



	GENERAL IN	IFORMATION				
Studies DEGREE IN ME	CHANICAL ENGINEERING	Subject ?				
Semester 2	Course 3	Mention / Field of				
Character COMPULSORY		specialisation	0 4 0 T T I I			
Plan 2022	Modality Face-to-face	Language EUSKARA/	CASTEL	_ANO/E	NGLISH	440 5
Credits 4,5	Hours/week 2.61	lotal hours 47 class ho hours	urs + 65.	o non-c	lass hour	s = <u>112.5</u>
	2030 AGEN	IDA GOALS				
1 😒						
		SSORS				
AIZPURU SULIS, JON	NZALEZ, DAVID					
	REQUIRED PREVI	OUS KNOWLEDGE				
Subj	ects	Kn	owledge		0	
		(INO previous)	knowleag	e requi	rea)	
	LEARNING	RESULTS				
EARNING RESULTS			кс	SK	AB	ECTS
VR307 - To apply thermal engine PTP1 - To develop interdiscipling	ering knowledge	v and of gradual complexity -		x x		3,78 04
ecoming aware of respect for hun	nan rights and fundamental rights,	and analyzing and assessing the		~		0,1
pact of the proposed solutions of	n the SDGs - to acquire and/or app	ly basic, advanced and/or				
1						
ant-garde, demonstrating the ab	ility to work in multidisciplinary tear	ns and/or undertake further studie	5			
ant-garde, demonstrating the ab th a high degree of autonomy RTR2 - To express information, in	ility to work in multidisciplinary tear	ns and/or undertake further studie	5	x		0,32
ant-garde, demonstrating the ab th a high degree of autonomy RTR2 - To express information, in herent manner, orally and in writ	ility to work in multidisciplinary tear deas and the arguments that suppo ing, based on quality information, s	ns and/or undertake further studie ort them in an orderly, clear and elf-made or obtained from differer	s	x		0,32
Ant-garde, demonstrating the ab ith a high degree of autonomy RTR2 - To express information, in wherent manner, orally and in writ burces, using inclusive and non-d	ility to work in multidisciplinary tear deas and the arguments that suppo ing, based on quality information, s iscriminatory language	ns and/or undertake further studie ort them in an orderly, clear and elf-made or obtained from differer	s .t	x		0,32
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ENA120 - Communication and Teamwork: Ability to operate effectively in domestic and international contexts, individually and as a team, and to cooperate with both engineers and people from other disciplines.

ENA122 - Continued training: Ability to stay up to date on science and technology innovations.

SECONDARY LEARNING RESULTS 2RGM392 (2 sem) **NCH** ΤН **LEARNING ACTIVITIES** СН Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in 3 h. 1 h. 2 h. interdisciplinary contexts, real and/or simulated, individually and/or in teams **EVALUATION SYSTEM** w MAKE-UP MECHANISMS 100% Reports on the completion of exercises, case studies, Reports on the completion of exercises, case studies, computer computer exercises, simulation exercises, laboratory exercises, simulation exercises, laboratory exercises, term exercises, term projects, challenges and problems projects, challenges and problems Comments: Continuous evaluation. FEEDBACK received from the Comments: Students have the responsability of meeting the tutor to do the tracking of the project and to ensure the achievement of tutor and the experts in the project follow-up meetings. the goals. CH - Class hours: 1 h.

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

RGM318 [!] Analiza los mecanismos de transferencia de calor (conducción, convección y radiación)

LEARNING ACTIVITIES	СН	NCH	ТН
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	2 h.	7 h.	9 h.
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	6 h.	8 h.	14 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	14 h.	14 h.	28 h.

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	5%	Individual written and/or oral tests or individual coding/programming tests Comments: The evaluation of the semester project will be
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	25%	continuous and is based on the meetings that the teams will hold with the tutors and experts. One week before the final delivery of the report, the joint work will be analyzed to identify the aspects to improve and communicate to the team. The final version of the
Individual written and/or oral tests or individual coding/programming tests	70%	report with the aspects to improve corrected will be the recovery.
Comments: Students have the responsability of meeting experts to do the tracking of the project and to ensure the achievement of the goals.	the	
CH - Class hours: 22 h		

NCH - Non-class hours: 29 h.

TH - Total hours: 51 h.

Earning 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 1 h. 2 h. 3 h.



M Mondragon Unibertsitatea Goi Eskola Politeknikoa Escuela Politécnica

Course: 2024	/ 2025 -	Course	planning
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EVALUATION SYSTEM	50%	Deports on the second state	5		dias sometre
Self-assessment Observation (technical capacity, attitude and participation)	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems				
Comments: The average of the marks of the tutor's assessment					
and the self-assessment carried out by the work team is call	culated,	semi-annual project	evaluation	and reedback	c of the
aking into account the co-evaluation among the members of	of the				
team.					
CH - Class hours: 1 h.					
NCH - Non-class hours: 2 h.					
TH - Total hours: 3 h.					
RGM319 [!] Diseña y dimensiona los componentes de	la transf	erencia de calor entre fluid	dos		
LEARNING ACTIVITIES			СН	NCH	тн
Conducting tests, giving presentations, presenting defence checkpoints	es, taking	examinations and/or doing	4 h.	6,5 h.	10,5 h.
Carrying out/resolving projects/challenges/cases, etc. to printerdisciplinary contexts, real and/or simulated, individual	rovide so ly and/or	lutions to problems in in teams	2 h.	6 h.	8 h.
Presentation by the teacher in the classroom, in participate	ory classe	es. of concepts and	14 h.	11 h.	25 h.
procedures associated with the subjects	-	.,			
procedures associated with the subjects Comments: The updated version of Ansys Fluent is used	to carry o	ut the dimensioning calculat	ions.		
procedures associated with the subjects Comments: The updated version of Ansys Fluent is used EVALUATION SYSTEM	to carry c W	ut the dimensioning calculat MAKE-UP MECHANISM	ions. I S		
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procedures associated with the subjects Comments: The updated version of Ansys Fluent is used EVALUATION SYSTEM Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory 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 Individual written and/or oral tests or individual coding/programming tests Comments: Students have the responsability of meeting the project of the state o	to carry c <u>w</u> 5% 25% 70%	MAKE-UP MECHANISM Individual written and/or of coding/programming test Comments: Continuous tutor and the experts in the	ions. I S oral tests s evaluatior e project fo	or individual n. FEEDBACK Illow-up meeti	received from tl ngs.
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2RGM393 (2 sem)

LEARNING ACTIVITIES			СН	NCH	тн
Development and writing of records, reports, presentation projects/work experience/challenges/case studies/experin individually and/or in teams	ns, audiovi mental inv	isual material, etc. on estigations carried out	1 h.	3 h.	4 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANI	SMS		
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	100%	Reports on the complexercises, simulation projects, challenges a	etion of exer exercises, la ind problems	cises, case stu boratory exerc	dies, computer ises, term
Comments: Students have the responsability of meeting to do the tracking of the project and to ensure the achieven the goals.	the tutor nent of	Comments: Continuo tutor and the experts in	us evaluatio the project f	n. FEEDBACK ollow-up meeti	received from the ngs.
CH - Class hours: 1 h. NCH - Non-class hours: 3 h.					





TH - Total hours: 4 h.

2RGM394 (2 sem) LEARNING ACTIVITIES СН NCH ΤН 1 h Development and writing of records, reports, presentations, audiovisual material, etc. on 3 h 4 h projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams **EVALUATION SYSTEM** W MAKE-UP MECHANISMS 100% Presentation and defence of exercises, case studies, Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree term projects, end of degree project, master's thesis, challenges project, master's thesis, challenges and problems and problems Comments: Students have the responsability of meeting the tutor Comments: Continuous assessment and feedback of the to do the tracking of the project and to ensure the achievement of semester project. the goals CH - Class hours: 1 h. NCH - Non-class hours: 3 h. TH - Total hours: 4 h. 2RGM390 (2 sem) LEARNING ACTIVITIES СН NCH ΤН Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in 1 h 3 h 4 h interdisciplinary contexts, real and/or simulated, individually and/or in teams w **EVALUATION SYSTEM** MAKE-UP MECHANISMS 100% Reports on the completion of exercises, case studies, Reports on the completion of exercises, case studies, computer computer exercises, simulation exercises, laboratory exercises, simulation exercises, laboratory exercises, term exercises, term projects, challenges and problems projects, challenges and problems Comments: Students have the responsability of meeting the tutor Comments: Continuous evaluation. FEEDBACK received from the to do the tracking of the project and to ensure the achievement of tutor and the experts in the project follow-up meetings. the goals. CH - Class hours: 1 h. NCH - Non-class hours: 3 h. TH - Total hours: 4 h. CONTENTS Introduction to heat transfer mechanisms: Conduction, convection and radiation

2 - Heat diffussion equation

- 3 Extended surfaces: Fins
- 4 Convection
- 5 Design of heat interchangers
- 6 Methodology for problem solving and communication

LEARNING RESOURCES AND BIBLIOGRAPHY





Learning resources	Bibliography
Subject notes Topic related web guires	Heat Transfer A Practical Approach, Cengel, Yunus A and Cengel, Yunus, McGraw Hill Professional, 2003.
Moodle Platform Class presentations	Fundamentals of heat and mass transfer, Incropera Frank, Dewitt David, Bergman Theodore, Lavine Adrienne, sixth edition, 2011.
Video projections Slides of the subject	John H. Lienhard IV and John H. Lienhard V, third edition, Cambridge MA, Phlogiston Press, 2004.
Programmes	