

Course Syllabus

STRENGTH OF MATERIALS

Printed by: jcedeno

Program: Oceanographic Engineering

1. Course number and name

CIVG1023 - STRENGTH OF MATERIALS

2. Credits and contact hours

3 credits and 4 contact hours

3. Instructor's course or coordinator's name

CARLOS OMAR SALVATIERRA MOREIRA

4. Text book, title, author, and year

- Hibbeler, R. C.. Mechanics of Materials (Décima Edición)
 - a. Other supplemental materials
- Pytel, Andrew & Singer, Ferdinand L.. Resistencia de Materiales (Traducción de cuarta edición en inglés)
- Beer, Ferdinand P; Johnston, E. Russell. Mecánica de Materiales (Sexta edición)
- Mott Robert L.. Resistencia de Materiales - con CD (Spanish Edition) (Perfect Paperback; 2009)

5. Specific course information

- a. Brief description of the content of the course (catalog description)

This course of professional level of Civil Engineering covers theoretical and technical foundations for the analysis of flexible bodies subject to the action of external loads, indispensable for the design of structures. The mechanical behavior of the isostatic and hyperstatic structures is evaluated and practical methods for the determination of stresses and deformations are introduced.

- b. Prerequisites

VECTOR MECHANICS - MECG1001

- c. This course is: Required

6. Specific goals for the course

- a. Specific outcomes of instruction

1.- Identify the types of internal forces present in the objects due to the external loads, by means of the section method and the static equilibrium for the analysis of the load capacity and the dimensioning of the elements.

2.- Determine the stresses and deformations that occur in bars subjected to axial and torsional loads, through the use of stress-strain curves and Hooke's Law.

3.- Analyze the effect of combinations of loads on the cross section of an element, for the sizing of sections.

4.- Dimension statically determined and indeterminate beams, to support different types



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of external loads.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course

- An ability to apply knowledge of mathematics, sciences, and civil engineering.

7. Brief list of topics to be covered

- 1.- Strain and simple deformation
- 2.- Torsion analysis
- 3.- Strain in beams
- 4.- Combined strain
- 5.- Deflection of beams
- 6.- Beams statically indeterminate
- 7.- Analysis of columns

