

## [GCK305] ENVIRONMENTAL PROCESS OPTIMISATION MACHINING

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN ENGINEERING IN ECO-TECHNOLOGY IN INDUSTRIAL PROCESS		<b>Subject</b>	?
<b>Semester</b>	2	<b>Course</b>	3	<b>Mention / Field of specialisation</b>
<b>Character</b>	COMPULSORY		<b>Language</b>	EUSKARA
<b>Plan</b>	2022	<b>Modality</b>	Face-to-face	<b>Total hours</b> 30 class hours + 82.5 non-class hours = <b>112.5 total hours</b>
<b>Credits</b>	4,5	<b>Hours/week</b>	1.67	

### 2030 AGENDA GOALS



### PROFESSORS

ARRAZOLA ARRIOLA, PEDRO JOSE  
ARRIETA GALDOS, IÑAKI

### REQUIRED PREVIOUS KNOWLEDGE

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

### LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
<b>GCR305</b> - Determines the process variables necessary to manufacture a component using machining technology		x		3,78
<b>G-RTR1</b> - To develop interdisciplinary projects specific to their specialty and of gradual complexity, - becoming aware of respect for human rights and fundamental rights, and analyzing and assessing the impact of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and/or avant-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies with a high degree of autonomy		x		0,4
<b>G-RTR2</b> - To express information, ideas and the arguments that support them in an orderly, clear and coherent manner, orally and in writing, based on quality information, self-made or obtained from different sources, using inclusive and non-discriminatory language		x		0,32

**Total:** 4,5

KC: Knowledge or Content / SK: Skills / AB: Abilities

### SECONDARY LEARNING RESULTS

#### 2RGC393 (2 sem)

#### LEARNING ACTIVITIES

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

CH

NCH

TH

4 h.

4 h.

#### EVALUATION SYSTEM

W

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

100%

#### MAKE-UP MECHANISMS

(No mechanisms)

**Comments:** Continuous assessment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.

**Comments:** Assessment of the acquired transversal skills:  
Followed methodology to solve the project: team work, decision making methods, conflict management... Project management: definition of objectives, planning,... Written and oral communication

**CH - Class hours:** 0 h.

**NCH - Non-class hours:** 4 h.

**TH - Total hours:** 4 h.

#### 2RGC394 (2 sem)

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			4 h.	4 h.
EVALUATION SYSTEM		W	MAKE-UP MECHANISMS	
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		100%	(No mechanisms)	
<b>Comments:</b> Assessment of the acquired transversal skills: Followed methodology to solve the project: team work, decision making methods, conflict management... Project management: definition of objectives, planning,... Written and oral communication			<b>Comments:</b> Continuous assessment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.	
CH - Class hours: 0 h.				
NCH - Non-class hours: 4 h.				
TH - Total hours: 4 h.				

<b>RGC314</b> [!] <i>Conoce las características de los procesos avanzados de fabricación por arranque de viruta, así como tecnologías limpias existentes para minimizar su impacto medioambiental</i>				
LEARNING ACTIVITIES		CH	NCH	TH
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects		13 h.	13 h.	26 h.
Carrying out exercises and solving problems individually and/or in teams		2 h.	3,5 h.	5,5 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		20%	Individual written and/or oral tests or individual coding/programming tests	
Individual written and/or oral tests or individual coding/programming tests		80%		
CH - Class hours: 15 h.				
NCH - Non-class hours: 16,5 h.				
TH - Total hours: 31,5 h.				

<b>RGC316</b> [!] <i>Aplica los conocimientos de mecanizado a la fabricación de un prototipo</i>				
LEARNING 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			27 h.	27 h.
EVALUATION SYSTEM		W	MAKE-UP MECHANISMS	
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		100%	(No mechanisms)	
CH - Class hours: 0 h.				
NCH - Non-class hours: 27 h.				
TH - Total hours: 27 h.				

<b>2RGC391</b> (2 sem)				
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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.	3 h.
EVALUATION SYSTEM	W	MAKE-UP MECHANISMS		
Self-assessment	50%	(No mechanisms)		
Co-assessment	50%	<b>Comments:</b> Continuous assessment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.		
<b>Comments:</b> Assessment of the acquired transversal skills: Followed methodology to solve the project: team work, decision making methods, conflict management... Project management: definition of objectives, planning,... Written and oral communication				
<b>CH - Class hours:</b> 0 h.				
<b>NCH - Non-class hours:</b> 3 h.				
<b>TH - Total hours:</b> 3 h.				

2RGC390 (2 sem)				
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			4 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)		
<b>Comments:</b> Assessment of the acquired transversal skills: Followed methodology to solve the project: team work, decision making methods, conflict management... Project management: definition of objectives, planning,... Written and oral communication		<b>Comments:</b> Continuous assessment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.		
<b>CH - Class hours:</b> 0 h. <b>NCH - Non-class hours:</b> 4 h. <b>TH - Total hours:</b> 4 h.				

2RGC392 (2 sem)				
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.	3 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)	
<b>Comments:</b> Assessment of the acquired transversal skills: Followed methodology to solve the project: team work, decision making methods, conflict management... Project management: definition of objectives, planning,... Written and oral communication			<b>Comments:</b> Continuous assessment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.	
<b>CH - Class hours:</b> 0 h.				
<b>NCH - Non-class hours:</b> 3 h.				
<b>TH - Total hours:</b> 3 h.				

**RGC315** [!] *Optimiza los procesos de fabricación por arranque de viruta con el soporte de herramientas numéricas.*

**LEARNING ACTIVITIES**

Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects

**CH**

15 h.

**NCH**

21 h.

**TH**

36 h.

**EVALUATION SYSTEM**

Individual written and/or oral tests or individual coding/programming tests

**W**

100%

**MAKE-UP MECHANISMS**

Individual written and/or oral tests or individual coding/programming tests

**CH - Class hours:** 15 h.

**NCH - Non-class hours:** 21 h.

**TH - Total hours:** 36 h.

**CONTENTS**

THEORY:

1. INTRODUCTION
2. MACHINING TIMES AND COSTS (4th)
3. ABRASIVE TECHNOLOGIES (3rd)
4. NON CONVENTIONAL TECHNOLOGIES (2nd)
5. LINEAR START-UP START-UP TECHNOLOGIES (1st)
6. FAST PROTOTYPING TECHNOLOGIES (1st)
7. ECOLOGICAL IMPACT OF MACHINING (9th)
8. LIFE CYCLE ANALYSIS (3rd)
9. CNC PROGRAMMING (12th)
10. CAM (12th)

EXERCISES:

1. TIME AND COST CALCULATION
2. CONSUMPTION AND ENERGY EFFICIENCY CALCULATION

**LEARNING RESOURCES AND BIBLIOGRAPHY**

**Learning resources**

- [!] *Apuntes de la asignatura*
- [!] *Charlas de ponentes externos*
- [!] *Laboratorios*
- [!] *Artículos de carácter técnico*
- [!] *Plataforma Moodle*
- [!] *Proyección de videos*
- [!] *Programas*

**Bibliography**

[http://katalogoa.mondragon.edu/janium-bin/janium\\_login\\_opac\\_re\\_in k.pl?grupo=EKOTEKNOLOGIA32&ejecuta=5](http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_in k.pl?grupo=EKOTEKNOLOGIA32&ejecuta=5)