[GMJ202] INDUSTRIAL FLUIDIC SYSTEMS

GENERAL INFORMATION

Studies	DEGREE IN MECHANICAL ENGINEERING			**Subject**	?
Semester	2	**Course**	3	**Mention / Field of specialisation**	
Character	COMPULSORY				
Plan	2017	**Modality**	Face-to-face	**Language**	EUSKARA
Credits	4,5	**Hours/week**	3.67	**Total hours**	66 class hours + 46.5 non-class hours = **112.5 total hours**

PROFESSORS

AZPI-ALKORTA LIZASO, JOSE MARI (GOIERRI)
MARTIN MAYOR, ALAIN

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	*(No previous knowledge required)*

SKILLS

VERIFICA SKILLS

SPECIFIC

GMCE06 - To be able to apply knowledge of the fundamentals of fluid-mechanical machines and systems.

GENERAL

GMCT01 - To be able to design, draft, sign and develop mechanical engineering projects for the construction, renovation, repair, maintenance, demolition, manufacture, installation, assembly and operation of structures, mechanical equipment, energy facilities, electric and electronic installations, industrial plants and facilities and manufacturing and automation processes.

GMCT02 - To be able to manage and coordinate tasks in mechanical engineering projects

GMCT03 - To build on basic concepts and technologies to expand knowledge of new theories and methods, and to acquire flexibility to adapt to new situations

GMCT04 - To be able to take the initiative in problem solving, decision making, creativity, critical thinking, effective communication and the transfer of knowledge and skills in the field of mechanical engineering.

GMCT06 - To be able to comply with specifications, regulations and standards

GMCT10 - To be able to do their job in multilingual, multidisciplinary environments

GMCT11 - Possessing the knowledge, understanding and ability to apply the legislation applicable to their work as an industrial engineering technician.

GMCT12 - To be able to do their job in cooperative, participatory environments, with awareness of social responsibility.

CROSS

GMCG02 - To be able to understand and apply knowledge to problem solving in complex work situations or specialised and professional environments calling for creative and innovative ideas, using self-developed arguments and procedures;

GMCG03 - To be capable of gathering and interpreting data and information on which to base conclusions including, when necessary and pertinent, reflection on matters of a social, scientific or ethical nature in their field of study;

GMCG04 - To be able to respond adequately in complex situations or situations that call for innovative solutions in both the academic field and work environments within their field of study;

GMCG05 - To clearly and accurately communicate knowledge, methods, ideas, problems and solutions in their field of study to all kinds of audiences (both expert and lay);

GMCG06 - To be able to identify their own training needs in their field of study and work environment and to organise their own autonomous learning process in all kinds of contexts (structured or not).

ENAEE LEARNING RESULTS

	ECTS
ENA102 - Knowledge and comprehension: Knowledge and comprehension of the engineering disciplines of their speciality, at the level necessary to acquire the rest of the competencies of the degree, including notions of the latest advances.	3,82
ENA103 - Knowledge and comprehension: Awareness of the multidisciplinary context of engineering.	0,04
ENA104 - Analysis in engineering: The ability to analyse complex products, processes and systems in their field of study; choose and apply relevant analytical, calculation and experimental methods in a suitable way; and correctly interpret the results of such analyses.	0,04
ENA105 - Analysis in engineering: The ability to identify, formulate and solve engineering problems in their speciality; choose and apply adequately established analytical, calculation and experimental methods; and acknowledge the importance of social, health and safety, environmental, economic, and industrial restrictions.	0,04
ENA106 - Engineering projects: Ability to project, design and develop complex products (parts, components, finished products, etc.), processes and systems of their speciality, which meet the established requirements, including awareness of the social, health and safety, environmental, economic and industrial aspects, as well as selecting and applying appropriate project methods.	0,04
ENA107 - Engineering projects: Project capacity some state-of-the-art knowledge of their engineering speciality.	0,04
ENA108 - Research and innovation: Ability to carry out bibliographic searches and consult and use databases and other information sources with discretion, in order to carry out simulation and analysis with the aim of conducting research on technical topics of their speciality.	0,04
ENA109 - Research and innovation: Ability to consult and apply codes of good practice and security in their speciality.	0,04

ENA110 - Research and innovation: Capacity and ability to project and carry out experimental investigations, interpret results, and reach conclusions in their field of study.	0,04
ENA111 - Practical application of engineering: Understanding of the applicable techniques and methods fr analysis, design and research and their limitations in the field of their speciality.	0,04
ENA112 - Practical application of engineering: Practical competency to solve complex problems, carry out complex engineering projects, and conduct investigations specific to their speciality.	0,04
ENA113 - Practical application of engineering: Knowledge of application of materials, equipment and tools, engineering technology and processes, and their limitations in the field of their speciality.	0,04
ENA115 - Practical application of engineering: Knowledge of the social, health and safety, environmental, economic and industrial implications of engineering practice.	0,04
ENA118 - Preparation of judgements: Ability to manage complex technical or professional activities or projects of their speciality, taking responsibility for decision making.	0,04
ENA119 - Communication and Teamwork: Ability to effectively communicate information, ideas, problems and solutions in the field of engineering and with society in general.	0,04
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.	0,04
ENA121 - Continued training: Ability to acknowledge the need for their own continued training and to undertake this activity throughout their professional life independently.	0,04
ENA122 - Continued training: Ability to stay up to date on science and technology innovations.	0,04
Total:	**4,5**

LEARNING RESULTS

RG304 Define the problem, develop the solution and present the conclusions in a efficient manner, arguing and justifying each one of them in writing.

LEARNING ACTIVITIES	CH	NCH	TH
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 MECHANISMS
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	100%	Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

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

RG305 Define the problem, develop the solution and present the conclusions in a efficient manner, arguing and justifying each one of them in spoken form.

LEARNING ACTIVITIES	CH	NCH	TH
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 MECHANISMS
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	100%	Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

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

RGM325 Interpret pneumatic and hydraulic circuits based on the name / symbol / function and operation of the components used in fluidic power transmission systems

LEARNING ACTIVITIES	CH	NCH	TH
Development, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams	10 h.	6,5 h.	16,5 h.

Individual study and work, tests and evaluations and check points	10 h.	7 h.	17 h.
Individual and team exercises	10 h.	7 h.	17 h.
Classroom presentations of relevant concepts and procedures in participatory environments	10 h.	7 h.	17 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and oral tests to assess technical skills of the subject	40%	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	20%	
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	40%	

CH - Class hours: 40 h.
NCH - Non-class hours: 27,5 h.
TH - Total hours: 67,5 h.

RG302 Analyze the intervening variables in the problem and propose actions for a stable situation.

LEARNING ACTIVITIES	CH	NCH	TH
Development, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams	3 h.	2 h.	5 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	100%	*(No mechanisms)*

CH - Class hours: 3 h.
NCH - Non-class hours: 2 h.
TH - Total hours: 5 h.

RGM326 Identify the benefits of using fluid power transmission systems in industrial machinery, and if necessary design pneumatic and hydraulic circuits and select the appropriate components for a given case

LEARNING ACTIVITIES	CH	NCH	TH
Development, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams	10 h.	7 h.	17 h.
Individual and team exercises	6 h.	4 h.	10 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Individual written and oral tests to assess technical skills of the subject	40%	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	20%	
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	40%	

CH - Class hours: 16 h.
NCH - Non-class hours: 11 h.
TH - Total hours: 27 h.

RG301 Assumes responsibilities in the work team, organizing and planning the tasks to be developed, facing the contingencies and encouraging the participation of its members.

LEARNING ACTIVITIES	CH	NCH	TH
Development, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams	3 h.	2 h.	5 h.

EVALUATION SYSTEM	*W*	MAKE-UP MECHANISMS
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	100%	Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

CH - Class hours: 3 h.
NCH - Non-class hours: 2 h.
TH - Total hours: 5 h.

CONTENTS

1. Industrial applications of fluids
2. Fluids used in Fluid Power transmission systems
3. Actuators
4. Control valves
5. Hydraulic pumps
6. Compressed air installations
7. Accessories (Tank, filters, sensors, ...)
8. Accumulators
9. Hydraulic and pneumatic circuits of industrial machinery
10. Hydraulic and pneumatic circuits design

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Topic related web quires	Hidraulika : Oinarrizko maila / D. Merkle, B. Schrader, M. Thomes, Esslingen (Alemania) : Festo Didactic K.G , cop. 1989
Labs	Fluidos, bombas e instalaciones hidráulicas, Salvador de las Heras, Barcelona : Iniciativa Digital Politècnica , 2011
Moodle Platform	Rabie, M., Fluid Power Engineering, MacGraw-Hill, 2009
Video projections	
Slides of the subject	
[!] *Capítulos de libro*	

Mondragon Unibertsitatea

Goi Eskola Politeknikoa

JARIAKIN INDUSTRIALAK ikasgaian egindako egokitzapenak.

Adaptaciones realizadas en la asignatura FLUIDOS INDUSTRIALES

Marzo – 2020 - Martxoa

TESTUINGURUA / CONTEXTO

Mondragon Unibertsitatea
Goi Eskola Politeknikoa

2019-20 ikasturte honetan COVID19 pandemiak eragindako alarma-egoera dela eta, berez aurrez aurreko ikasketak direnak on line modalitatera egokitu behar izan ditu MONDRAGON UNIBERTSITATEko Goi Eskola Politeknikoak GRADU ZEIN MASTER-etako tituluetan.	El estado de alarma sobrevenido por la pandemia de COVID19 en el presente curso 2019-20, ha llevado a la Escuela Politécnica Superior de MONDRAGON UNIBERTSITATEA a impartir en modo on-line, formación de títulos de GRADO Y MÁSTER que fueron diseñados para impartir en modo presencial
Egokitzapen honek bi jarduera motatan eragin dio nagusiki ikaskuntzari: -FORMAZIO JARDUERETAN -EBALUAZIO JARDUERETAN	Esta adaptación ha afectado principal-mente a dos tipos de actividades: -ACTIVIDADES DE FORMACIÓN -ACTIVIDADES DE EVALUACIÓN

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Goi Eskola Politeknikoa

FORMAZIO JARDUERAK
Actividades formativas

FORMAZIO JARDUERAK / Actividades de Formación.

PROGRAMAREN ATALA (ezagutzak edo ikaste emaitzak)	AURREIKUSITAKO JARDUERAK	EGOERA BERRIRA EGOKITUTAKO JARDUERAK
RGM325 – RGM326	Talde ariketa/lanak klase orduan, Mudle-n entregatzeko.	-
	Zalantzak argitzea klase orduan.	MEET bidez deiak zalantzak argitzeko edota klase formatiboak.

ASPECTOS DEL PROGRAMA (Contenidos y/o resultados de aprendizaje)	ACTIVIDADES PREVISTAS	ACTIVIDADES ADAPTADAS A LA SITUACIÓN
RGM325 – RGM326	Ejercicios/trabajos grupales en clase, a entregar en Mudle.	-
	Aclaración dudas en clase.	Conversaciones a través de MEET para aclarar dudas o impartir píldoras formativas.

OHARRA; moldaketa edo egokitzapenik egin ez den kasuan, taula hutsik egongo da.
NOTA: en los casos en los que no ha habido adaptaciones, la tabla estará vacía.

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EBALUAZIO JARDUERAK

Actividades de evaluación

EBALUAZIO JARDUERAK / Actividades de evaluación.

PROGRAMAREN ATALA (Ikaste emaitzak) ASPECTOS DEL PROGRAMA (Resultados de aprendizaje)	AURREIKUSITAKO JARDUERAK / Actividades previstas	PISUA / Peso	EGOERA BERRIRA EGOKITUTAKO JARDUERAK / Actividades adaptadas a la situación.	EMANDAKO PISUA / NUEVO PESO ESTABLECIDO
RGM325 – RGM326	POPBL6	%40	POPBL6	%40
	Parte hartzea / Participación.	%12	Parte hartzea / Participación.	%6
	1.Kontrola / 1er Control	%19	-	-
	2.Kontrola / 2º Control	%29	AMAIERAKO KONTROLA / Control FINAL.	%18
			ENTREGATURIKO LANAK / Trabajos entregados*	%18
			AUTOMATIKAREKIN ELKARLANA / Trabajo conjunto con automatika.	%18

OHARRA; moldaketa edo egokitzapenik egin ez den kasuan, taula hutsik egongo da.

NOTA: en los casos en los que no ha habido adaptaciones, la tabla estará vacía.

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ESKERRIK ASKO

Muchas gracias

JARIAKIN INDUSTRIALEKO IRAKASLEAK

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