

1. Course number and name  
(a)MA2001 : Differential Equations
2. Credits and contact hours  
(b)3 - 0 - 8
3. Instructor's or course coordinator's name  
( c)Ruth Rodríguez Gallegos
4. Text book, title, author, and year  
(d)\* William E. Boyce y Richard C. DiPrima, Ecuaciones diferenciales y problemas con valores a la frontera, 3a ed., LIMUSA, , , ,
  - a. other supplemental materials  
(e )Zill, D. y Cullen, M. (2009). Ecuaciones Diferenciales con problemas con valores de frontera. Cengage Learning. / Blanchard, Devaney y Hall. (2007). Differential Equations. Cengage Learning./Zill, D. y Wright, W. (2012). Matemáticas Avanzadas para Ingeniería. Cuarta Edición.
5. Specific course information
  - a. brief description of the content of the course (catalog description)  
( f)This course provides students with the mathematical tools necessary to model and analyze the behavior of physical systems using differential equations. Learning outcome: students will be able to 1. Understand the basic concepts of matrix algebra. 2. Solve systems of linear equations using the tools of matrix algebra. 3. Understand the basic concepts of differential equations and the methods of solving them. 4. Understand the Laplace transform. 5. Apply the Laplace transform in solving differential equations (linear with constant coefficients). 6. Apply the concepts of differential equations to modeling and solving problems of medium complexity.
  - b. prerequisites or co-requisites  
(g)MA1004
  - c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program  
(h)Required
6. Specific goals for the course
  - a. specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.  
(j)By the end of the course, students will be able to: Understand ordinary differential equations and the different methods for solving them; model, solve, and interpret problem solving in the area of engineering.
  - b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.  
(k)(a) an ability to apply knowledge of mathematics, science, and engineering  
(b) an ability to design and conduct experiments, as well as to analyze and interpret data

- (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- (d) an ability to function on multidisciplinary teams

7. Brief list of topics to be covered

(1)ODE First Order;ODE Second Order; Laplace Transform; Partial Differential Equations; Modelling different phenomenon.