**Course description form**

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| 1. **Course Name**
 |
| Mathematics II |
| 1. **Course Code**
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| E102 |
| 1. **Semester/Year**
 |
| Spring 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 integrations with various methods.
* Complex number and its applications.
* Hyperbolic functions and its inverse.
* Vectors and its applications.
* Conic sections and its applications.
 | **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 | Integration | Indefinite Integral , Theorems, Definite Integral , Properties | 4 | 1 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Integration  | Integration of Trigonometric and Inverse Trigonometric Functions, Integration of Exponential and Logarithmic Functions  | 4 | 2 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Integration and transcendental functions | Integration and transcendental functions (hyperbolic and inverse hyperbolic functions) | 4 | 3 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Numerical integration | Introduction, trapezoidal rule and Simpson’s rule | 4 | 4 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Methods of Integration  | Integration by Parts, Integration by Partial Fractions,  | 4 | 5 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Methods of Integration | Integration by Substitution Integration by Quadratic complement,  | 4 | 6 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Methods of Integration | Integration by t=tan (x) substitution, Integration by t=tan (x/2) substitution | 4 | 7 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Application of the Definite Integral | Area Under The Curve, Area Between Two Curves | 4 | 8 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Application of the Definite Integral. | VOLUMES , IMPROPER INTEGRALS | 4 | 9 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Application of definite integrals | Length of curve in the plane, Area of surface of revolution | 4 | 10 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Application of definite integrals | Center of mass, moment of inertia  | 4 | 11 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Application of definite integrals | Area by polar coordinates | 4 | 12 |
| Weekly & monthly tests+ assignments+ seminars | Lectures |  Matrix. | Definition, matrix algebra  | 4 | 13 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Matrix |  Determinant of matrix, Grammar’s rule | 4 | 14 |
| Weekly & monthly tests+ assignments+ seminars | Lectures | Matrix |  Inverse of matrix, Gauss Elimination Method  | 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 |