

Course Syllabus

DIFFERENTIAL EQUATIONS

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Program: Telecommunications Engineering

1. Course number and name

MATG1004 - DIFFERENTIAL EQUATIONS

2. Credits and contact hours

3 credits and 5 contact hours

3. Instructor's course or coordinator's name

ANTONIO SIMON CHONG ESCOBAR

4. Text book, title, author, and year

- William Boyce y Richard DiPrima. ECUACIONES DIFERENCIALES Y PROBLEMAS CON VALORES EN LA FRONTERA (Quinta)

- a. Other supplemental materials

- Edwin Purcell, Dale Varberg y Steven Rigdon. CÁLCULO (Novena)

5. Specific course information

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

The course of differential equations is aimed for the training of professionals in the area of engineering and sciences, which require the use of techniques to solve problems modeled by means of ordinary differential equations. This course covers the following topics: power series, first order and higher order ordinary differential equations, Laplace transform as well as systems of ordinary differential linear and integro-differential equations.

- b. Prerequisites

SINGLE VARIABLE CALCULUS - MATG1001

LINEAR ALGEBRA - MATG1003

- c. This course is: Required

6. Specific goals for the course

- a. Specific outcomes of instruction

- 1.- Solve ordinary differential equations of first and second order associated with engineering and science application problems, using an appropriate resolution method.

- 2.- Determine the solution of ordinary differential equations of higher order, using the generalization of the resolution methods of the second order equations.

- 3.- Calculate the Laplace transform of classical functions and the Dirac delta function to solve ordinary differential equations, systems of ordinary differential equations, integro-differential equations, and systems of integro-differential equations.

- 4.- Solve systems of ordinary linear differential equations and systems of integro-differential equations, using the eigenvector method and the differential operator method.

- b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other



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outcomes are addressed by the course

- An ability to apply knowledge of mathematics, science, and engineering
- An ability to function on multidisciplinary teams

7. Brief list of topics to be covered

- 1.- Sequences and series
- 2.- Ordinary differential equations of the first order
- 3.- Ordinary differential equations of second order, higher order and solutions in power series
- 4.- Laplace transform
- 5.- Systems of ordinary linear differential equations and systems of integro-differential equations

