MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | Mathematics | | | | **Module Delivery** | | |
| **Module Type** | Core | | | | * **☒ Theory** * **☐ Lecture** * **☐** **Lab** * **☒Tutorial** * **☐ Practical**   **☐ Seminar** | | |
| **Module Code** | Kus1101 | | | |
| **ECTS Credits** | 5 | | | |
| **SWL (hr/sem)** | 125 | | | |
| **Module Level** | | 1st | **Semester of Delivery** | | | | 1 |
| **Administering Department** | | Geophysics | **College** | Geophysics and Remote Sensing | | | |
| **Module Leader** | Ali Khalid | | **e-mail** |  | | | |
| **Module Leader’s Acad. Title** | | Instructor | **Module Leader’s Qualification** | | | | MSc. |
| **Module Tutor** |  | | **e-mail** |  | | | |
| **Peer Reviewer Name** | |  | **e-mail** |  | | | |
| **Scientific Committee Approval Date** | | 6/11/2023 | **Version Number** | | |  | |

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| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | None | **Semester** |  |
| **Co-requisites module** | None | **Semester** |  |

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| **Module Aims, Learning Outcomes and Indicative Contents**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية** | |
| **Module Aims**  **أهداف المادة الدراسية** | 1. Identify the properties of mathematical functions and their opposites.  2. Familiarity with the properties of polynomials, exponential and logarithmic functions, trigonometric functions and their opposites.  3. Recognize the concept of differential functions and its relationship to speed and the rate of their change with time (acceleration).  4. Identify the integration of the functions and methods of Integration.  5. Knowledge of applications of integral in geometry. |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. Recognize properties of functions and their inverses; 2. Recall and use properties of polynomials, rational functions, exponential, logarithmic, trigonometric and inverse-trigonometric functions; 3. Apply the differentiation procedures to solve related rates and extreme value problems; 4. To understand the term integration. 5. To distinguish between definite and indefinite integration. 6. To describe the area and volume by means of integration. |
| **Indicative Contents**  **المحتويات الإرشادية** | 1-To know the methods of differentiation of functions accurately and its applications.  2- To know the relationship between the function term and its differential.  3- To extract the area and volume through integration.  4 - To know the differentiation and integration of functions.  4- To use integration methods to find complex integrals. |

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| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **Strategies** | * Following up the scientific development of mathematics by reviewing modern curricula.   • Follow-up and development of academic courses and compare them with other universities.  • Using the latest teaching aids to motivate the student to learn and understand. |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 48 |  |  |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 77 |  |  |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | 125 | | |

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| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 3 | 10% (10) | Within the course | All of the previous Lectures |
| **Assignments** | 15 | 10% (10) | Within the course | All of the previous Lectures |
| **Projects / Lab.** |  |  |  |  |
| **Report** | 1 | 10% (10) | Within the course | All of the previous Lectures |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | Within the course | All of the previous Lectures |
| **Final Exam** | 2hr | 60% (60) | After the course | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | Functions, Inverse Functions. |
| **Week 2** | Trigonometric Functions, Inverse Trigonometric Functions. |
| **Week 3** | Exponential and Logarithmic Functions. |
| **Week 4** | Limits and Continuity |
| **Week 5** | The Derivative, The Chain Rule. |
| **Week 6** | Implicit Differentiation, L'Hopitals Rule. |
| **Week 7** | The Derivative in graphing and applications, Relative Extrema. |
| **Week 8** | Rolle's Theorem; Mean –Value Theorem |
| **Week 9** | The indefinite integral, Areas under a curve |
| **Week 10** | The fundamental theorem of integral calculus, Area between two curves |
| **Week 11** | The integral of trigonometric functions, the integral of inverse trigonometric |
| **Week 12** | The integral of the functions logu(x),lnu(x),eu(x) and au(x) |
| **Week 13** | Methods of integration , powers of trigonometric functions |
| **Week 14** | Integration by parts |
| **Week 15** | **Volumes** |
| **Week 16** | **Preparatory week before the final Exam** |

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| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | **Material Covered** |
| **Week 1** |  |
| **Week 2** |  |
| **Week 3** |  |
| **Week 4** |  |
| **Week 5** |  |
| **Week 6** |  |
| **Week 7** |  |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | **Thomas & Finney "Calculus and Analytic Geometry" (2005), 11th edition, Addison**  **Wesley.** | yes |
| **Recommended Texts** | **Howard Anton,IrI Bivens & Stephen Davis "Calculus"(2009),9thedition,John Wiley & Sons,NC.** | yes |
| **Websites** | **Various lectures and lecture notes on the internet**. | |

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| **Grading Scheme**  **مخطط الدرجات** | | | | |
| **Group** | **Grade** | التقدير | **Marks (%)** | **Definition** |
| **Success Group**  **(50 - 100)** | **A -** Excellent | **امتياز** | 90 - 100 | Outstanding Performance |
| **B -** Very Good | **جيد جدا** | 80 - 89 | Above average with some errors |
| **C -** Good | **جيد** | 70 - 79 | Sound work with notable errors |
| **D -** Satisfactory | **متوسط** | 60 - 69 | Fair but with major shortcomings |
| **E -** Sufficient | **مقبول** | 50 - 59 | Work meets minimum criteria |
| **Fail Group**  **(0 – 49)** | **FX –** Fail | **راسب (قيد المعالجة)** | (45-49) | More work required but credit awarded |
| **F –** Fail | **راسب** | (0-44) | Considerable amount of work required |
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| **Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above. | | | | |