Course Syllabi

1. MAES-00084 DIFFERENTIAL CALCULUS
2. 144 credits hours.
3. Bibliography
   - Cálculo para la modelación matemática fundamental / https://hdl.handle.net/11285/651461, Rodríguez Gallegos, Ruth Soto Apolinar, Efraín, 2023
   - Cálculo Trascendentes tempranas, Dennis G.Zill; Warren S. Wright., 2011
4. Specific Course Information
   a. The Differential Calculus aims to introduce the student to formal concepts for the analysis of kinematic mathematical models and acquire scientific skills before daily problems. This subject will provide students with knowledge of limits, continuity, graphs of functions, derivative and applications of the derivative. The subject has the learning methodology strategy based on mathematical problems, where the student learns to form working groups and bus the information necessary for the resolution of the same ones. In addition, it will be complemented with the strategy of autonomous learning methodology to strengthen the knowledge with the practice and calculation of problems. The subject contributes in the indicator ABET as detailed below: RA1. Problem solving
5. Learning Objectives of the Course
   a. Apply the definitions and theorems of differential calculus in the resolution of engineering problems.
      - Analyze the functions, their characteristics and behavior as previous concepts for the understanding of differential calculus.
      - Apply the definitions and theorems of infinitesimal calculus of functions of a variable in the resolution of engineering problems.
      - Mathematically model real situations by applying differential calculus.
   b. Learning Outcomes
      - Ra1 apply derivatives in function analysis.
      - Ra1 interprets the interrelation of mathematical, physical, chemical phenomena from models graphically represented by functions.
      - Ra1 interprets the interrelation of mathematical, physical, chemical phenomena from models graphically represented by functions.
      - Ra1 interprets the interrelation of mathematical, physical, chemical phenomena from models graphically represented by functions.
      - Ra1 interprets the interrelation of mathematical, physical, chemical phenomena from models graphically represented by functions.
      - Ra1 use the derivative to solve application problems.
      - Ra1 apply derivatives in function analysis.
      - Ra1 use the derivative to solve application problems.
      - Ra1 use the derivative to solve application problems.
      - Ra1 interprets the interrelation of mathematical, physical, chemical phenomena from models graphically represented by functions.
      - Ra1 interprets the interrelation of mathematical, physical, chemical phenomena from models graphically represented by functions.
      - Ra1 interprets the interrelation of mathematical, physical, chemical phenomena from models

graphically represented by functions.

- Ra1 apply derivatives in function analysis.
- Ra1 interprets the interrelation of mathematical, physical, chemical phenomena from models graphically represented by functions.

6. Course Topics

- Functions and limits
- The derivative
- Applications of the derivative
- Partial derived