Centre	**University College of Engineering of Vitoria-Gasteiz**
Name of subject	**26052- Computer Aided Structural Analysis**
Qualification	**Degree in Mechanical Engineering**
Type	**Compulsory**
Credits	**6 ECTS**
Year	**4**
Term(s)	**2nd**
Department	**Mechanical Engineering**
Language	**Spanish and English**

Outcomes / Objectives

The course aims to provide students with an understanding of the methods of analysis and solution of mechanical structural systems. From an eminently practical approach and after a brief introduction to the FEM method, students will learn to use a finite element program and explore its potential uses in relation to mechanical design.

Syllabus

Articulated node structures. Analysis methods for roof trusses and planar trusses. Continuous node structures. Analysis methods for continuous planar systems. (Porticoes). Introduction to matrix analysis. Generalisation of the analysis for bar structures. Introduction to the finite element method. Definition, purpose, basic principles. Pre-processing: solid modelling and meshing practice. Parametric meshing, automatic meshing. Process: analysis practice. Linear static analysis. Post-process: results analysis. Study of the results obtained in the analysis practice.

Methodology

Teaching Method

Face-to-Face Teaching Hours								
Lectures	**Seminars**	**Classroom practice**	**Lab. practice**	**Computer sessions**	**Clinical practice**	**Workshops**	**Industrial workshops**	**Field practice**
36		**12**	**12**					
Student Hours of Non Face-To-Face Activities								
Lectures	**Seminars**	**Classroom practice**	**Lab. practice**	**Computer sessions**	**Clinical practice**	**Workshops**	**Industrial workshops**	**Field practice**
54		**18**	**18**					

Bibliography

Basic Bibliography

- Lecturer's notes
- Pedro José Landa. José Luis Ramírez. Teoría de Estructuras .Tomos I, II y III. ETSII y ITT. UPV/EHU - AVILES, R.; AJURIA, G. Elementos finitos para el analisis y diseño de sistemas mecánicos. Edit: ETSII y ITT. UPV/EHU
- ROMERA, L.E.; HERNANDEZ, S. Analisis estático y dinámico de estructuras con el programa COSMOS/M. Edit. ETTSICC y P. Universidad de la Coruña.

In-depth Bibliography

- TUTORIALES COSMOS GEOSTAR
- O. C. ZIENKIEWICZ, THE FINITE ELEMENT METHOD, MCGRAW-HILL, LONDON, 3RD EDITION (1977).

Websites

- http://moodle.ehu.es