention / Field of specialisation	???				
	2023	Modality Face	-to-face	Language	NGUSH				
Credits		Hours/week 2.63		Total hours		rs + 27.7	' non-cla	ass hou	rs = <u>75</u>
			PROFE	SSORS					
ALBERDI A	RAMENDI, ANE								
		REQUIRED	PREVIC	OUS KNOWLEDG	ε				
	Subj	ects			Know	ledge			
(No	o specific previous	s subjects required)		•	o previous kno	wledge i	required	Ŋ	
		LE/	ARNING	RESULTS					
ARNING RESU		ing algorithms suitable (or oppliant'	one in the biomedia-	field	КС	SK /	AB	2,1
R-26 - To apply	/ the knowledge a	ning algorithms suitable for acquired and your probler	m-solving s	kills in new, little-knov	n or		x x		2,1 0,72
nging environr R-28 - To comr	ments within broad	der (or multidisciplinary) nclusions and the knowle audiences in a clear and	contexts re dge and ul	lated to your area of s timate reasons that su	tudy		x		0,18
			unumbigu	Jub way			То	otal:	3
Knowledge or Cor	ntent / SK: Skills / AB:		DVIEA	RNING RESULT	2				
		s de los algoritmos de r	redes neur	onales y de las disti	ntas topología Сн	as NC	сн	тн	
LEARNING AC Presentation by procedures ass	TIVITIES / the teacher in th sociated with the s	e classroom, in participa	tory classe	s, of concepts and		NC	СН 25 h.	12 h	n. 25 h.
LEARNING AC Presentation by procedures ass Carrying out ex EVALUATION	TIVITIES / the teacher in th sociated with the s ercises and solvir SYSTEM	e classroom, in participat subjects ng problems individually a	tory classe and/or in te	s, of concepts and ams MAKE-UP MECHA	CH 12 h. 5 h. NISMS	NC 9,2	25 h.	12 h 14,2	25 h.
LEARNING AC Presentation by procedures ass Carrying out ex EVALUATION Reports on the computer exercises, term Individual writte coding/program Comments: If t valuation item w	TIVITIES the teacher in the sociated with the second with the second solving SYSTEM completion of exectises, simulation ex- projects, challenger and/or oral test ming tests the score of the ex- second solving tests	e classroom, in participat subjects ng problems individually a ercises, case studies, exercises, laboratory ges and problems	tory classe and/or in te <u>W</u> 70% 30%	s, of concepts and ams	CH 12 h. 5 h. NISMS ppletion of exe on exercises, la s and problem nd/or oral tests g tests core of the ex the exam. The	9,2 rcises, ca aboratory s or indivi am is low e final gra	25 h. ase stuc y exercis idual ver than ade will	12 h 14,2 dies, cou ses, terr ses, terr s, it wi consist	25 h. mputer m
LEARNING AC Presentation by procedures ass Carrying out ex EVALUATION Reports on the computer exercises, term Individual writte coding/program Comments: If t valuation item w f the exam. H - Class hour	TIVITIES the teacher in the sociated with the services and solvin SYSTEM completion of exections projects, challenger and/or oral test ming tests the score of the ex- vill be evaluated in rs: 17 h. s hours: 9,25 h.	e classroom, in participat subjects ng problems individually a ercises, case studies, exercises, laboratory ges and problems as or individual xam is lower than 4, this	tory classe and/or in te <u>W</u> 70% 30%	s, of concepts and ams MAKE-UP MECHA Reports on the com exercises, simulatio projects, challenge Individual written an coding/programmin Comments: If the s mandatory to repeat	CH 12 h. 5 h. NISMS ppletion of exe on exercises, la s and problem nd/or oral tests g tests core of the ex the exam. The	9,2 rcises, ca aboratory s or indivi am is low e final gra	25 h. ase stuc y exercis idual ver than ade will	12 h 14,2 dies, cou ses, terr ses, terr s, it wi consist	25 h. mputer m
LEARNING AC Presentation by procedures ass Carrying out ex EVALUATION Reports on the computer exercises, term Individual writter coding/program Comments: If t valuation item w f the exam. H - Class hour CH - Non-class H - Total hours H - Total hours EXAMPLE [!] De Tabajo con los	TIVITIES the teacher in the sociated with the services and solvin SYSTEM completion of exections projects, challenger and/or oral tests the score of the ex- vill be evaluated in s: 17 h. s hours: 9,25 h. s: 26,25 h. efine los objetived demás miembro CTIVITIES nd writing of reco xperience/challen	e classroom, in participat subjects ng problems individually a ercises, case studies, exercises, laboratory ges and problems is or individual xam is lower than 4, this n its entirety (%100) with	tory classe and/or in te <u>W</u> 70% 30% the score	s, of concepts and ams <u>MAKE-UP MECHA</u> Reports on the con exercises, simulatio projects, challenge Individual written an coding/programmin Comments: If the s mandatory to repeat from the first exam a	CH 12 h. 5 h. NISMS on exercises, la s and problem nd/or oral tests g tests iscore of the ex the exam. The nd 75% from t	9,2 rcises, ca aboratory s or indivi am is low final gra he recov	25 h. ase stuc y exercis idual wer than ade will ery exar ico cool	12 h 14,2 dies, con ses, tern o 5, it wi consist m.	25 h. mputer m ill be of 25%



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exercises, term projects, challenges and problems 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

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.

50%

LEARNING ACTIVITIES			СН	NCH	тн
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 MECHANIS	SMS		
Individual written and/or oral tests or individual coding/programming tests	40%	Observation (technical	l capacity, at	titude and part	icipation)
Co-assessment	5%				
Prototype / Product	55%				
Comments: If the score of the defense is lower than a evaluation item will be evaluated in its entirety (%100) of the defense. A co-evaluation system will be implement adjust the score of the student based on his or her part the Project.	with the score nted to				
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			СН	NCH	тн	
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 MECHAN			ISMS			
Individual written and/or oral tests or individual coding/programming tests	40%	Observation (technical	l capacity, at	titude and par	ticipation)	
Co-assessment	5%					
Prototype / Product	55%					
Comments: If the score of the defense is lower than 5 evaluation item will be evaluated in its entirety (%100) w of the defense. A co-evaluation system will be impleme adjust the score of the student based on his or her partitive the Project.	with the score nted to					
CH - Class hours: 5,5 h. NCH - Non-class hours: 3,5 h. TH - Total hours: 9 h.						

RMM133 [!] Desarrollar aplicaciones de aprendizaje profundo con algoritmos que mejor se adecúen a las características del problema a modelar

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EARNING ACTIVITIES			СН	NCH	ТН	
omputer simulation exercises, individually and/or in tear	ns		6,5 h.	9,75 h.	16,25 h.	
resentation by the teacher in the classroom, in participa rocedures associated with the subjects	tory classes	, of concepts and	10 h.		10 h.	
VALUATION SYSTEM	w	MAKE-UP MECHAN	IISMS			
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	60%	Reports on the comp exercises, simulation projects, challenges	exercises, lat			
ndividual written and/or oral tests or individual oding/programming tests	40%	Individual written and/or oral tests or individual coding/programming tests				
comments: If the score of the exam is lower than 4, this aluation item will be evaluated in its entirety (%100) with the exam.		Comments: If the sc mandatory to repeat th from the first exam and	ne exam. The f	inal grade will	consist of 25%	
CH - Non-class hours: 9,75 h. H - Total hours: 26,25 h.						
stificando cada una de ellas, y haciendo un uso corr					nentando y TH	
EARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experience/challenges/case stu	ecto del len	n guaje, por escrito y d ual material, etc. on	de manera ora	al.	-	
stificando cada una de ellas, y haciendo un uso corre EARNING ACTIVITIES Development and writing of records, reports, presentatior projects/work experience/challenges/case studies/experir ndividually and/or in teams	ecto del len	n guaje, por escrito y d ual material, etc. on	de manera ora CH 1,5 h.	лсн	тн	
RMM146 [!] Define el problema, el desarrollo de la so stificando cada una de ellas, y haciendo un uso corresta de ellas,	ecto del len ns, audiovisu mental inves	iguaje, por escrito y d ual material, etc. on tigations carried out	de manera ora <u>Сн</u> 1,5 h. IISMS	NCH 1 h.	TH 2,5 h.	
EARNING ACTIVITIES Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin ndividually and/or in teams EVALUATION SYSTEM Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory	ecto del len ns, audiovisu mental inves	ual material, etc. on tigations carried out	de manera ora <u>Сн</u> 1,5 h. IISMS	NCH 1 h.	TH 2,5 h.	

CONTENTS

- 1.- Introduction
- 2.- Multiple Layer Perceptrons
- 3.- Convolutional Neural Networks
- 4.- Recurrent Neural Networks
- 5.- Other topologies

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Slides of the subject	The Hundred-page Machine Learning Book. Andriy Burkov.
Computer practical training	Deep Learning with Python. Jason Brownlee.
Class presentations	
Moodle Platform	
Topic related web quires	

