



IDENTIFYING DATA

Systems for data analysis, simulation and validation

Subject	Systems for data analysis, simulation and validation			
Code	V12G380V01933			
Study programme	Grado en Ingeniería Mecánica			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	1st
Teaching language	#EnglishFriendly Spanish			
Department				
Coordinator	Casarejos Ruiz, Enrique			
Lecturers	Casarejos Ruiz, Enrique Yáñez Alfonso, Pablo			
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General description	Design, calculation and analysis of elements of machines			

Training and Learning Results

Code			
B1	CG1 Skills for writing, signing and developing projects in the field of industrial engineering, whose purpose, specializing in Mechanics, construction, alteration, repair, maintenance, demolition, manufacturing, installation, assembly or operation of: structures, mechanical equipments, energy facilities, electrical systems and electronic installations and industrial plants, and manufacturing processes and automation.		
B3	CG3 Knowledge in basic and technological subjects that will enable students to learn new methods and theories, and provide them the versatility to adapt to new situations.		
B4	CG4 Ability to solve problems with initiative, decision making, creativity, critical thinking and the ability to communicate and transmit knowledge and skills in the field of industrial engineering in Mechanical specialty.		
C19	CE19 Knowledge and skills to apply the techniques of engineering graphics.		
C20	CE20 Knowledge and abilities to calculate, design and test machines.		
D2	CT2 Problems resolution.		
D9	CT9 Apply knowledge.		
D10	CT10 Self learning and work.		
D17	CT17 Working as a team.		

Expected results from this subject

Expected results from this subject	Training and Learning Results		
Know and apply the computational technicians of simulation to the mechanical design.	B1	C19	D2
Know and apply the computational technicians for the classical calculation of design of machines.	B3	C20	D9
Know and apply the computational technicians of numerical analysis in the design of machines.	B4		D10 D17

Contents

Topic			
Presentation of the matter	-Introduction to the matter, planning and evaluation -previous Knowledge: design of machines; theory of mechanisms; materials		

Static and dynamic calculation	<ul style="list-style-type: none"> - Definition and context - theoretical Calculation - Software of calculation
Gears	<ul style="list-style-type: none"> -Definition and context -theoretical Calculation -Software of calculation -Selection of commercial elements from catalogue
Gear-engines systems	<ul style="list-style-type: none"> -Definition and context -theoretical Calculation and examples -Selection of commercial elements from catalogue
Shafts and Axles	<ul style="list-style-type: none"> -Definition and context -theoretical Calculation -Design of detail -Software of calculation -Calculation of unions axis-cube -*Elemementos of *fijación axial and selection according to norm
Bearings	<ul style="list-style-type: none"> -Definition and context -theoretical Calculation -Software of calculation -Selection of commercial elements from catalogue -Tolerances of manufacturer according to catalogue
Tolerances of elements of machine	<ul style="list-style-type: none"> -Dimensional and geometrical tolerances -Interpretation of planes of manufacture and setting
Design advanced and integration in engineering	<ul style="list-style-type: none"> -Design and import of elements of machine according to catalogues of manufacturer -Parts and groups

Planning

	Class hours	Hours outside the classroom	Total hours
Presentation	20	0	20
Problem solving	14	0	14
Case studies	14	0	14
Problem and/or exercise solving	0	46	46
Project	0	56	56

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

Methodologies

	Description
Presentation	Subjects. Applications. Cases.
Problem solving	Methods. Examples. Discussion.
Case studies	Methods. Examples. Discussion.

Personalized assistance

Methodologies	Description
Presentation	Discussion in common to solve the doubts arisen in the presentation of subjects and applications.
Problem solving	Discussion in common to solve the doubts arisen in the resolution of problems.
Case studies	Discussion in common to solve the doubts arisen in the resolution of cases.
Tests	Description
Project	Personalised discussion to the *alumn@ to solve the doubts arisen developing of the projects
Problem and/or exercise solving	Personalised discussion to the *alumn@ to solve the doubts arisen developing of the exercises.

Assessment

	Description	Qualification	Training and Learning Results		
Problem and/or exercise solving	Resolution of exercises proposed.	40	B3 B4	C19 C20	D2 D9 D10 D17

Project	Resolution of cases proposed. They evaluate different appearances of design and calculation, and each one does not exceed 40% of the total.	60	B1 B3 B4	C19 C20	D2 D9 D10 D17
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Other comments on the Evaluation

The subject is evaluated according to the working blocks of exercises and project handed in by the students. To pass the subject the score must be equal or higher to 50% of the total. Additionally, it is mandatory to obtain at least 35% of the partial of each block.

In the case of official renunciation to continuous evaluation, the student will be evaluated according the project presented and an examination with a value of until 40% of the score.

It is expected an adequate ethical behaviour of the student. In case of detecting unethical behaviour (copying, plagiarism, unauthorized use of electronic devices, etc.) shall be deemed that the student does not meet the requirements for passing the subject. In this case, the overall rating in the current academic year will be Fail (0.0).

The use of any electronic device for the assessment tests is not allowed unless explicitly authorized. The fact of introducing unauthorized electronic device in the examination room will be considered reason for not passing the subject in the current academic year and will hold overall rating (0.0).

Sources of information

Basic Bibliography

various authors, **Diseño en Ingeniería Mecánica de Shigley**, 0, McGraw-Hill, 0

Complementary Bibliography

Norton, R., **Diseño de Máquinas**, Pearson, 2000

Mott, R.L., **Diseño de elementos de máquinas**, 0, Pearson, 2006

Larburu, N., **Máquinas prontuario. Técnicas, máquinas, herramientas**, Paraninfo, 1989

Recommendations

Subjects that are recommended to be taken simultaneously

Technical Office/V12G380V01701

Subjects that it is recommended to have taken before

Graphic expression: Graphic expression/V12G380V01101

Resistance of materials/V12G380V01402

Mechanism and machine theory/V12G380V01306

Machine design I/V12G380V01304

Theory of structures and industrial constructions/V12G380V01603

Other comments

The students that want to *cursar these two subjects will have to show sufficient basic knowledges of the reality of the engineering of machines.

Said sufficiency will consider achieved having worked the contents of the following matters:

- Graphic expression
- Resistance of material
- Theory of machines and mechanisms
- Design of machines I
- Theory of structures and industrial constructions

Therefore it would be recommended to have *cursado said matters of previous form in the inferior courses to take advantage of the matter with guarantee.

In case of discrepancies will prevail the version in Spanish of this guide.