

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                           |                               |                                                                                                                                                                                                                               |
|------------------------------------|---------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                           |                               |                                                                                                                                                                                                                               |
| Module Title                       | <b>Mathematics 2</b>      |                               | Module Delivery                                                                                                                                                                                                               |
| Module Type                        | Basic learning activities |                               | <input checked="" type="checkbox"/> Theory<br><input type="checkbox"/> Lecture<br><input type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input type="checkbox"/> Practical<br><input type="checkbox"/> Seminar |
| Module Code                        | <b>CE108</b>              |                               |                                                                                                                                                                                                                               |
| ECTS Credits                       | 5                         |                               |                                                                                                                                                                                                                               |
| SSWL (hr/sem)                      | <b>63</b>                 |                               |                                                                                                                                                                                                                               |
| USSWL (hr/sem)                     | <b>62</b>                 |                               |                                                                                                                                                                                                                               |
| SWL (hr/sem)                       | <b>125</b>                |                               |                                                                                                                                                                                                                               |
| Module Level                       | 1                         | Semester of Delivery          |                                                                                                                                                                                                                               |
| Administering Department           | CE                        | College                       | GE                                                                                                                                                                                                                            |
| Module Leader                      | Jihad Qais                | e-mail                        | <a href="mailto:Jihad.qais@alnaji-uni.edu.iq">Jihad.qais@alnaji-uni.edu.iq</a>                                                                                                                                                |
| Module Leader's Acad. Title        | Ass.Lecturer              | Module Leader's Qualification | MSc                                                                                                                                                                                                                           |
| Module Tutor                       |                           | e-mail                        | <a href="mailto:Jihad.qais@alnaji-uni.edu.iq">Jihad.qais@alnaji-uni.edu.iq</a>                                                                                                                                                |
| Peer Reviewer Name                 | Name                      | e-mail                        | E-mail                                                                                                                                                                                                                        |
| Scientific Committee Approval Date |                           | Version Number                | 1.0                                                                                                                                                                                                                           |

| Relation with other Modules       |       |          |   |
|-----------------------------------|-------|----------|---|
| العلاقة مع المواد الدراسية الأخرى |       |          |   |
| Prerequisite module               | CE107 | Semester | 1 |
| Co-requisites module              | None  | Semester |   |

| <b>Module Aims, Learning Outcomes and Indicative Contents</b><br><b>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Objectives</b><br><b>أهداف المادة الدراسية</b>                                                                         | <ol style="list-style-type: none"> <li>1. Introduce the basic concepts and rules to enable students to solve the integration for both types, the finite and definite and their applications.</li> <li>2. Clarifying to students how to determine the areas under or between curves and illustrate these concepts by examples.</li> <li>3. Enable students to determine the volumes generated by revolving the areas about specific axis and illustrate these concepts by examples.</li> <li>4. Introducing the method of Matrix to solve simultaneous equations and illustrate these concepts by examples.</li> </ol>                                                                                                                                                                                          |
| <b>Module Learning Outcomes</b><br><b>مخرجات التعلم للمادة الدراسية</b>                                                          | <ol style="list-style-type: none"> <li>1. Describing the definite and indefinite integrals.</li> <li>2. Explaining the methods of integration.</li> <li>3. Explaining how to determine areas under curves or between curves by using several methods.</li> <li>4. Calculating the volumes of revolving areas about a specific axis by using several methods.</li> <li>5. Identifying ho to solve simultaneous equations by using the Matrix Method.</li> </ol>                                                                                                                                                                                                                                                                                                                                                 |
| <b>Indicative Contents</b><br><b>المحتويات الإرشادية</b>                                                                         | <p><u>Part A – Integrations (definite and indefinite integration)</u><br/> Introduction and the definition of integration, the rules of integrations and method of integrations on all functions including the invers functions, hyperbolic functions and transcendental functions. [30 hrs]</p> <p><u>Part B – Applications on integrations</u><br/> Determining and calculating the areas under and between curves. In addition, determining and calculating the volumes of revolving areas about axes by using several methods. [20 hrs]</p> <p><u>Part C – Matrix Method</u><br/> Introduction, definitions and types of matrices including the operations on matrices and calculating determinants, cofactors and adjoints of matrices. In addition, includes solving simultaneous equations. [8 hrs]</p> |

## Learning and Teaching Strategies

### استراتيجيات التعلم والتعليم

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategies</b> | Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students. |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Student Workload (SWL)

### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

|                                                                                |            |                                                                           |   |
|--------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------|---|
| <b>Structured SWL (h/sem)</b><br>الحمل الدراسي المنتظم للطالب خلال الفصل       | 63         | <b>Structured SWL (h/w)</b><br>الحمل الدراسي المنتظم للطالب أسبوعيا       | 4 |
| <b>Unstructured SWL (h/sem)</b><br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 62         | <b>Unstructured SWL (h/w)</b><br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4 |
| <b>Total SWL (h/sem)</b><br>الحمل الدراسي الكلي للطالب خلال الفصل              | <b>125</b> |                                                                           |   |

## Module Evaluation

### تقييم المادة الدراسية

|                             |                     | Time/Number | Weight (Marks)   | Week Due | Relevant Learning Outcome |
|-----------------------------|---------------------|-------------|------------------|----------|---------------------------|
| <b>Formative assessment</b> | <b>Quizzes</b>      | 1           | 10% (10)         | 5 and 10 | LO #1, #2 and #10, #11    |
|                             | <b>Assignments</b>  | 1           | 10% (10)         | 2 and 12 | LO #3, #4 and #6, #7      |
|                             | <b>Seminar</b>      | 1           | 10% (10)         | -        | -                         |
|                             | <b>Report</b>       | 1           | 10% (10)         | 13       | LO #5, #8 and #10         |
| <b>Summative assessment</b> | <b>Midterm Exam</b> | 2hr         | 10% (10)         | 7        | LO #1 - #7                |
|                             | <b>Final Exam</b>   | 3hr         | 50% (50)         | 16       | All                       |
| <b>Total assessment</b>     |                     |             | 100% (100 Marks) |          |                           |

### Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

|         | Material Covered                                               |
|---------|----------------------------------------------------------------|
| Week 1  | Introduction                                                   |
| Week 2  | Indefinite Integral                                            |
| Week 3  | Integral of Trigonometric Functions                            |
| Week 4  | Integral of inverse Trigonometric Functions                    |
| Week 5  | Integration Factors                                            |
| Week 6  | Integration by Parts                                           |
| Week 7  | Mid-term Exam + Products of Power of Sines and Cosines Methods |
| Week 8  | Trigonometric Substitutions                                    |
| Week 9  | Method of Partial Fraction                                     |
| Week 10 | Definite Integration                                           |
| Week 11 | Integral of Transcendental and hyperbolic functions            |
| Week 12 | Area between Curves                                            |
| Week 13 | Volume a Solid Revolution                                      |
| Week 14 | Disk Method- shell method                                      |
| Week 15 | Matrix method                                                  |
| Week 16 | Preparatory week before the final Exam                         |

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

|        | Material Covered |
|--------|------------------|
| Week 1 | -----            |

## Learning and Teaching Resources

### مصادر التعلم والتدريس

|                          | Text                                                        | Available in the Library? |
|--------------------------|-------------------------------------------------------------|---------------------------|
| <b>Required Texts</b>    | Thomas' Calculus, Early Transcendentals by George B. Thomas | Yes                       |
| <b>Recommended Texts</b> | Calculus by Howard Anton                                    | No                        |
| <b>Websites</b>          | -----                                                       |                           |

## Grading Scheme

### مخطط الدرجات

| Group                               | Grade                   | التقدير             | Marks %  | Definition                            |
|-------------------------------------|-------------------------|---------------------|----------|---------------------------------------|
| <b>Success Group<br/>(50 - 100)</b> | <b>A</b> - Excellent    | امتياز              | 90 - 100 | Outstanding Performance               |
|                                     | <b>B</b> - Very Good    | جيد جدا             | 80 - 89  | Above average with some errors        |
|                                     | <b>C</b> - Good         | جيد                 | 70 - 79  | Sound work with notable errors        |
|                                     | <b>D</b> - Satisfactory | متوسط               | 60 - 69  | Fair but with major shortcomings      |
|                                     | <b>E</b> - Sufficient   | مقبول               | 50 - 59  | Work meets minimum criteria           |
| <b>Fail Group<br/>(0 - 49)</b>      | <b>FX</b> – Fail        | راسب (قيد المعالجة) | (45-49)  | More work required but credit awarded |
|                                     | <b>F</b> – 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.