# Templates NO (10)

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| **University** | Helwan |
| **Faculty** | Computers and Information  |
| **Department** | Software Engineering |

#### **Course Specifications**

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| **1- Course Data** |
| **Code:** Ma111 | **Course Name:** Mathematics 1 | **Level: One** |
| **Specialization:**Software Engineering | **No of Learning Units:** Lecture (3) Practical (2) Tutorial (0)**Prerequisites**:  |  |

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| **2- Course Objective:** | 1. Discuss how to find the limits, continuous and differentiation for functions of one variable.

2- Teach how to use the differentiation to expand any function and draw it by the upper and lower limits, also how to apply the mean value theorem. 3- Recognize the methods of the integrate functions. 4-Discuss the integration to find the area and the volume. |
| **3- Intended Learning Outcomes (ILOs)** |
| 1. **Knowledge and Understanding:**
 | **A1-**Define basic concepts of topic, sets, relations and functions.**A2-**Describe how to differentiate functions. **A3-**Mention recursive definitions of functions on numbers (e.g. addition and multiplication). **A4-**Describe how to integrate functions.**A5-**Define the definite integral and coordinate systems to solve physical problems. **A6-**Determine an approximate value for a definite integral.  |
| 1. **Intellectual Skills:**
 | **B1-**Analyze the relationships of mathematics. **B2-**Recognize and discuss solutions to practical problems in science and engineering.  |
| 1. **Professional and Practical Skills:**
 | **C1-**Explain different problems in other fields. **C2-**Execute mathematics to solve problems in other fields.**C3-** Produce the cooperative multi-disciplinary teams.  |
| 1. **General and Transferable Skills:**
 | **D1-**Practice Learning and working both independently and in groups. **D2-** Follow Logical Thinking in real time problem solving.**D3-** Follow Critical and Analytical Thinking. |
| **4- Course Content:** | **Week 1 :**Solving Inequalities**Week 2:** Definition of Function, Domain and Range of Function, Classification of Functions**Week 3:** Graph of Functions, Composition of Functions, Even and Odd Functions**Week 4 :** Limit of Function: Rules for Finding Limits, Special Limits, Squeeze Rule **Week 5:** Continuity of Functions, Intermediate Value Theorem **Week 6:** Differentiation: Rules for Differentiation, Differentiation of Trigonometric Functions **Week 7: Quiz, Midterm****Week 8:** Differentiation of Inverse Trigonometric Functions **Week 9:** Derivatives of Higher Order, Extreme Values**Week 10:** Indefinite Integrals: Basic Rules of Integration, Integration by Substitution **Week 11:** Trigonometric Substitutions, Integration by Parts **Week 12:** Integration of Rational Functions: The method of undetermined coefficients, The method of determining coefficients**Week 13 :** Definite Integral: The area of plane figures**Week 14 :** Volume of Solids**Week 15: Final Exam.**  |
| **5- Learning and Teaching Methods:** | Lectures |
| **6- Learning and Teaching Methods for students with limited skills:** | Academic advising |
| **7- Students Evaluation:** |
| 1. **Used Methods**
 | - Semester work- Final written Exam |
| 1. **Schedule**
 | * Assessment 1: Throughout the semester
* Assessment 2: End of Semester (according to faculty’s exams schedule)
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| 1. **Grades Distribution**
 | * Final written exam: 60 marks
* Semester Work: 40 marks (20 for midterm exam+ 20 for Assignments)
* **Total**:100 marks
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| **List of Books and References:** |
| 1. **Notes:**
 | * **course notes**
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| 1. **Mandatory Books:**
 | 1. Salas and Hille‘s, Calculus: One and Several Variables, 7th Edition, 1995, John Wiley & Sons, New York.
2. Arthur B. Simon, Calculus with Analytic Geometry, 1987, Scott, Foresman and Company, Illinois, USA
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| 1. **Suggested Books:**
 | Howard Anton, Calculus: A New Horizon, 6th Edition, 1999, John Wiley & Sons, New York. |
| 1. **Periodicals & Websites**
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**Course Professor:** Dr. Eman Fathy

**Course Coordinator:**

**Chairman of the Scientific Department:**