**Course description form**

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| 1. **Course Name**
 |
| Mathematics I |
| 1. **Course Code**
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| 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)**
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| 125/3 |
| 1. **Name of the course administrator**
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| Name: Lect. Ali SachitEmail: |
| 1. **Course objectives**
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| * 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**
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|  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**
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| **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**
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| 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**
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| **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 |