Course: 2024 / 2025 - Course planning

Goi Eskola Politeknikoa Escuela Politécnica Superior

[MLA003] Analysis of process variability									
		GENE	RAL INF	ORMATION					
Studies	UNIVERSITY MAS PRODUCTIVE LO MANAGEMENT	STER'S DEGREE IN GISTICS OPERATIONS	5	Subject	Improvement o	of indust	trial pi	rocesses	
Semester Character	2 COMPULSORY	Course 1		Mention / Field of specialisation					
Plan	2022	Modality Face-	o-face	Language	CASTELLANO	)			
Credits	6	Hours/week 0		Total hours	84 class hours <u>hours</u>	+ 66 no	on-cla	ss hours =	<u>150 total</u>
		2030	AGEND	DA GOALS					
eucarina 8 decontine capitra 9 acces	RECHARGEMENT PRATECTIVE RELATION TO A CONSTRUCTION AND PRODUCTION								
		F	PROFES	SORS					
EGUREN EG SOTO RUIZ ZENIGAON DOK-BARR	guiguren, Jose : De Gordoa, Mi Aindia Muruami Eiro Buezo, Un	: ALBERTO RIAM ENDIARAZ, NEREA AI							
		REQUIRED	PREVIO	US KNOWLED	GE				
	Subjec	ts			Know	ledge			
????				(/	No previous kno	wledge	e requi	ired)	
		LEA	RNING	RESULTS		KC	SK.	48	FOTO
MLR161 - Identifies	and describes the	appropriate methodolog	gies, techn	iques and tools for t	he analysis	<u>x</u>	31	AD	3,6
and control of the v MLR162 - Applies in (Green belt six sign MLR301 - Works in	variability of produce mprovement methor ma) multidisciplinary te	ction processes using ad odologies focused on rec	vanced to ducing vari	ols for data manage iability in product pro	ment ocesses ipative attitude	x	x	x	1,8 0,3
and efficiently communicates the results obtained orally and in writing in different languages. Without any limitation of accessibility to achieve the established objectives. <b>MLR302</b> - Understands the impact of their profession on the environment in order to practice with social <b>x</b> 0,3									
KC: Knowledge or Con	tont / SK: Skills / AB: A	hilities						Total:	6
KC: Knowledge or Con	tent/ SK: Skills/ AB: Al	SECONDA			10				
RML127 [1] Ide variabilidad de la	ntifica y describe os procesos prod	las metodologias, téci uctivos utilizando heri	nicas y he ramientas	erramientas adecua avanzadas para la	adas para el an gestión de da CH	alisis y tos	y el do	ominio de	la
LEARNING AC	IIVIIIES	s reports presentations		ual material etc. on	10 h	1		201	<u> </u>
projects/work ex individually and/	perience/challeng	es/case studies/experim	ental inves	stigations carried out	t	·		201	
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in 10 h. interdisciplinary contexts, real and/or simulated, individually and/or in teams			1	9 h.	29 h	I.			
Presentation by the teacher in the classroom, in participatory classes, of concepts and 25 h. 25 h procedures associated with the subjects									
Carrying out exe	ercises and solving	problems individually a	iu/or in tea	ams	ο Π.	1	U II.	101	
EVALUATION S	SYSTEM		W 30%	MAKE-UP MECH		alass		tudiaa -	
Reports on the o computer exerci exercises, term Individual writter	Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems Individual written and/or oral tests or individual 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					nputer ical work, llenges			
coding/programming tests Individual written and/or oral tests or individual coding/programming tests									

CH - Class hours: 51 h. NCH - Non-class hours: 39 h.



Course: 2024 / 2025 - Course planning

TH - Total hours: 90 h.

**RML301** [!] Trabaja en equipos multidisciplinares, sin distinción ninguna, con actitud cooperativa, participativa y comunica eficiente los resultados obtenidos de forma oral y escrita en distintos idiomas. Sin ninguna limitación de accesibilidad para alcanzar lo

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				1,5 h.	4,5 h.
Carrying out/resolving projects/challenges/cases, etc. to p nterdisciplinary contexts, real and/or simulated, individua	provide sol Illy and/or i <i>W</i>	utions to problems in n teams MAKE-UP MECHAN	2 h.	1 h.	3 h.
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems 100% Reports on the completion of exercises exercises, laboratory exercises, simulation exercises, laboratory projects, challenges and problems			rises rase sti	udies, compute	

NCH - Non-class hours: 2,5 h.

TH - Total hours: 7,5 h.

**RML123** [!] Aplica metodologías de mejora enfocadas a la reducción de la variabilidad de los procesos productos (Green belt seis sigma)

LEARNING ACTIVITIES	СН	NCH	ТН		
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				5 h.	10 h.
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in 10.5 h. 7 h. 17.5 h. interdisciplinary contexts, real and/or simulated, individually and/or in teams					17,5 h.
Presentation by the teacher in the classroom, in participa procedures associated with the subjects	5 h.	5 h.	10 h.		
Carrying out exercises and solving problems individually and/or in teams			2,5 h.	5 h.	7,5 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 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	70% 30%	Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical wor term projects, end of degree project, master's thesis, challenges and problems Individual written and/or oral tests or individual coding/programming tests			dies, computer bry practical work, esis, challenges

CH - Class hours: 23 h. NCH - Non-class hours: 22 h. TH - Total hours: 45 h.

RML302 [!] Entiende el impacto de su profesión en el entorno para ejercer con responsabilidad social

LEARNING ACTIVITIES	СН	ИСН	тн
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.	1 h.	4 h.
Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in	2 h.	1,5 h.	3,5 h.



Course: 2024 / 2025 - Course planning

interdisciplinary contexts, real and/or simulated, individually and/or in teams

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%	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
		and problems

CH - Class hours: 5 h. NCH - Non-class hours: 2,5 h. TH - Total hours: 7,5 h.

## CONTENTS

1. TOPIC 0: Introduction to the variability of industrial processes.

2. TOPIC 1: 6 sigma methodology

3. TOPIC 2: Define stage

1.Clarify the purpose2. Map of high level processes (SIPOC)3.Voice of the customer (VOC) Character. Revie ws (CC)4.Business impact5.Formalization: IP Sheet

4. TOPIC 3: Measuring stage

1. Diagram process 2. Process capacity. Descriptive statistics 3. Elements of statistical inference. 4. C apability Ratios, Six Sigma Metrics, and KPIs 5. Analysis of the measurement system (R&R)

5. TOPIC 4: Analyze stage.

1.AMFE (2019 latest version updates) 2. Design of experiments

6. TOPIC 5: Improve stage. 7. TOPIC 6: Control stage.

1. Statistical process control (SPC)2.Standardization3.Close

8. TOPIC 7: CHALLENGE. Development of a case with the objective of improving an industrial process throu gh the application of sigma's

LEARNING RESOURCES AND BIBLIOGRAPHY				
Learning resources	Bibliography			
(No resources)	DEHNAD, K.(1988). Quality Control, Robust Design, and the Taguchi			
	Method. Wadsworth & Brooks / Cole Advanced Books & Software,			
	Pacific Grove (California), ISBN 978-1-4684-1472-1			



KACKAR, R.N.(1985) Off-Line Quality Control, Parameter Design, and the Taguchi Method. Journal of Quality Technology. 17:4, 176-188

PANDE, P.; NEUMAN, R.P; CAVANAGH, R.R (2002) Las claves del seig sigma. La implantación con éxito de una cultura que revoluciona el mundo empresarial. Ed. McGraw Hill, Madrid. ISBN 84-481-3753-1.

PRAT, ALBERT; TORT-MARTORELL, XAVIER; GRIMA, PERE; POZUETA, LOURDES.(1997) Métodos estadísticos. Control y Mejora de la calidad. Ed. UPC, Barcelona. ISBN 84-8301-786-5. ASTM standard, Standar Guide for Measurement System Analysis (MSA) E2782 – 17 (2022)

Measurement System Analysis. Reference Manual. Ford Motor Company (2010); Forth Edition.

Thomas Pyzdek and Paul Keller, The Six Sigma Handbook, McGraw-Hill Professional; 4th edition, 2014.

Gutiérrez Pulido, H., & Salazar, V. (2004). Control estadístico de calidad y seis sigma/Humberto Gutiérrez pulido, coautor Román de la Vara Salazar.

Automotive Industry Action Group, (2019). Failure Mode and Effects Analysis, Handbook, 1st edition. AIAIG, Southfield, MI 2019.