

Course Syllabi

1. MAES-00090 NUMERICAL METHODS

2. 144 credits hours.

3. Bibliography

- Analisis Numerico y Visualizacion Grafica con Matlab, Nakamura, Shoichiro, 2005
- Metodos Numericos para Ingenieros, Chapra Canale, 2009

4. Specific Course Information

- a. The subject of Numerical Methods tries to demonstrate in the student the need to design algorithms for, through numbers and simple mathematical rules, simulate more complex mathematical physical processes applied to Engineering The subject contributes in the indicators ABET as detailed below:
RA1. Problem solving

b. Prerequisites:

- TICS-00023 PROGRAMMING LANGUAGES
- MAES-00087 DIFFERENTIAL EQUATIONS

5. Learning Objectives of the Course

- a. To train students in the knowledge on the development of algorithms that allow solving mathematical models in approximate form and in the elaboration of programs using some programming language
- To train students in the area of resolution of nonlinear Equations, interpolation, numerical linear algebra, integration and numerical differentiation and differential Equations, using numerical methods implemented in the computer.
- b. Learning Outcomes
- Ra 1. analyze and apply problem solving of differentiation and numerical integration
 - Ra 1. analyze the resolution of nonlinear equations
 - Ra 1. analyze the resolution of differential equations
 - Ra 1. apply the numerical linear algebra to the resolution of systems of linear equations
 - Ra 1. analyze the forms of interpolation

6. Course Topics

- Linear interpolation
- Solution of non-linear equations
- Numerica integration
- Numerica difference
- Numeric linear algebra
- Adjustment of curves
- 7. problems of differential equations with initial value or condition