MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Module Title** | Mathematics I | | | | **Module Delivery** | | |
| **Module Type** | Basic | | | | * **☒ Theory** * **☐ Lecture** * **☒ Lab** * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | ITC320021 | | | |
| **ECTS Credits** | **6.00** | | | |
| **SWL (hr/sem)** | 150 | | | |
| **Module Level** | | 1 | **Semester of Delivery** | | | | 1 |
| **Administering Department** | | BID | **College** | BMIC | | | |
| **Module Leader** | Ahmed Wadi Shehab | | **e-mail** | Ahmed.shiahb@uoitc.edu.iq | | | |
| **Module Leader’s Acad. Title** | | lecturer | **Module Leader’s Qualification** | | | | Ph.D. |
| **Module Tutor** |  | | **e-mail** | E-mail | | | |
| **Peer Reviewer Name** | | jwan k alwan | **e-mail** | jwanism@uoitc.edu.iq | | | |
| **Scientific Committee Approval Date** | | 18/06/2023 | **Version Number** | | | 1.0 | |

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

| **Module Aims, Learning Outcomes and Indicative Contents**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية** | |
| --- | --- |
| **Module Aims**  **أهداف المادة الدراسية** | 1. To understand Matrices operations- type of Matrices- Determinants-,Grammar rule method-,Adjoint and Inverse of Matrices-solutions of linear equations using Inverse of Matrix method 2. This course deals with the basic concept of Functions 3. To understand Trigonometric Functions-even and odd functions. Limits and Continuity 4. To understand Differentiation: Gradients, Differentiation from first principles, Table of derivatives, Evaluating derivatives, Higher derivatives, Differentiating products and quotients, Chain rule, Parametric differentiation, Implicit differentiation 5. To understand Applications of Differentiation & Integration: Maxima and minima Table of integrals, Rules of integration, Definite integrals, Area bounded by curves |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. Recognize how to use mathematics in real life. 2. Improve Mathematics Skills. 3. To provide sufficient practice in the mathematical methods presented.. 4. To promote a deeper learning environment. 5. To emphasize the relevance of mathematics to the degree programmers. 6. To potentially develop other non-disciplinary skills such as professional, personal and interpersonal skills. |
| **Indicative Contents**  **المحتويات الإرشادية** | Indicative content includes the following.  Part A - Matrices  Matrices and Determinants(Def of Matrices- Matrices operations- type of Matrices- Determinants-, Grammer rule Adjoint and Inverse of Matrices-solutions of linear equations using Inverse of Matrix method  Part B- Functions  Functions (Domain and Range)- Shifting graphs-composition of functions Trigonometric Functions-even and odd functions Limits and Continuity  Differentiation-Higher Derivatives- Derivatives Trigonometric Functions –The chain rule Application Differentiation, Increasing - decreasing and inflection points.  Integration- Integration by substitutions, the definite Integral Application of definite Integral-Volumes. |

| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| --- | --- |
| **Strategies** | Basic necessity for the foundations of Technology being mathematics ,the main aim is to teach mathematical methodologies and models develop mathematical skills and enhance thinking power of students |

| **Student Workload (SWL)**  **الحمل الدراسي للطالب** | | | |
| --- | --- | --- | --- |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 78 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 5 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 72 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 5 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | 150 | | |

| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10 | LO #1, 2, 4 and 5 |
| **Assignments** | 2 | 10% (10) | 2, 12 | LO # 3, 4, 5 |
| **Projects / Lab.** | 1 | 10% (10) | Continuous |  |
| **Report** | 1 | 10% (10) | 13 | LO # 2,3 and 4 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-5 |
| **Final Exam** | 3hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| --- | --- |
| **Week** | **Material Covered** |
| **Week 1** | Introduction - Matrices and Determinants(Def of Matrices- Matrices operations- type of Matrices) |
| **Week 2** | Adjoint and Inverse of Matrices Determinants-,Grammar rule method |
| **Week 3** | Functions (Domain and Range) |
| **Week 4** | Shifting graphs-composition of functions |
| **Week 5** | Trigonometric Functions-even and odd functions |
| **Week 6** | Limits and Continuity |
| **Week 7** | Mid-term Exam |
| **Week 8** | Differentiation-Higher Derivatives |
| **Week 9** | Derivatives Trigonometric Functions |
| **Week 10** | Application Differentiation, Increasing - decreasing and inflection points |
| **Week 11** | Chain rule Maxima and minima |
| **Week 12** | Integration- Integration by substitutions |
| **Week 13** | The definite Integral |
| **Week 14** | Application of definite Integral Area of the surface |
| **Week 15** | Application of definite Integral-Volumes |

| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| --- | --- |
| **Week** | **Material Covered** |
| **Week 1** | Introduction – Matrices |
| **Week 2** | Grammar rule method |
| **Week 3** | Domain and Range of functions |
| **Week 4** | Graph and Shifting graphs of functions |
| **Week 5** | Trigonometric Functions and it applications |
| **Week 6** | Limits and Continuity |
| **Week 8** | Complement  above lab |
| **Week 9** | Derivatives Trigonometric Functions and Application |
| **Week 10** | Complement  above lab |
| **Week 11** | Application Differentiation, Increasing - decreasing and inflection points and Chain rule Maxima and minima |
| **Week 12** | The definite Integral and Application of definite Integral Area of the surface |
| **Week 13** | Complement  above lab |
| **Week 14** | Application of Integral-Volumes and it application in reality |
| **Week 15** | Test examination |

| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
| --- | --- | --- |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | Calculus Ron Larson (Author), Bruce H. Edwards | No |
| **Recommended Texts** | Text book of Matrices .Hari Kishan  Essential Calculus Skills Practice Workbook with Full Solutions Chris McMullen | No |
| **Websites** | https://ocw.mit.edu/courses/18-01-single-variable-calculus-fall-2006/pages/lecture-notes/ | |

| **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 |
|  |  |  |  |  |
| **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. | | | | |