[MNC102] Advanced Software Architectures

GENERAL INFORMATION

Studies	MASTER DEGREE IN DATA ANALYSIS, CYBERSECURITY AND CLOUD COMPUTING			**Subject**	Development and Operations
Semester	1	**Course**	1	**Mention / Field of specialisation**	
Character	COMPULSORY				
Plan	2024	**Modality**	Face-to-face	**Language**	ENGLISH
Credits	6	**Hours/week**	0	**Total hours**	64 class hours + 86 non-class hours = **150 total hours**

PROFESSORS

LARRINAGA BARRENECHEA, FELIX
PEREZ RIAÑO, ALAIN

REQUIRED PREVIOUS KNOWLEDGE

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

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
M2N112 - Developing scalable and flexible software using advanced software architectures.		*x*		4,8
M2N210 - Possess the learning skills that will enable them to continue studying in a largely self-directed or autonomous way.		*x*		1,2
			Total:	6

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

SECONDARY LEARNING RESULTS

RA332 Designs and implements scalable and flexible applications that offer an architecture composed of heterogeneous and independently deployable services, responding to problems or projects individually or coordinating as a group

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	12 h.	26 h.	38 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.	9 h.	11 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	11 h.		11 h.
Carrying out exercises and solving problems individually and/or in teams	17 h.	23 h.	40 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

(No mechanisms)

CH - Class hours: 42 h.
NCH - Non-class hours: 58 h.
TH - Total hours: 100 h.

RA331 Designs and implements scalable and flexible applications that collect and send data from different devices and sensors that facilitate the loading and analysis of the collected information.

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing	5 h.	11 h.	16 h.

checkpoints			
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.	5 h.	7 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	6 h.		6 h.
Carrying out exercises and solving problems individually and/or in teams	9 h.	12 h.	21 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	40%	Individual written and/or oral tests or individual coding/programming tests
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%	

CH - Class hours: 22 h.
NCH - Non-class hours: 28 h.
TH - Total hours: 50 h.

CONTENTS

- Connectivity and IOT Gateways
- Service-oriented architectures and microservices
- Service Discovery and API Gateways
- Service Resilience
- Data Management in Service-Based Architectures
- Event-driven architectures
- Observability/Monitoring of services
- Semantic Web and Interoperability

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Moodle Platform	http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_lnk.pl?grupo=MASTERDATUANALISIA11&ejecuta=30&
Computer practical training	