

## [GIE205] OPERATING SYSTEMS

### GENERAL INFORMATION

<b>Studies</b>	DEGREE IN COMPUTER ENGINEERING	<b>Subject</b>	OPERATING SYSTEMS, DISTRIBUTED SYSTEMS AND NETWORKS
<b>Semester</b>	1	<b>Course</b>	3
<b>Character</b>	COMPULSORY	<b>Mention / Field of specialisation</b>	
<b>Plan</b>	2017	<b>Modality</b>	Adapted Face-to-face
<b>Credits</b>	6	<b>Hours/week</b>	5
		<b>Total hours</b>	90 class hours + 60 non-class hours = <b>150 total hours</b>

### PROFESSORS

ROMAN TXOPITEA, IBAI

### REQUIRED PREVIOUS KNOWLEDGE

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

### SKILLS

#### VERIFICA SKILLS

##### SPECIFIC

**GICE12** - To know the characteristics, functions and structure of Operating Systems and to design and implement applications based on their services.

**GICE13** - To understand and be able to apply basic techniques and fundamental principles of parallel, concurring, distributed and real time programming.

##### GENERAL

**GIGC06** - To be able to devise and develop centralised or distributed computer architectures or systems, integrating hardware, software and networks

**GIGC10** - To know how to perform measurements, calculations, valuations, estimates, inspections, studies, reports, task planning schemes and other analogous related activities

##### CROSS

**GICTR1** - To be able to work in multidisciplinary, multilingual environments, and to effectively communicate knowledge, procedures, results and ideas concerning IT, verbally and in writing.

**GICTR2** - 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

**G\_CB4** - To be able to communicate information, ideas, problems and solutions to both expert and lay audiences

**G\_CB5** - To have developed learning abilities required to embark on subsequent studies with a high level of autonomy.

### 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

Development, writing and presentation of memorandums, reports, audiovisual material, etc. **CH** 5 h. **NCH** 5 h. **TH** 5 h.

Relating to projects/POPBLs carried out individually or in teams

#### EVALUATION SYSTEM

Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence

**Comments:** Continuous assessment.

#### MAKE-UP MECHANISMS

(No mechanisms)

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

**NCH - Non-class hours:** 5 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, writing and presentation of memorandums, reports, audiovisual material, etc. Relating to projects/POPBLs carried out individually or in teams		4 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)			
<b>Comments:</b> Continuous assessment.					
<b>CH - Class hours:</b> 0 h. <b>NCH - Non-class hours:</b> 4 h. <b>TH - Total hours:</b> 4 h.					

**RG194 [!] Análisis de los impactos de los ODS en el proyecto realizado**

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		4 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)			
<b>Comments:</b> Continuous assessment.					
<b>CH - Class hours:</b> 0 h. <b>NCH - Non-class hours:</b> 4 h. <b>TH - Total hours:</b> 4 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		5 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)			
<b>Comments:</b> Continuous assessment. It may be asked to redo the document.					
<b>CH - Class hours:</b> 0 h. <b>NCH - Non-class hours:</b> 5 h. <b>TH - Total hours:</b> 5 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		5 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)			
<b>Comments:</b> Continuous assessment.					
<b>CH - Class hours:</b> 0 h. <b>NCH - Non-class hours:</b> 5 h. <b>TH - Total hours:</b> 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)
<b>Comments:</b> Continuous assessment.		
<b>CH - Class hours:</b> 0 h. <b>NCH - Non-class hours:</b> 5 h. <b>TH - Total hours:</b> 5 h.		

<b>RGI301</b> Knows how to use the proper synchronization algorithms to respond to an application's synchronization problems and solve them through the use of semaphores		
<b>LEARNING ACTIVITIES</b>		
Development, writing and presentation of memorandums, reports, audiovisual material, etc.	CH	NCH
Relating to projects/POPBLs carried out individually or in teams	10 h.	9 h.
Individual study and work, tests and evaluations and check points	2 h.	2 h.
Presentation of the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	6 h.	6 h.
Individual and team exercises	12 h.	8 h.
<b>EVALUATION SYSTEM</b>		
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	40%	Written, coding/programming and individual oral tests for the evaluation of technical skills in the field
Written, coding/programming and individual oral tests for the evaluation of technical skills in the field	60%	<b>Comments:</b> Project: There will not be any retake of the individual defense. Students with less than 5 in the Control point must retake the exam. Control point value will be 25% and retake 75%.
<b>Comments:</b> Minimum grade: 5		
<b>CH - Class hours:</b> 30 h. <b>NCH - Non-class hours:</b> 17 h. <b>TH - Total hours:</b> 47 h.		

<b>RGI302</b> Knows how to use the right synchronization algorithms to address an application's synchronization problems and resolve them through the use of monitors and message queues		
<b>LEARNING ACTIVITIES</b>		
Development, writing and presentation of memorandums, reports, audiovisual material, etc.	CH	NCH
Relating to projects/POPBLs carried out individually or in teams	10 h.	8 h.
Individual study and work, tests and evaluations and check points	2 h.	2 h.
Presentation of the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	6 h.	6 h.
Individual and team exercises	12 h.	5 h.
<b>EVALUATION SYSTEM</b>		
Technical skills, involvement in the project, finished work, obtained results, handed documentation, presentation and technical defence	42%	Written, coding/programming and individual oral tests for the evaluation of technical skills in the field
Written, coding/programming and individual oral tests for the evaluation of technical skills in the field	58%	<b>Comments:</b> Project: There will not be any retake of the individual defense. Students with less than 5 in the Control point must retake the exam. Control point value will be 25% and retake 75%.
<b>Comments:</b> Minimum grade: 5		
<b>CH - Class hours:</b> 30 h. <b>NCH - Non-class hours:</b> 13 h. <b>TH - Total hours:</b> 43 h.		

### RGI303 Knows how an operative system does processes and memory management

LEARNING ACTIVITIES		CH	NCH	TH
Presentation of the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects		10 h.	3 h.	13 h.
Individual and team exercises		20 h.	4 h.	24 h.
EVALUATION SYSTEM	W			
Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices	100%			
<b>Comments:</b> Minimum grade: 5				
MAKE-UP MECHANISMS				
	Reports of solving exercises, case studies, computer practices, simulation practices and laboratory practices			
	<b>Comments:</b> Continuous assessment. It may be asked to redo practises, being 5 the maximum grade achievable.			
<b>CH - Class hours:</b> 30 h.				
<b>NCH - Non-class hours:</b> 7 h.				
<b>TH - Total hours:</b> 37 h.				

## CONTENTS

- 1.-Introduction to Operating Systems.
- 2.-Processes and threads. State models.
- 3.-Mutual Exclusión and Synchronization by Semaphores.
- 4.-Synchronization by Monitors.
- 5.-Memory Management and Virtual Memory.

## LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Subject notes Moodle Platform	<a href="http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_ink.pl?grupo=INFORMATICA31&amp;ejecuta=5&amp;">http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_ink.pl?grupo=INFORMATICA31&amp;ejecuta=5&amp;</a>