

Course: 2022 / 2023 - Course planning

Goi Eskola Politeknikoa Escuela Politécnica

			DUWQIQQ			
	[GJC	5101]	PHYSICS			
	GENER	AL IN	FORMATION			
Studies DEGREE II	N MECHATRONICS ENGINEER	ING	Subject	?		
Semester 1	Course 1		Mention / Field of			
Character BASIC TRA	AINING		specialisation			
Plan 2020	Modality Face-to	o-face	Language	CASTELLANO/	EUSKARA	
Credits 6	Hours/week 5		Total hours	90 class hours +	+ 60 non-class	hours = <u>150 to</u>
				hours		
	P	ROFE	SSORS			
GANDARIAS INCHAUS	STI, KEPA					
URRUTIBEASCOA IRA	ALA, IDOIA					
EGUIA IBARZABAL, JO	DSU					
	REQUIRED P	PREVI	OUS KNOWLED	GE		
	Subjects			Knowl	edge	
(No specific pre	evious subjects required)		(1	No previous knov	vledge require	d)
		SKI	LLS			
PECIFIC						
<b>CE02</b> - To understand and ectromagnetism, applying the time of the sector of the sect	master basic concepts from the the to engineering problems.	general	laws of mechanics, th	nermodynamics,	fields and way	es and
ROSS						
ICTR2 - To be able to unde	rstand and apply knowledge to p	roblem	solving in complex wo	ork situations or s	specialised an	d professional
vironments calling for creat	tive and innovative ideas, using s	self-dev	eloped arguments and	d procedures;		
ASIC						
CB2 - To be able to apply a	knowledge to occupational or pro	fession	al tasks; have the nec	cessary skills to p	oose and defe	nd arguments, a
CB2 - To be able to apply l solve problems within their CB5 - To have developed l	knowledge to occupational or pro field of study learning abilities required to emba	ofession ark on s	al tasks; have the nec	cessary skills to p th a high level of	oose and defer autonomy.	nd arguments, a
_CB2 - To be able to apply l solve problems within their _CB5 - To have developed l	knowledge to occupational or pro field of study earning abilities required to emba	fession ark on s	al tasks; have the nec	cessary skills to p th a high level of	oose and defer autonomy.	nd arguments, a
_ <b>CB2</b> - To be able to apply be solve problems within their _ <b>CB5</b> - To have developed be apply be ap	knowledge to occupational or pro field of study earning abilities required to emba LEAF	fession ark on s RNING	al tasks; have the nec ubsequent studies wi RESULTS	essary skills to p th a high level of	oose and defer autonomy.	nd arguments, a
_CB2 - To be able to apply I solve problems within their _CB5 - To have developed I	knowledge to occupational or pro field of study learning abilities required to emba LEAF	ofession ark on s RNING	al tasks; have the nec subsequent studies wi RESULTS	cessary skills to p	oose and defer autonomy.	nd arguments, a
_CB2 - To be able to apply I solve problems within their _CB5 - To have developed I	knowledge to occupational or pro field of study earning abilities required to emba LEAF	ofession ark on s RNING	al tasks; have the nec subsequent studies wi RESULTS	essary skills to p	pose and defer autonomy.	nd arguments, a
_CB2 - To be able to apply I solve problems within their _CB5 - To have developed I _RGJ131 They model, calo	knowledge to occupational or pro field of study earning abilities required to emba LEAF	ofession ark on s RNING	al tasks; have the nec subsequent studies wi RESULTS of solids.	essary skills to p	oose and defer autonomy.	nd arguments, a
_CB2 - To be able to apply I solve problems within their _CB5 - To have developed I _RGJ131 They model, calo	knowledge to occupational or pro field of study earning abilities required to emba LEAF	ofession ark on s RNING palance	al tasks; have the nec subsequent studies wi RESULTS of solids.	cessary skills to p	oose and defer autonomy.	nd arguments, a
CB2 - To be able to apply I solve problems within their CB5 - To have developed I RGJ131 They model, calc	knowledge to occupational or pro field of study earning abilities required to emba LEAF	ark on s RNING	al tasks; have the nec subsequent studies wi RESULTS of solids.	cessary skills to p th a high level of сн	NCH	nd arguments, a
CB2 - To be able to apply I solve problems within their CB5 - To have developed I RGJ131 They model, calc LEARNING ACTIVITIES Development, writing and p	knowledge to occupational or pro field of study earning abilities required to emba LEAF culate and examine the static b	ofession ark on s RNING palance	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids.	cessary skills to p th a high level of CH etc. 3 h.	NCH	nd arguments, a
CB2 - To be able to apply I solve problems within their CB5 - To have developed I RGJ131 They model, calc LEARNING ACTIVITIES Development, writing and p Relating to projects/POPBL	knowledge to occupational or pro field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re s carried out individually or in tea	ofession ark on s RNING balance eports, a ams	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids.	cessary skills to p th a high level of <u>CH</u> etc. <sup>3 h.</sup>	NCH	nd arguments, a
CB2 - To be able to apply I solve problems within their CB5 - To have developed I RGJ131 They model, calc LEARNING ACTIVITIES Development, writing and p Relating to projects/POPBL Individual study and work, f	knowledge to occupational or pro field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re s carried out individually or in teat tests and evaluations and check	ofession ark on s RNING palance eports, a ams points	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids.	th a high level of the a high level of the ability	NCH 1 h. 5 h.	nd arguments, a 
CB2 - To be able to apply I solve problems within their CB5 - To have developed I RGJ131 They model, calc LEARNING ACTIVITIES Development, writing and p Relating to projects/POPBL Individual study and work, 1 Practices of problem solvin	knowledge to occupational or pro field of study learning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re as carried out individually or in tea tests and evaluations and check g and real or simulated context p	ofession ark on s <b>RNING</b> palance eports, a ams points projects	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids.	cessary skills to p th a high level of <u>CH</u> etc. 3 h. 3 h. 2 h.	NCH 1 h. 5 h. 5 h.	nd arguments, a 
CB2 - To be able to apply I solve problems within their CB5 - To have developed I RGJ131 They model, calc LEARNING ACTIVITIES Development, writing and p Relating to projects/POPBL Individual study and work, f Practices of problem solvin Presentation of the teacher	knowledge to occupational or pro field of study learning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re s carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory	eports, a ams points points y classe	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e	eessary skills to p th a high level of <u>CH</u> etc. 3 h. 3 h. 2 h. 13 h.	NCH NCH 1 h. 5 h. 5 h.	TH     4 h.     8 h.     7 h.     13 h.
CB2 - To be able to apply I solve problems within their CB5 - To have developed I RGJ131 They model, calc LEARNING ACTIVITIES Development, writing and p Relating to projects/POPBL Individual study and work, f Practices of problem solvin Presentation of the teacher procedures associated with	knowledge to occupational or pro field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re s carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory to the subjects	eports, a ams points projects y classe	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e	cessary skills to p th a high level of <u>CH</u> etc. 3 h. 3 h. 2 h. 13 h.	NCH NCH 1 h. 5 h. 5 h. 4 b.	TH     4 h.     8 h.     7 h.     13 h.
CB2 - To be able to apply I solve problems within their CB5 - To have developed I CB5 - To have	knowledge to occupational or pro field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- s carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory to the subjects ses	ofession ark on s <b>RNING</b> balance eports, a ams points projects y classe	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e	eessary skills to p th a high level of <u>CH</u> etc. 3 h. 3 h. 2 h. 13 h. 9 h.	autonomy. autonomy. NCH 1 h. 5 h. 5 h. 5 h. 4 h.	TH     4 h.     8 h.     7 h.     13 h.     13 h.
CB2 - To be able to apply I solve problems within their CB5 - To have developed I CB5 - To have developed I CB5 - To have developed I Regulation They model, calc LEARNING ACTIVITIES Development, writing and p Relating to projects/POPBL Individual study and work, t Practices of problem solvin Presentation of the teacher procedures associated with Individual and team exercis EVALUATION SYSTEM	knowledge to occupational or pro field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- s carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory to the subjects ses	ofession ark on s <b>RNING</b> balance eports, a ams points projects y classe W	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e s, of concepts and <u>MAKE-UP MECH</u>	eessary skills to p th a high level of <u>CH</u> etc. 3 h. 3 h. 2 h. 13 h. 9 h. ANISMS	NCH 1 h. 5 h. 5 h. 4 h.	TH     4 h.     8 h.     7 h.     13 h.     13 h.
CB2 - To be able to apply I solve problems within their CB5 - To have developed I CB5 - To have developed I CB5 - To have developed I Regularing They model, calc LEARNING ACTIVITIES Development, writing and p Relating to projects/POPBL Individual study and work, t Practices of problem solvin Presentation of the teacher procedures associated with Individual and team exercis EVALUATION SYSTEM Individual written and oral t	knowledge to occupational or pro field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- s carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory in the subjects ses ests to assess technical skills of	Ark on s ark on s <b>RNING</b> Aalance eports, a ams points projects y classe <u>w</u> 80%	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e s, of concepts and <u>MAKE-UP MECH</u> Individual written a	eessary skills to p th a high level of <u>CH</u> etc. 3 h. 3 h. 2 h. 13 h. 9 h. <b>ANISMS</b> and oral tests to a	NCH 1 h. 5 h. 5 h. 4 h. assess technic	TH     4 h.     8 h.     7 h.     13 h.     cal skills of the
CB2 - To be able to apply I solve problems within their CB5 - To have developed I CB5 - To have developed I CB5 - To have developed I Relating They model, calc Development, writing and p Relating to projects/POPBL Individual study and work, f Practices of problem solvin Presentation of the teacher procedures associated with Individual and team exercise EVALUATION SYSTEM Individual written and oral t the subject	knowledge to occupational or pro field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- is carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory in the subjects ses ests to assess technical skills of	Ark on s ark on s <b>RNING</b> Palance Palance Poorts, a ams points projects y classe W 80%	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e s, of concepts and <u>MAKE-UP MECH</u> Individual written a subject Comments: Final	cessary skills to p   th a high level of   th a high level of   cH   etc. 3 h.   3 h.   2 h.   13 h.   9 h.   ANISMS   and oral tests to p	NCH 1 h. 5 h. 5 h. 4 h. assess technic	TH     4 h.     8 h.     7 h.     13 h.     13 h.     cal skills of the
CB2 - To be able to apply I solve problems within their CB5 - To have developed I RGJ131 They model, calc LEARNING ACTIVITIES Development, writing and p Relating to projects/POPBL Individual study and work, f Practices of problem solvin Presentation of the teacher procedures associated with Individual and team exercis EVALUATION SYSTEM Individual written and oral t the subject Reports of solving exercise practices, simulation practic	knowledge to occupational or pro field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- is carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory in the subjects ses ests to assess technical skills of es, case studies, computer ces and laboratory practices	Ark on s ark on s <b>RNING</b> balance balance eports, a ams points projects y classe <u>w</u> 80% 10%	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e s, of concepts and <u>MAKE-UP MECH</u> Individual written a subject <b>Comments:</b> Final exam (25%) Labora	cessary skills to p   th a high level of   th a high level of   cH   etc. 3 h.   3 h.   2 h.   13 h.   9 h.   ANISMS   and oral tests to a   mark: written se   atory practices ar	NCH NCH 1 h. 5 h. 5 h. 4 h. assess technic cond-chance end autoevaluat	TH 4 h. 8 h. 7 h. 13 h. 13 h. cal skills of the exam (75%) + ions will be
CB2 - To be able to apply I solve problems within their CB5 - To have developed I CB5 - To have	knowledge to occupational or pro field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- s carried out individually or in tea tests and evaluations and check is g and real or simulated context p in the classroom, in participatory to the subjects ses ests to assess technical skills of es, case studies, computer ces and laboratory practices in the project, finished work.	ofession ark on s <b>RNING</b> balance points projects y classe <u>w</u> 80% 10%	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e s, of concepts and <u>MAKE-UP MECH</u> Individual written a subject <b>Comments:</b> Final exam (25%) Labora made-up by on-goir	cessary skills to p   th a high level of   th a high level of   cH   etc.   3 h.   2 h.   13 h.   9 h.   ANISMS   and oral tests to a   mark: written se   atory practices ar   ng evaluation	NCH Autonomy. NCH 1 h. 5 h. 5 h. 4 h. A ssess technic cond-chance of autoevaluat	TH 4 h. 8 h. 7 h. 13 h. 13 h. 13 h. cal skills of the exam (75%) + ions will be
CB2 - To be able to apply I solve problems within their CB5 - To have developed I RGJ131 They model, calc LEARNING ACTIVITIES Development, writing and p Relating to projects/POPBL Individual study and work, f Practices of problem solvin Presentation of the teacher procedures associated with Individual and team exercis EVALUATION SYSTEM Individual written and oral t the subject Reports of solving exercise practices, simulation praction Technical skills, involvement obtained results, handed do	knowledge to occupational or pro field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- s carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory to the subjects ses ests to assess technical skills of es, case studies, computer ces and laboratory practices int in the project, finished work, ocumentation, presentation and	ofession ark on s <b>RNING</b> balance points projects y classe w 80% 10%	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e es, of concepts and <u>MAKE-UP MECH</u> Individual written a subject <b>Comments:</b> Final exam (25%) Labora made-up by on-goir	cessary skills to p   th a high level of   th a high level of   cH   etc.   3 h.   2 h.   13 h.   9 h.   ANISMS   and oral tests to a   mark: written se   atory practices ar   ng evaluation	NCH NCH 1 h. 5 h. 5 h. 4 h. assess technic cond-chance of autoevaluat	TH 4 h. 8 h. 7 h. 13 h. 13 h. cal skills of the exam (75%) + ions will be
_CB2 - To be able to apply I solve problems within their _CB5 - To have developed I 	knowledge to occupational or pro- field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- s carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory of the subjects ses ests to assess technical skills of es, case studies, computer ces and laboratory practices int in the project, finished work, ocumentation, presentation and	ofession ark on s <b>RNING</b> balance eports, a ams points projects y classe <u>v</u> 80% 10%	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e s, of concepts and <u>MAKE-UP MECH</u> Individual written a subject Comments: Final exam (25%) Labora made-up by on-goir	eessary skills to p th a high level of <u>CH</u> etc. 3 h. 3 h. 2 h. 13 h. 9 h. ANISMS and oral tests to a mark: written se atory practices ar ng evaluation	NCH 1 h. 5 h. 5 h. 4 h. assess technic cond-chance of ad autoevaluat	TH 4 h. 8 h. 7 h. 13 h. 13 h. cal skills of the exam (75%) + ions will be
_CB2 - To be able to apply I solve problems within their _CB5 - To have developed I 	knowledge to occupational or pro- field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- s carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory in the subjects ses ests to assess technical skills of es, case studies, computer ces and laboratory practices int in the project, finished work, ocumentation, presentation and	Ark on s ark on s <b>RNING</b> Analance Anal	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e s, of concepts and <u>MAKE-UP MECH</u> Individual written a subject <b>Comments:</b> Final exam (25%) Labora made-up by on-goir	cessary skills to p th a high level of <u>CH</u> etc. 3 h. 3 h. 2 h. 13 h. 9 h. ANISMS and oral tests to a mark: written se atory practices ar ng evaluation	NCH 1 h. 5 h. 5 h. 4 h. assess technic cond-chance of autoevaluat	TH 4 h. 8 h. 7 h. 13 h. 13 h. cal skills of the exam (75%) + ions will be
_CB2 - To be able to apply I solve problems within their _CB5 - To have developed I _CB5 - To have developed I 	knowledge to occupational or pro- field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- tests and evaluations and check g and real or simulated context p in the classroom, in participatory in the subjects ses ests to assess technical skills of es, case studies, computer ces and laboratory practices nt in the project, finished work, ocumentation, presentation and	Ark on s ark on s <b>RNING</b> Analance ams points projects y classe <u>w</u> 80% 10%	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e s, of concepts and <u>MAKE-UP MECH</u> Individual written a subject Comments: Final exam (25%) Labora made-up by on-goir	cessary skills to p   th a high level of   th a high level of   cH   stc. 3 h.   2 h.   13 h.   9 h.   ANISMS   and oral tests to a   mark: written se   atory practices ar   ng evaluation	NCH 1 h. 5 h. 5 h. 4 h. assess technic cond-chance of autoevaluat	TH 4 h. 8 h. 7 h. 13 h. 13 h. cal skills of the exam (75%) + ions will be
_CB2 - To be able to apply I solve problems within their _CB5 - To have developed I _CB5 - To have developed I _CB5 - To have developed I 	knowledge to occupational or pro- field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- s carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory in the subjects ses ests to assess technical skills of res, case studies, computer ces and laboratory practices int in the project, finished work, ocumentation, presentation and h.	Ark on s ark on s <b>RNING</b> Palance Poorts, a ams points projects y classe <u>w</u> 80% 10%	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e s, of concepts and $\frac{MAKE-UP MECH}{Individual written asubjectComments: Finalexam (25%) Laboramade-up by on-goir$	eessary skills to p th a high level of	NCH NCH 1 h. 5 h. 5 h. 4 h. assess technic cond-chance of autoevaluat	TH 4 h. 8 h. 7 h. 13 h. 13 h. cal skills of the exam (75%) + ions will be
CB2 - To be able to apply I solve problems within their CB5 - To have developed I CB5 - To have	knowledge to occupational or pro- field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- s carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory in the subjects ses ests to assess technical skills of es, case studies, computer ces and laboratory practices in the project, finished work, ocumentation, presentation and h.	Ark on s ark on s <b>RNING</b> Analance eports, a ams points projects y classe <b>W</b> 80% 10%	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e s, of concepts and <u>MAKE-UP MECH</u> Individual written a subject Comments: Final exam (25%) Labora made-up by on-goir	cessary skills to p   th a high level of   cH   etc. 3 h.   3 h.   2 h.   13 h.   9 h.   ANISMS   and oral tests to a   mark: written se   tory practices ar   ng evaluation	NCH 1 h. 5 h. 5 h. 4 h. assess technic cond-chance of autoevaluat	TH 4 h. 8 h. 7 h. 13 h. 13 h. cal skills of the exam (75%) + ions will be
CB2 - To be able to apply I solve problems within their CB5 - To have developed I RGJ131 They model, calc LEARNING ACTIVITIES Development, writing and p Relating to projects/POPBL Individual study and work, t Practices of problem solvin Presentation of the teacher procedures associated with Individual and team exercise EVALUATION SYSTEM Individual written and oral t the subject Reports of solving exercise practices, simulation practic Technical skills, involvemen obtained results, handed du technical defence H - Class hours: 30 h. CH - Non-class hours: 15 H - Total hours: 45 h.	knowledge to occupational or pro- field of study earning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- s carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory in the subjects ses ests to assess technical skills of es, case studies, computer ces and laboratory practices in the project, finished work, ocumentation, presentation and h.	Ark on s ark on s <b>RNING</b> Analance ams points projects y classe <u>w</u> 80% 10%	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e s, of concepts and <u>MAKE-UP MECH</u> Individual written a subject <b>Comments:</b> Final exam (25%) Labora made-up by on-goir	cessary skills to p   th a high level of   cH   etc. 3 h.   2 h.   13 h.   9 h.   ANISMS   and oral tests to a   mark: written se   tory practices ar   ng evaluation	NCH 1 h. 5 h. 5 h. 4 h. assess technic cond-chance of autoevaluat	TH 4 h. 8 h. 7 h. 13 h. 13 h. cal skills of the exam (75%) + ions will be
CB2 - To be able to apply I solve problems within their CB5 - To have developed I CB5 - To have developed I CB5 - To have developed I Relating They model, cald Development, writing and p Relating to projects/POPBL Individual study and work, th Practices of problem solvin Presentation of the teacher procedures associated with Individual and team exercise EVALUATION SYSTEM Individual written and oral t the subject Reports of solving exercises practices, simulation practic Technical skills, involvement obtained results, handed de technical defence H - Class hours: 30 h. CH - Non-class hours: 15 H - Total hours: 45 h.	knowledge to occupational or pro- field of study learning abilities required to emba LEAF culate and examine the static b presentation of memorandums, re- is carried out individually or in tea tests and evaluations and check g and real or simulated context p in the classroom, in participatory in the subjects ses ests to assess technical skills of res, case studies, computer ces and laboratory practices int in the project, finished work, ocumentation, presentation and h.	ofession ark on s <b>NING</b> palance ports, a ams points projects y classe <u>w</u> 80% 10%	al tasks; have the nec subsequent studies wi <b>RESULTS</b> of solids. audiovisual material, e s, of concepts and MAKE-UP MECH Individual written a subject Comments: Final exam (25%) Labora made-up by on-goir	cessary skills to p   th a high level of   cH   etc. 3 h.   3 h.   2 h.   13 h.   9 h.   ANISMS   and oral tests to a   mark: written se   atory practices aring evaluation	NCH 1 h. 5 h. 5 h. 4 h. assess technic cond-chance of autoevaluat	TH 4 h. 8 h. 7 h. 13 h. 13 h. cal skills of the exam (75%) + ions will be

RGJ132 They describe, calculate and examine the characteristics of the plane motion of particles and solids.

Course: 2022 / 2023 - Course planning

LEARNING ACTIVITIES			СН	NCH	ТН
Development, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams			3 h.	1 h.	4 h.
Individual study and work, tests and evaluations and check points			3 h.	6 h.	9 h.
Individual and team exercises			7 h.	6 h.	13 h.
Classroom presentations of relevant concepts and procedures in participatory environments			10 h.		10 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANIS	MS		
Individual written and oral tests to assess technical skills of the subject	80%	Individual written and or subject	ral tests to	assess technic	cal skills of the
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	ses, case studies, computer 10% <b>Comments:</b> Final mark		: written se practices ar	cond-chance end autoevaluat	exam (75%) + ions will be
Technical skills, involvement in the project, finished work	10%	made-up by on-going eva	aluation		

**RCU183** They identify, calculate and examine the changes of movement created in particles and solids by force systems that are not in static equilibrium.

СН	NCH	ТН
4 h.	2 h.	6 h.
4 h.	9 h.	13 h.
5 h.	3 h.	8 h.
11 h.		11 h.
6 h.	3 h.	9 h.
4 h.	3 h.	7 h.
	<i>CH</i> 4 h. 5 h. 11 h. 6 h. 4 h.	CH   NCH     4 h.   2 h.     4 h.   9 h.     5 h.   3 h.     11 h.   3 h.     4 h.   3 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and oral tests to assess technical skills of <sup>80</sup> the subject	30%	Individual written and oral tests to assess technical skills of the subject
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	10%	<b>Comments:</b> Final mark: written second-chance exam (75%) + exam (25%) Laboratory practices and autoevaluations will be made-up by on-going evaluation

CH - Class hours: 34 h. NCH - Non-class hours: 20 h. TH - Total hours: 54 h.

**RGJ181** They communicate, search and structure written information: they write a clear and concise project report following the criteria established in the guide for written reports using the appropriate software.

LEARNING ACTIVITIES			СН	NCH	тн
Development, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams			2 h.	2 h.	4 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANIS	MS		
Technical skills, involvement in the project, finished work, <sup>100%</sup> obtained results, handed documentation, presentation and technical defence		Technical skills, involve results, handed docum defence	ement in the entation, pr	e project, finish resentation and	ed work, obtain d technical
		Comments: Revision a semester project	nd correcti	on of the writte	en report of the

Superior

Course: 2022 / 2023 - Course planning

CH - Class hours: 2 h. NCH - Non-class hours: 2 h. TH - Total hours: 4 h.

**RGJ182** They communicate, search and structure orally the information correctly: they make a clear and concise oral presentation and defense of the project, considering the aspects gathered in the oral communication guide and using the proper software approp

LEARNING ACTIVITIES			CH	NCH	ІН
Development, writing and presentation of memorandums, re Relating to projects/POPBLs carried out individually or in te	eports, a ams	audiovisual material, etc.	1 h.	3 h.	4 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANIS	MS		
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	100%	Technical skills, involve results, handed docum defence <b>Comments:</b> With the o semester	ement in the entation, pr ral present	e project, finish resentation and ation of the pro	ed work, obtained d technical nject of the second
CH - Class hours: 1 h. NCH - Non-class hours: 3 h. IH - Total hours: 4 h					

RGJ191 They use the right methodology to find solutions to problems and to develop projects: analyse problems properly, look for meaningful information to face them and propose solutions. LEARNING ACTIVITIES СН NCH ΤН 4 h. Development, writing and presentation of memorandums, reports, audiovisual material, etc. 4 h. Relating to projects/POPBLs carried out individually or in teams w **EVALUATION SYSTEM** MAKE-UP MECHANISMS 100% Technical skills, involvement in the project, finished work, Technical skills, involvement in the project, finished work, obtained obtained results, handed documentation, presentation and results, handed documentation, presentation and technical technical defence defence Comments: With the project of the second semester CH - Class hours: 0 h. NCH - Non-class hours: 4 h. TH - Total hours: 4 h.

RGJ192 They use the right methodology to find solutions to problems and to develop projects: analyse problems properly, look for meaningful information to face them and propose solutions. LEARNING ACTIVITIES СН NCH ΤН Development, writing and presentation of memorandums, reports, audiovisual material, etc. 3 h. 3 h Relating to projects/POPBLs carried out individually or in teams w MAKE-UP MECHANISMS **EVALUATION SYSTEM** Technical skills, involvement in the project, finished work, 100% Technical skills, involvement in the project, finished work, obtained obtained results, handed documentation, presentation and results, handed documentation, presentation and technical technical defence defence Comments: With the project of the second semester CH - Class hours: 0 h.

Mondragon Unibertsitatea Goi Eskola Politeknikoa Escuela Politécnica Superior

Course: 2022 / 2023 - Course planning

NCH - Non-class hours: 3 h. TH - Total hours: 3 h.

## CONTENTS

1. STATICS

- 1.1 Forces and moments
- 1.2 Newton's laws
- 1.3. Free Solid Diagrams
- 1.4. Centers of gravity. Distributed loads
- 1.5. Contact forces: normal and friction
- 2. CINEMATICS
- 2.1. Rectilineal movement
- 2.2. General movement of the particle. Tangencial and normal components
- 2.3. Practical cases: parabolic movement and circular movement
- 2.4. Composition of movements
- 3. DINAMICS
- 3.1. Newton's 2nd law
- 3.2. Dinamics of the rigid solid. Moment of inertia
- 3.3. Energy Methods

LEARNING RESOURCES AND BIBLIOGRAPHY				
Learning resources	Bibliography			
Moodle Platform Class presentations	F. W. Sears, M. W. Zemansky, H. D. Young, R. A. Freedman. FísicaUniversitaria. Pearson Ed., 2004			
Programmes Slides of the subject	P.A. Tipler, G. Mosca. Física para la ciencia y la tecnología (2º vol.).Barcelona:Reverté. 2010. ISBN: 978-84-291-4433-8			
Lab practical training	P. M. Fishbane, S. Gasiorowicz, S. T. Thornton. Fisika zientzialari etaingeniarientzat. EHU-ko argitalpen zerbitzua. 2008			
	J. L. Meriam, L. G. Kraige. Estática / Dinámica. Editorial Reverté,1999			
	W. F. Riley. L. D. Sturges. Estática/ Dinámica. Editorial Reverté. 2005			
	F. Beer, E. Johnston, P. Cornwell. Mecánica Vectorial para ingenierosEstática + Dinámica. 10 Ed. Mc Graw Hill. 2013			
	http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_ln k.pl?grupo=MECATRONICA11&ejecuta=5& ST			