



## IDENTIFYING DATA

### Manufacturing engineering

Subject	Manufacturing engineering			
Code	V12G363V01604			
Study programme	Grado en Ingeniería en Tecnologías Industriales			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	3rd	2nd
Teaching language	Spanish			
Department				
Coordinator				
Lecturers	Fenollera Bolívar, María Inmaculada			
E-mail				
Web				
General description				

## Skills

Code	
B3	CG3 Knowledge in basic and technological subjects that will enable them to learn new methods and theories, and equip them with versatility to adapt to new situations.
C20	CE20 Applied knowledge of systems and manufacturing processes, metrology and quality control.
D2	CT2 Problems resolution.
D8	CT8 Decision making.
D9	CT9 Apply knowledge.
D10	CT10 Self learning and work.
D17	CT17 Working as a team.
D20	CT20 Ability to communicate with people not expert in the field.

## Learning outcomes

Expected results from this subject	Training and Learning Results		
- Know the technological basis and the basics of manufacturing processes	B3	C20	D2
- Understand the basics of manufacturing systems			D8
- Acquire skills for the selection of manufacturing processes and developing manufacturing planning			D9
- Develop skills for making assemblies and parts in CAD/CAM environments			D10
- Application of CAQ technologies			D17
			D20

## Contents

Topic	
Thematic block I: Integration of product design and manufacturing.	Chapter 0. Product and process design. Chapter 1. Manufacturing systems. Chapter 2. Additive manufacturing technologies. Chapter 3. Design for manufacturing and assembly (DFMA).
Thematic block II: Design and planning of manufacturing processes.	Chapter 4. Design and planning methodologies for manufacturing processes. Chapter 5. Selection of operations, tools, equipment and process conditions. Chapter 6. Datum references, jigs, fixtures and equipments. Chapter 7. Design and process improvement techniques.

Thematic block III: Resources of manufacturing systems.

Chapter 8. Description and structure of CNC machine tools.  
Chapter 9. handlers and industrial robots. Positioning systems. Maintenance.  
Chapter 10. Measurement and verification systems in manufacturing lines. Definition of control ranges.

## Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	2	0	2
Problem solving	18	16	34
Laboratory practical	18	0	18
Mentored work	0	60	60
Lecturing	14	14	28
Objective questions exam	2	0	2
Essay	2	0	2
Essay questions exam	2	2	4

\*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

## Methodologies

	Description
Introductory activities	<ul style="list-style-type: none"> <li>- Introduction</li> <li>- Objectives</li> <li>- Theoretical classes</li> <li>- Practical classes</li> <li>- Assessment</li> <li>- Project development. Topic selection and work progress.</li> <li>- References</li> </ul>
Problem solving	Development of real practical cases and exercises on the following contents <ol style="list-style-type: none"> <li>1. Plant distribution</li> <li>2. Product and tools design</li> <li>3. DFMA application</li> <li>4. Application of dimensional, geometrical and surface finishing tolerances.</li> <li>5. Sequence of manufacturing operations.</li> <li>6. Setting of the conditions in manufacturing processes.</li> <li>7. Calculation of cutting speeds, feeds, strengths and cutting powers in manufacturing.</li> <li>8. Measurement procedures.</li> </ol>
Laboratory practical	P1-2. PLM introduction. Product and process design. CAD software. Available software: Catia, NX, Fusion. 2 hour +2 hour P3. Part manufacturing process planning. Tooling design for product. 2 hour P4 -5 -6. Computer-aided tooling manufacturing, CAM prismatic, (Catia, NX, Fusion). 6 hour P7 -8 -9 Supervision of project development. 6 hour
Mentored work	Project (Work to make by student. It would correspond to Groups C of 5 students) Total 18*h
Lecturing	Development of the contents of the subject Proposition real cases and problems

## Personalized assistance

Methodologies	Description
Mentored work	Attending Works and supervising projects (groups from among 3 and 5 people).

## Assessment

	Description	Qualification	Training and Learning Results
Objective questions exam	- Test-type questions, marks will be deducted for incorret answer. - The test can involve problem and essay type questions.	50	B3 C20 D2 D8 D9
Essay	Project development. Teamwork, creativity, self-sufficiency will be evaluated and in case of public presentation the ability for synthesis and communication	50	C20 D2 D9 D10 D17 D20

Essay questions exam	- Development of problems and/or cases.	50	C20	D2 D8 D9 D10
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### Other comments on the Evaluation

The evaluation consists of:

A.-) Multiple choice exam: It's mandatory. The students must have a mark > 4 (0 to 10) to be able to make average with part B. Value 50%

Practical Part, The student have to choose between \*B1 or \*B2

B1.-) Project. Value 50%

B2.-) Essay type questions: problems and cases. Value 50%.

The final mark is the average mark A + B, being B = B1 or B2

Ethical commitment: The student is expected to exhibit appropriate ethical behavior. In the case of detecting non-ethical behaviour (copy, plagiarism, utilisation of unauthorised electronic devices, and others), it will be considered that the student does not gather the necessary requirements to pass the subject. In this case the global qualification in the present academic course will be fail (0.0).

Other comments Requirements: To enrol in this subject is necessary to have passed or be enrolled in all the matters of the previous courses.

ethical Commitment: it expects that the present student a suitable ethical behaviour. In the case to detect a no ethical behaviour (copy, plagiarism, utilisation of unauthorised electronic devices, and others) will consider that the student does not gather the necessary requirements to surpass the matter. In this case the global qualification in the present academic course will be of suspense (0.0).

### Sources of information

#### Basic Bibliography

#### Complementary Bibliography

Pereira A., Prado T., **Notes of the subject IF**, 2015,

Pereira A., **Exercises and cases of manufacturing Engineering**, 2016,

Kalpajian, S., **Manufacturing Engineering and Technology**, 7th ed.,

Notes of the ME subject,

### Recommendations

### Subjects that it is recommended to have taken before

Fundamentals of manufacturing systems and technologies/V12G360V01402

### Other comments

Requirements:

To enrol in this matter is necessary to have surpassed or be enrolled of all the matters of the inferior courses to the course in which it is situated this matter.

### Contingency plan

#### Description

=== EXCEPTIONAL MEASURES PLANNED ===

Given the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University of Vigo establishes extraordinary planning that will be activated at the time that the administrations and the institution itself determine it based on safety, health and responsibility criteria. , and guaranteeing teaching in a non-classroom or partially classroom setting. These already planned measures guarantee, at the required time, the development of teaching in a more agile and effective way by being known in advance (or well in advance) by students and teachers through the standardized tool and institutionalized teaching guides.

=== ADAPTATION OF THE METHODOLOGIES ===

\* Teaching methodologies that are maintained:  
All. Excepting virtual clases.  
\* Non-face-to-face classes (tutorials):  
Through virtual office on remote campus  
\* Additional bibliography to facilitate self-learning:  
Necessary educational resources will be published on faitic platform

=== ADAPTATION OF THE EVALUATION ===

\* Tests already carried out:  
They are all kept with the same weight and value  
\* Pending tests that are maintained:  
They will be carried out virtually through faitic platfporm, keeping the same weight and value

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