

## [MNC101] Platforms and Infrastructures

### GENERAL INFORMATION

<b>Studies</b>	MASTER DEGREE IN DATA ANALYSIS, CYBERSECURITY AND CLOUD COMPUTING		<b>Subject</b>	Development and Operations
<b>Semester</b>	1	<b>Course</b>	1	<b>Mention / Field of specialisation</b>
<b>Character</b>	COMPULSORY		<b>Language</b>	CASTELLANO
<b>Plan</b>	2024	<b>Modality</b>	Face-to-face	<b>Total hours</b>
<b>Credits</b>	6	<b>Hours/week</b>	0	68 class hours + 82 non-class hours = <b>150 total hours</b>

### PROFESSORS

AGIRRE BASTEGIETA, JOSEBA ANDONI

ROMAN TXOPITEA, IBAI

### REQUIRED PREVIOUS KNOWLEDGE

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

### LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
<b>M2N110</b> - Defining, designing and implementing scalable, flexible and resilient architectures that address existing problems and accelerating the deployment of different applications.		x		5
<b>M2N207</b> - Apply acquired knowledge and problem-solving skills in new, unfamiliar or changing environments within broader (or multidisciplinary) contexts related to their field of study.		x		0,4
<b>M2N209</b> - Communicate their conclusions and the ultimate knowledge and reasons behind them to specialist and non-specialist audiences in a clear and unambiguous way.		x		0,6
<b>Total:</b>				<b>6</b>

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

### SECONDARY LEARNING RESULTS

**RA313** Is able to create automatic provisioning systems for scalable, flexible and highly available application infrastructure, facing the problem or project individually and in groups.

#### 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	6 h.	16 h.	22 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	1 h.	4 h.	5 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	3 h.	2 h.	5 h.
Carrying out exercises and solving problems individually and/or in teams	3 h.	5 h.	8 h.

#### EVALUATION SYSTEM

	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	40%
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	20%
Individual written and/or oral tests or individual coding/programming tests	40%

#### MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems
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
Individual written and/or oral tests or individual coding/programming tests

**CH - Class hours:** 13 h.

**NCH - Non-class hours:** 27 h.

**TH - Total hours:** 40 h.

**RA311** Design, deploy and monitor scalable, flexible and highly available infrastructures using cloud services.

<b>LEARNING ACTIVITIES</b>	<b>CH</b>	<b>NCH</b>	<b>TH</b>
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.	13 h.	20 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	1 h.	3 h.	4 h.
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	2 h.	2 h.	4 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	12 h.	3 h.	15 h.
Carrying out exercises and solving problems individually and/or in teams	7 h.	10 h.	17 h.
<b>EVALUATION SYSTEM</b>	<b>W</b>	<b>MAKE-UP MECHANISMS</b>	
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	40%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	
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	20%	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	
Individual written and/or oral tests or individual coding/programming tests	40%	Individual written and/or oral tests or individual coding/programming tests	
<b>CH - Class hours:</b> 29 h.			
<b>NCH - Non-class hours:</b> 31 h.			
<b>TH - Total hours:</b> 60 h.			

<b>RA312 Designs, deploys and monitors scalable, flexible and highly available infrastructures using virtual containers.</b>			
<b>LEARNING ACTIVITIES</b>	<b>CH</b>	<b>NCH</b>	<b>TH</b>
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	8 h.	7 h.	15 h.
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	1 h.	2 h.	3 h.
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams	2 h.	4 h.	6 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	4 h.	1 h.	5 h.
Carrying out exercises and solving problems individually and/or in teams	11 h.	10 h.	21 h.
<b>EVALUATION SYSTEM</b>	<b>W</b>	<b>MAKE-UP MECHANISMS</b>	
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	40%	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	
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	20%	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	
Individual written and/or oral tests or individual coding/programming tests	40%	Individual written and/or oral tests or individual coding/programming tests	
<b>CH - Class hours:</b> 26 h.			
<b>NCH - Non-class hours:</b> 24 h.			
<b>TH - Total hours:</b> 50 h.			

## CONTENTS

- Cloud Computing
- Infrastructure Management
- Virtual Infrastructures
- Cluster management

- Scalability
- Deployment of infrastructures
- Infrastructure provisioning
- Infrastructure performance monitoring and analysis

## LEARNING RESOURCES AND BIBLIOGRAPHY

### Learning resources

Moodle Platform  
Class presentations  
Computer practical training

### Bibliography

<https://labur.eus/CvsNL>