Course Syllabus

STRUCTURAL ANALYSIS

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Program: Oceanographic Engineering

1. Course number and name

CIVG1034 - STRUCTURAL ANALYSIS

2. Credits and contact hours

3 credits and 4 contact hours

3. Instructor's course or coordinator's name

CARLOS PAUL QUISHPE OTACOMA

4. Text book, tittle, author, and year

• Hibbeler, R. C.. Structural Analysis (10th Edition)

 a.Other supplemental materials

• Weaver,W. Gere, J.. Matrix Analysis of Frame Structures (Third Edition)

• McCormac, Jack. Análisis de estructuras. Métodos Clásico y Matricial (Cuarta)

• Leet, K. y Uang, Ch.. Fundamentals of Structural Analysis (4ta Edition)

5. Specific course information

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

The course addresses the structural study, from its conceptual foundation to the adequate use of the flexibility method (force method) and the stiffness method (displacement method). Structural mechanic's basic concepts are exposed, including the different types of frame structures and energetic methods for the computation of deformations. Afterward, the methods of flexibility and stiffness are introduced, making emphasis on the appropriate matrices. Additionally, the previous described methods are applied in real problems, and the stiffness method is automatized and compared with a structural analysis software.

b.   Prerequisites

  STRENGTH OF MATERIALS - CIVG1056

c.   This course is: Required

6. Specific goals for the course

a.   Specific outcomes of instruction

1.- Classify different types of frame structures, by applying basic concepts of strength of materials, for the study of their specific characteristics.

2.- Apply flexibility and stiffness methods to obtain structural behavior of any structure.

3.- Evaluate stiffness method, through computational methods, to obtain a structure's behavior.

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

STRUCTURAL ANALYSIS

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  • A knowledge of contemporary issues.

  • An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

7. Brief list of topics to be covered

  1.- Fundamental principles

  2.- Introduction to the flexibility and stiffness method

  3.- Flexibility method

  4.- Stiffness method