[GBM104] DEVELOPMENT OF MEDICAL EQUIPMENT

GENERAL INFORMATION

Studies	DEGREE IN BIOMEDICAL ENGINEERING			**Subject**	New Products Engineering
Semester	1	**Course**	3	**Mention / Field of specialisation**	
Character	COMPULSORY				
Plan	2017	**Modality**	Adapted Face-to-face	**Language**	ENGLISH
Credits	4,5	**Hours/week**	3.71	**Total hours**	66.75 class hours + 45.75 non-class hours = **112.5 total hours**

PROFESSORS

FERNANDEZ MANCHADO, RAUL
MENDIGUREN OLAETA, JOSEBA

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
DEVELOPMENT TECHNOLOGY	*(No previous knowledge required)*

SKILLS

VERIFICA SKILLS

SPECIFIC

GBCE24 - To analyse, design and measure the mechanical requirements of the various medical equipment

GENERAL

GBCG4 - To take the initiative in problem solving, decision making and creativity, and to communicate and share knowledge and skills, understanding the ethical and professional responsibilities of the business activity in the field of Biomedical Engineering.

GBCG8 - Ability to apply quality principles and techniques.

CROSS

GBCTR2 - To be able to do their job in cooperative, participatory environments, with awareness of social responsibility.

BASIC

G_CB2 - To be able to apply knowledge to occupational or professional tasks; have the necessary skills to pose and defend arguments, and to solve problems within their field of study

LEARNING RESULTS

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%	*(No mechanisms)*

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

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

LEARNING ACTIVITIES	CH	NCH	TH
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams	3 h.	2 h.	5 h.

EVALUATION SYSTEM	W	MAKE-UP MECHANISMS
Reports on the completion of exercises, case studies,	100%	*(No mechanisms)*

computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

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

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	2,5 h.	1,5 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%	*(No mechanisms)*

CH - Class hours: 2,5 h.
NCH - Non-class hours: 1,5 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 and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams	2,5 h.	1,5 h.	4 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	100%	*(No mechanisms)*

CH - Class hours: 2,5 h.
NCH - Non-class hours: 1,5 h.
TH - Total hours: 4 h.

RGB304 Understand and comprehend manufacturing processes for medical equipment

LEARNING ACTIVITIES	CH	NCH	TH
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams	12 h.	7 h.	19 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	22 h.	20,5 h.	42,5 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	28%	Individual written and oral tests to assess technical skills of the subject
Presentation and defence of exercises, case studies, computer practical work, simulation practical work,	23%	

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	49%

CH - Class hours: 34 h.
NCH - Non-class hours: 27,5 h.
TH - Total hours: 61,5 h.

RGB305 Analyze and define manufacturing technologies to be used and assess its cost

LEARNING ACTIVITIES	CH	NCH	TH
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams	7 h.	4 h.	11 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	14,75 h.	7,25 h.	22 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	30%
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	14%
Individual written and/or oral tests or individual coding/programming tests	56%

MAKE-UP MECHANISMS

(No mechanisms)

CH - Class hours: 21,75 h.
NCH - Non-class hours: 11,25 h.
TH - Total hours: 33 h.

CONTENTS

P1) Cost estimation in manufacturing processes:

Process Information Maps, parametric cost estimation and analytic cost estimation.

P2) Process optimization via FEM technologies.

P3) Special machining processes:

Abrasive technologies.

Non conventional machining processes.

Other machining processes.

P4) CNC technologies.

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Subject notes Moodle Platform Class presentations	https://katalogoa.mondragon.edu/janium-bin/referencista.pl?Id=20211004144305

Programmes
Video projections
Specific Master Software