



IDENTIFYING DATA

Mechanical Engineering Design

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|---------------------|---|----------|------|------------|
| Subject | Mechanical Engineering Design | | | |
| Code | V04M141V01214 | | | |
| Study programme | (*)Máster Universitario en Enxeñaría Industrial | | | |
| Descriptors | ECTS Credits | Type | Year | Quadmester |
| | 3 | Optional | 1st | 2nd |
| Teaching language | English | | | |
| Department | | | | |
| Coordinator | Casarejos Ruiz, Enrique | | | |
| Lecturers | Casarejos Ruiz, Enrique | | | |
| E-mail | e.casarejos@uvigo.es | | | |
| Web | http://www.faitic.uvigo.es | | | |
| General description | Classical and numerical calculation of Mechanical Elements | | | |

Competencies

| | | | | |
|------|--|--|--|--|
| Code | | | | |
| CE14 | CTI3. Ability to design and test machines. | | | |
| CT9 | ABET-i. A recognition of the need for, and an ability to engage in life-long learning. | | | |

Learning outcomes

| Learning outcomes | Competences |
|---|-------------|
| - Know the most common components of the machines and his use. | CE14 |
| - Know calculate the elements more commonly used in machines. | CT9 |
| - Know the general appearances of the construction and calculation of machines. | |

Contents

| Topic | |
|--|---|
| Presentation of the contents | - Introduction - Syllabus |
| Shafts, gears and bearings | - Definition of the element - theoretical Calculation and selection - Software of calculation |
| Belts, chains and springs. Lead screws. | - Definition of the element - theoretical Calculation and selection - Software of calculation |
| Joints: - screws | - Definition of the element - theoretical Calculation and selection - Software of calculation |
| Introduction to FEM | - FEM calculation - Definition of a FEM case |

Planning

| | Class hours | Hours outside the classroom | Total hours |
|---------------------------------------|-------------|-----------------------------|-------------|
| Master Session | 10 | 0 | 10 |
| Troubleshooting and / or exercises | 5 | 0 | 5 |
| Case studies / analysis of situations | 5 | 0 | 5 |

| | | | |
|--|---|----|----|
| Group tutoring | 2 | 0 | 2 |
| Troubleshooting and / or exercises | 0 | 30 | 30 |
| Practical tests, real task execution and / or simulated. | 2 | 0 | 2 |
| Jobs and projects | 0 | 21 | 21 |

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

Methodologies

| | Description |
|---------------------------------------|--|
| Master Session | Review of previous contents of design / calculation of machines. Presentation of syllabus |
| Troubleshooting and / or exercises | Resolution of exercises |
| Case studies / analysis of situations | Discussion of particular cases |
| Group tutoring | Discussion and resolution of doubts about the development of works and projects |

Personalized attention

| Tests | Description |
|------------------------------------|---|
| Troubleshooting and / or exercises | Individual discussions for the resolution of problems and/or exercises proposed |
| Jobs and projects | Individual discussions to solve the doubts related to the works and projects proposed |

Assessment

| | Description | Qualification | Evaluated Competences | |
|--|--|---------------|-----------------------|-----|
| Troubleshooting and / or exercises | Resolution of exercises | 50 | CE14 | CT9 |
| Practical tests, real task execution and / or simulated. | Resolution and presentation of problems (examination **) | 20 | CE14 | CT9 |
| Jobs and projects | Resolution of realistic cases proposed | 30 | CE14 | CT9 |

Other comments on the Evaluation

The continuous evaluation will be done considering both the regular exercises and the project to hand in. The quota of the exam will pass to the project.

In anyone gives up (officially) the continuous evaluation, the examination for the evaluation will be done together with the proposed project, and the distribution of the evaluation will be of 50% for the examination.

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, **Shigley's mechanical engineering design**, McGraw-Hill,

Complementary Bibliography

Mott, R.L., **diseño de elementos de máquinas**, Pearson, 2006

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

Ansys, documentation,

Recommendations