[MRA106] MACHINE SAFETY

GENERAL INFORMATION

Studies	Master's Degree in ROBOTICS AND CONTROL SYSTEMS			**Subject**	?
Semester	2	**Course**	1	**Mention / Field of specialisation**	AUTOMATION
Character	OPTIONAL				
Plan	2023	**Modality**	Face-to-face	**Language**	CASTELLANO/EUSKARA
Credits	3	**Hours/week**	0	**Total hours**	28 class hours + 47 non-class hours = **75 total hours**

PROFESSORS

ZALDIBIA GARATE, JOSEBA EDORTA

REQUIRED PREVIOUS KNOWLEDGE

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

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
M1R206 - [!] *Desarrollar el estudio que valida la solución técnica referente a los requerimientos de la normativa de seguridad en máquinas vigente y aplicar soluciones basadas en autómatas de seguridad según especificaciones definidas*	x			2,2
M1R223 - [!] *Capacidad de trabajar en equipos multidisciplinares y en un entorno multilingüe y de comunicar, tanto de forma oral como escrita, conocimientos, procedimientos, resultados e ideas relacionadas con los temas afines al máster*		x		0,2
M1R224 - [!] *Capacidad para ejercer su profesión con actitud cooperativa y participativa, y con responsabilidad social*		x		0,2
M1R226 - To apply the knowledge acquired and your problem-solving skills in new, little-known or changing environments within broader (or multidisciplinary) contexts related to your area of study		x		0,4
			Total:	3

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

SECONDARY LEARNING RESULTS

RA071 **[!]** ***Realiza el estudio y valida la solución técnica que cumpla con los requisitos de seguridad en máquina vigentes usando las herramientas pertinentes trabajando individualmente y en equipos multidisciplinares***

LEARNING ACTIVITIES	CH	NCH	TH
Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints	1 h.		1 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		9 h.	9 h.
Practical work in workshops and/or laboratories, individually and/or in teams	15 h.	10 h.	25 h.

EVALUATION SYSTEM	W
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	60%
Individual written and/or oral tests or individual coding/programming tests	40%

Comments: All activities (control points, individual and group work, etc.) must have a minimum grade of 5 and an opportunity for recovery (except the PBL). In unapproved training activities (less than 5) the recovery is compulsory and the final grade will be the grade obtained in the recovery. In the activities carried out it is necessary to obtain a minimum mark of 4 to calculate the average mark of the learning result. Otherwise, the note of the learning result will be that of the suspended activity. The system will calculate the final grade with the RA, applying the percentages defined in IKOF.

MAKE-UP MECHANISMS

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

CH - Class hours: 16 h.
NCH - Non-class hours: 19 h.
TH - Total hours: 35 h.

RA072 **[!]** ***Implementa y valida el programa de control mediante el autómata de seguridad referente a la solución técnica requerida colaborando de manera activa para evaluar y asumir la responsabilidad social implícita en la propuesta y resolviendo los problemas***

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		19 h.	19 h.
Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects	12 h.	9 h.	21 h.

Comments: All activities (control points, individual and group work, etc.) must have a minimum grade of 5 and an opportunity for recovery (except the PBL). In unapproved training activities (less than 5) the recovery is compulsory and the final grade will be the grade obtained in the recovery. In the activities carried out it is necessary to obtain a minimum mark of 4 to calculate the average mark of the learning result. Otherwise, the note of the learning result will be that of the suspended activity. The system will calculate the final grade with the RA, applying the percentages defined in IKOF.

EVALUATION SYSTEM	W
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	50%
Individual written and/or oral tests or individual coding/programming tests	50%

MAKE-UP MECHANISMS
Individual written and/or oral tests or individual coding/programming tests

CH - Class hours: 12 h.
NCH - Non-class hours: 28 h.
TH - Total hours: 40 h.

CONTENTS

1.-Machine Safety
1.1-Normative Environment - Machinery Directive and Harmonised Standards.1.2-ISO/EN 12.100-Risk assessmen t.1.3-ISO/EN 13.849-1 Performnace Level.1.4- Study and validation with System tool-EN/ISO 13.849-1
2.-Safety in the electrical part of the machines
2.1-Normative and Regime of the neutral.2.2-Protection against electric shocks.2.3-Protection against ove rcurrents. 2.4.2.4.-Electrical machine tests.

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Subject notes	*(No bibliography)*
Presentations by external Lecturers	
Moodle Platform	
Class presentations	
Specific Master Software	
Lab practical training	
Computer practical training	