

Centre	University College of Engineering of Vitoria-Gasteiz
Name of subject	25984 – Applied Mechanics
Qualification	Degree in Mechanical Engineering
Type	Compulsory
Credits	9 ECTS
Year	2
Term(s)	1st and 2nd
Department	Mechanical Engineering
Language	Spanish and Basque

Outcomes / Objectives

Statics, kinematics and dynamics of material systems and key applications in engineering. Principles of the resistance of materials.

Syllabus

VECTORS. Taking for granted previous knowledge of the concept of vector, we will focus on the study of vector systems. GEOMETRY AND MASS DISTRIBUTION. Spatial distribution of mass through the concepts of centre of mass and first- and second-order moments. Generalisation of the concept of tensor. STATICS. Concept of equilibrium in mechanical systems. Active forces and binding forces, smooth and rough bounds. KINEMATICS. Concept of position, velocity and acceleration. Relative motion. Kinematics of rigid bodies. Kinematics of rigid body systems. DYNAMICS. Laws of dynamics. Theorems of dynamics, for the point and for material systems. INTRODUCTION TO THE STUDY OF THE RESISTANCE OF MATERIALS. EXPERIMENTAL STUDY OF THE PROPERTIES OF MATERIALS. TRACTION AND COMPRESSION. STRESS AND STRAIN STATES. CUTTING AND ITS APPLICATIONS. GENERAL FLEXURAL THEORY.

Methodology

Teaching Method

Face-to-Face Teaching Hours

Lectures	Seminars	Classroom practice	Lab. practice	Computer sessions	Clinical practice	Workshops	Industrial workshops	Field practice
60		30						

Student Hours of Non Face-To-Face Activities

Lectures	Seminars	Classroom practice	Lab. practice	Computer sessions	Clinical practice	Workshops	Industrial workshops	Field practice
90		45						

Assessment System

General criteria

Clarification regarding assessment

Bibliography

Basic Bibliography

Teacher's notes - BEER, F.P.; RUSSELL, E. Mecánica vectorial para Ingenieros. (Volumes I and II) Publisher: MacGraw-Hill- HIGDON; STILES. Ingeniería Mecánica. (Volumes I and II) Publisher: Prentice-Hall Inc.- MERIAM, J.L. Mecánica (Volumes I and II) Publisher: Reverté- Joseba García Melero. Resistencia de Materiales. Publisher: UPV-EHU

In-depth Bibliography

BILBAO, A; AMEZUA, E. Mecánica Aplicada: Estática y cinemática. Publisher: Síntesis.
BILBAO, A; AMEZUA, E; ALTUZARRA, O. Mecánica Aplicada: Dinámica. Publisher: Síntesis.
BASTERO, J.M.; CASELLAS, J. Curso de Mecánica, Publisher: EUNSA
Manuel Vazquez. Resistencia de Materiales. Publisher: Universidad Politécnica de Madrid
Luis Ortiz Berrocal. Resistencia de Materiales. Publisher: Mc Graw Hill
Timoshenko. Resistencia de Materiales (2 volumes). Publisher: Espasa-Calpe

Websites

- <http://www.vc.ehu.es/ingme>
- <http://moodle.ehu.es>