# Course Syllabus

## VECTOR MECHANICS

Printed by: lualtam

Program: Oceanographic Engineering

**1. Course number and name**

MECG1052-VECTOR MECHANICS

**2. Credits and contact hours**

3 credits and 4 contact hours

**3. Instructor's course or coordinator's name**

JONATHAN ROBERTO LEON TORRES

**4. Text book, tittle, author, and year**

• Beer, F. Johnston, E. Mazurek, D.. MECANICA VECTORIAL PARA INGENIEROS: ESTATICA (11)

a.Other supplemental materials

• Beer, F. Johnston, E. PhillipJ. Self B.. MECÁNICA VECTORIAL PARA INGENIEROS: DINÁMICA (11)

• R.C. Hibbeler. Ingeniería Mecánica Estática, para cursos con enfoque por competencias (Primera Edición)

**5. Specific course information**

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

This initial basic level course for engineering, describes the behavior of rigid bodies under force action. In the first part of this course, Newton's laws are used to determine the static balance of structures, machines, beams and cables. It applies punctual concepts force, moments, distributed loads and friction in solving engineering problems.

In the second part of this course, moving particles and rigid bodies are studied under the action of external forces that produce acceleration.

In addition, it presents alternative methods of energy and momentum for the solution of particular cases.

b. Prerequisites

PHYSICS: MECHANICS - FISG1005

c. This course is: Required

**6. Specific goals for the course**

a. Specific outcomes of instruction

1.- Apply criteria of static and dynamic balance on particles and rigid bodies for solving engineering problems

2.- Analyze internal forces in beams, cables and structural elements using free body diagrams and balance conditions

3.- Analyze dynamic problems in rigid bodies using Newton's second law, the principle of

work and energy and the principle of impulse and momentum.

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

**7. Brief list of topics to be covered**

1.- Evaluation activities

2.- Static balance of rigid bodies

3.- Structural analysis

4.- Forces in beams and cables

5.- Kinematic of particles and rigid bodies

6.-Work and energy, impulse and momentum methods for rigid bodies