**Ministry of Higher Education and Scientific Research**
**Supervision and Scientific Evaluation Authority**
**Department of Quality Assurance and Academic Accreditation**

# Academic Program Description Form for Colleges and Institutes Academic Year

**University:** Shatt Al-Arab
**College/Institute:** Engineering
**Scientific Department:** Civil
**Date of Form Completion:** 01/09/2024


**Signature**                                                                **Signature**
**Name of Head of Department:**

Asst. Lecturer Nabeel Najm Abdullah          **Name of Scientific Assistant:** Dr. Jawad Kadhim


**Reviewed by:**
**Quality Assurance and University Performance Division**
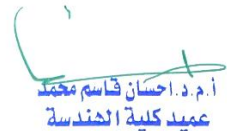**Name of Division Director:** Dr. Jasem Mohsen Yasser

**Signature:**

الدكتور
جاسم محسن ياسر
Dr.Jasim Al-Battat

أ.م. د. احسان قاسم محمد
عميد كلية الهندسة

**Dean's Approval**

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

<table>
<tr>
<td colspan="2" align="center"><b>Module Information</b><br>معلومات المادة الدراسية</td>
<td>☑ <br>☑ I</td>
</tr>
<tr>
<td><b>Module Title</b></td>
<td align="center"><b>Strength of Material II</b></td>
<td><b>Module Delivery</b><br>☑ 1</td>
</tr>
<tr>
<td><b>Module Type</b></td>
<td align="center"><b>Core</b></td>
<td rowspan="5">☐ Theory<br><br>☐ Lecture<br><br>☐ Lab<br><br>☐ Tutorial<br><br>☐ Practical<br><br>☐ Seminar</td>
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<tr>
<td><b>Module Code</b></td>
<td align="center"><b>CE213</b></td>
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<tr>
<td><b>ECTS Credits</b></td>
<td align="center"><b>5</b></td>
</tr>
<tr>
<td><b>SWL (hr/sem)</b></td>
<td align="center"><b>75</b></td>
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</table>

| Module Level | 2 | Semester of Delivery | | 1,2 |
|---|---|---|---|---|
| **Administering Department** | Type Dept. Code | **College** | Type College Code | |
| **Module Leader** | Jasim Mohsin | **e-mail** | | |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | | PH.D. |
| **Module Tutor** | Name (if available) | **e-mail** | E-mail | |
| **Peer Reviewer Name** | Name | **e-mail** | E-mail | |
| **Scientific Committee Approval Date** | 01/09/2024 | **Version Number** | 1.0 | |

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

| Module Aims, Learning Outcomes and Indicative Contents | |
|---|---|
| أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية | |
| **Module Aims**<br><br>أهداف المادة الدراسية | The objective of this course is elaborate on the knowledge of engineering mechanics (statics) and to teach the students the purpose of studying strength of materials with respect to civil engineering design and analysis. The course introduces the students to the concepts of engineering mechanics of materials and the behavior of the materials and structures under applied loads |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | Apply the knowledge of fundamental sciences mainly mathematics and physics to identify, formulate and solve civil engineering problems including stress, strain and deflection calculations as well as calculating axial force, shear and bending moment diagrams used in civil engineering analysis and design |
| **Indicative Contents**<br><br>المحتويات الإرشادية | The objectives of CE213, Strength of Materials, are to learn the principles of mechanics applied to different materials [III] and to develop problem solving skills through application of these principles to basic engineering problems. Specific topics covered in this class include: behavior of axially loaded members; torsion of circular shafts; stresses and deflections in beams; connectors in built-up beams; stress transformation under rotation of axes; principal stresses; triaxial stress and maximum shear stress; pressure vessels; and buckling behavior of columns. The course will rely on students' prerequisite knowledge of mathematics and basic science [II] in developing principles and analytical techniques of mechanics of materials. |

| Learning and Teaching Strategies | |
|---|---|
| استراتيجيات التعلم والتعليم | |
| **Strategies** | This module will be delivered with a strategy that encourage students' to participate in the discussion, exercises solving, and at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple projects involving some sampling activities that are interesting to the students. |

## Student Workload (SWL)

### الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 128 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب اسبوعيا | 9 |
| **Unstructured SWL (h/sem)**<br>الدراسي غير المنتظم للطالب خلال الفصل | 97 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب اسبوعيا | 6.46 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 225 | | |

## Module Evaluation

### تقييم المادة الدراسية

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

## Delivery Plan (Weekly Syllabus)

### المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | Shear forces and bending moments in the beams |
| **Week 2** | Shear forces and bending moments in the beam |
| **Week 3** | Shear forces and bending moments in the beam |
| **Week 4** | Graphs of shear forces and bending moments. |
| **Week 5** | Graphs of shear forces and bending moments. |

| | |
|---|---|
| **Week 6** | **Graphs of shear forces and bending moments.** |
| **Week 7** | **Bending stress in beams** |
| **Week 8** | **Bending stress in beams** |
| **Week 9** | **Bending stress in beams** |
| **Week 10** | **Bending stress in beams** |
| **Week 11** | **The deviation of bundles - Integration method** |
| **Week 12** | **The deviation of bundles - Integration method** |
| **Week 13** | **Beam deviation - The uniqueness method** |
| **Week 14** | Buckling of Columns. |
| **Week 15** | Buckling of Columns. |
| **Week 16** | **Preparatory week before the final Exam** |

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

| Learning and Teaching Resources | | |
|---|---|---|
| مصادر التعلم والتدريس | | |
| | **Text** | **Available in the Library?** |
| **Required Texts** | Mechanics of Materials-Andrew Pytel | No |
| **Recommended Texts** | Strength of Materials-Ferdinand L.Singer | No |
| **Websites** | https://www.coursera.org/courses?query=mechanics%20of%20materials | |

| Grading Scheme |||||
| مخطط الدرجات |||||
| Group | Grade | التقدير | Marks (%) | Definition |
|---|---|---|---|---|
| **Success Group (50 - 100)** | **A** - Excellent | امتاز | 90 - 100 | Outstanding Performance |
| | **B** - Very Good | جد جدا | 80 - 89 | Above average with some errors |
| | **C** - Good | جد | 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 (قد المعالجة) | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |

| | | | | |
|---|---|---|---|---|
| | | | | |