6MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Module Title** | Mathematics II | | | | **Module Delivery** | | |
| **Module Type** | Basic | | | | * **☒**  **Theory** * **☐ Lecture** * **☒ Lab** * **☒ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | ITC320022 | | | |
| **ECTS Credits** | 7 | | | |
| **SWL (hr/sem)** | 175 | | | |
| **Module Level** | | 1 | **Semester of Delivery** | | | | 2 |
| **Administering Department** | | BID | **College** | BMIC | | | |
| **Module Leader** | Ahmed Wadi Shehab | | **e-mail** | [Ahmed.shiahb@uoitc.edu.iq](mailto:Ahmed.shiahb@uoitc.edu.iq) | | | |
| **Module Leader’s Acad. Title** | | lecturer | **Module Leader’s Qualification** | | | | Ph.D. |
| **Module Tutor** | Name (if available) | | **e-mail** | E-mail | | | |
| **Peer Reviewer Name** | | jwan k alwan | **e-mail** | jwanism@uoittc.edu.iq | | | |
| **Scientific Committee Approval Date** | | 18/06/2023 | **Version Number** | | | 1.0 | |

| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| --- | --- | --- | --- |
| **Prerequisite module** | Mathematics I / BID111 | **Semester** | 1 |
| **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 Inverse functions & Inverse Trigonometric Functions 2. This course deals with the basic concept of logarithm & Exponentiation Functions 3. To understand Inverse of Trigonometric and hyperbolic Functions 4. Explain Derivatives & integral hyperbolic Functions 5. To understand sequences and series convergent and divergent 6. To understand Techniques of Integration 7. Explain basic concept to differential equations and its solution |
| **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 - - Functions  Inverse functions & Inverse Trigonometric Functions. logarithm & Exponentiation Functions Inverse of Trigonometric and hyperbolic Functions Derivatives & integral hyperbolic Functions Techniques of Integration  Part B- sequences and series & differential equations  Understand sequences and series & convergent and divergent .Definition differential equations order and degree ODE and its solution of First and second order. |

| **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** | 97 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 6 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | 175 | | |

| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 6, 12 | LO #1, 2, 5 |
| **Assignments** | 2 | 10% (10) | 2, 14 | LO # 3, 4, 6 |
| **Projects / Lab.** | 1 | 10% (10) | Continuous |  |
| **Report** | 1 | 10% (10) | 15 | LO # 5, 6 |
| **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 - Inverse functions (Def of one-to-one function & inverse function ) Finding inverse function |
| **Week 2** | Inverse Trigonometric Functions |
| **Week 3** | logarithm & Exponentiation Functions |
| **Week 4** | Inverse of Trigonometric and hyperbolic Functions |
| **Week 5** | Derivatives Hyperbolic Functions |
| **Week 6** | Integration of Hyperbolic Functions |
| **Week 7** | Mid-term Exam |
| **Week 8** | sequences and series Definition and Examples |
| **Week 9** | convergent and divergent sequences and series |
| **Week 10** | Techniques of Integration Making a simplifying substitution Completing the Square |
| **Week 11** | Techniques of Integration Expanding a Power and Using Trigonometric Identity |
| **Week 12** | Techniques of Integration Eliminating a Square Root Separating a fraction |
| **Week 13** | Definition of ODE order and degree |
| **Week 14** | Solutions Of ODE of first order |
| **Week 15** | Solutions Of ODE of second order |

| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| --- | --- |
| **Week** | **Material Covered** |
| **Week 1** | Inverse functions |
| **Week 2** | Inverse Trigonometric Functions |
| **Week 3** | logarithm & Exponentiation |
| **Week 4** | Derivatives Hyperbolic Functions |
| **Week 5** | Complete above lab |
| **Week 6** | sequences and series Definition and application |
| **Week 7** | Complete above lab |
| **Week 8** | Techniques of Integration Making a simplifying substitution Completing the Square |
| **Week 9** | Complete above lab |
| **Week 10** | ODE order and degree |
| **Week 11** | ODE of first order |
| **Week 12** | Complete above lab |
| **Week 13** | ODE of second order |
| **Week 14** | Complete above lab |
| **Week 15** | Solutions Of ODE of second order |

| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
| --- | --- | --- |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | Calculus Ron Larson (Author), Bruce H. Edwards | No |
| **Recommended Texts** | Differential equations.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. | | | | |