

Course Syllabus

NUMERICAL METHODS

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Program: Oceanographic Engineering

1. Course number and name

MATG1052 - NUMERICAL METHODS

2. Credits and contact hours

2 credits and 4 contact hours

3. Instructor's course or coordinator's name

MANUEL PABLO ALVAREZ ZAMORA

4. Text book, title, author, and year

- Burden, Richard L. & Faires, J. Douglas. Análisis Numérico (Décima)

5. Specific course information

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

The cross-sectional course of Numerical Methods is aimed at the basic training of professionals in the areas of engineering and science, which require developing skills in planning and solving problems using numerical methods. For this purpose, the subject addresses the following topics: nonlinear equations, systems of linear equations, interpolation, differentiation and integration, and, resolution of ordinary and partial differential equations. The emphasis is on the computational analysis and implementation of numerical algorithms to solve engineering problems with a controlled error.

- b. Co - Requisites

DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA - MATG1048

- c. This course is: Required

6. Specific goals for the course

- a. Specific outcomes of instruction
- b. Explicitly 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.- Foundations of numerical analysis
- 3.- Solutions of nonlinear equations
- 4.- Systems of linear equations
- 5.- Interpolation
- 6.- Numerical integration and numerical differentiation
- 7.- Ordinary and partial differential equations