**Course description form**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. **Course Name** | | | | | | | | |
| Mathematics I | | | | | | | | |
| 1. **Course Code** | | | | | | | | |
| E101 | | | | | | | | |
| 1. **Semester/Year** | | | | | | | | |
| Fall Semester/First Year | | | | | | | | |
| 1. **The date this description was prepared** | | | | | | | | |
| 17 / 9 / 2023 | | | | | | | | |
| 1. **Available forms of attendance** | | | | | | | | |
| Face-to-Face theoretical lectures | | | | | | | | |
| 1. **Number of study hours (total) / number of units (total)** | | | | | | | | |
| 125/3 | | | | | | | | |
| 1. **Name of the course administrator** | | | | | | | | |
| Name: Lect. Ali Sachit Email: | | | | | | | | |
| 1. **Course objectives** | | | | | | | | |
| * To study and solve inequalities, quadratic and cubic equations. * Partial Fractions, Exponential , Logarithmic, Trigonometric and its inverse Functions . * Study limit and continuity to understand the derivative to solve differential equations. * Solving Systems of Linear Equations Using Determinants (Cramer's Rule). * Solving System of Linear Equations Using Matrix Inverse. | | | | **Objectives of the study subject** | | | | |
| 1. **Teaching and learning strategies** | | | | | | | | |
|  Weekly lectures included providing students with the basics and topics related to the pre-skills education outcomes to solve practical problems through presentation, lecture, or conducting experiments.   Solve a group of practical and applied examples by faculty members.   Through discussion, students participate in solving some practical problems.   Practical laboratories in the department are monitored by faculty members in the department.   Asking the student to visit the library and the international information network (the Internet) to obtain additional knowledge of the academic subjects.  Giving a seminar to the student in front of his fellow students to enhance his self-confidence. | | | **The Strategy** | | | | | |
| 1. **Course structure** | | | | | | | | |
| **Evaluation method** | **Learning method** | **Required learning outcomes** | | | **Name of the unit or topic** | | **Hours** | **Week** |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Functions | | | Cartesian coordinates, slope of lines, angle of inclination, functions, types of functions, graph of the functions, domain and range, identifying , Circles and parabolas | | 4 | 1 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | vectors | | | Introduction to vectors | | 4 | 2 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Preliminaries | | | Sum, differences, products and quotients of Composite functions, shifting a graph of a function, scaling and reflecting a graph of a function, Absolute value | | 4 | 3 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | trigonometric function | | | Review of trigonometric function  graph of trigonometric function, range and domain, identities | | 4 | 4 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Limits and Continuity | | | Properties, limits involving infinity, continuity | | 4 | 5 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Transcendental functions | | | Inverse function, graph of inverse function, Logarithmic and exponential functions, trigonometric functions , inverse trigonometric functions, hyperbolic functions, inverse hyperbolic functions | | 4 | 6 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Derivatives | | | Definition, rules of derivative, slopes , tangent lines, chain rule, derivative of trigonometric functions, Implicit differentiation, L hospital’s rule | | 4 | 7 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Derivatives | | | derivative of inverse trigonometric functions, derivative of exponential and logarithmic functions | | 4 | 8 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Applications of derivatives | | | Speed and acceleration, Relative maximum and relative minimum | | 4 | 9 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Applications of derivatives | | | Curve sketching with 1st and 2nd derivative | | 4 | 10 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Applications of derivatives. | | | Linearization, | | 4 | 11 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Applications of derivatives . | | | rate of change problems | | 4 | 12 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Applications of derivatives . | | | Mean value theorem -Initial value problem | | 4 | 13 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Complex numbers . | | | Basic definitions. The geometric representations of the complex numbers, argand diagram | | 4 | 14 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Complex numbers . | | | Basic operations with complex numbers, Euler's Formula | | 4 | 15 |
| 1. **Course Evaluation** | | | | | | | | |
| Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc. | | | | | | | | |
| 1. **Learning and teaching resources** | | | | | | | | |
| **Calculus, Early Transcendentals by Anton.** | | | | | | Required textbooks (methodology, if any) | | |
| **Calculus and Analytic Geometry by Thomas.** | | | | | | Main references (sources) | | |
|  | | | | | | Recommended supporting books and references (scientific journals, reports....) | | |
|  | | | | | | Electronic references, Internet sites | | |