# MODULE DESCRIPTOR FORM

# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | ***Reinforced concrete 2*** | | | **Module Delivery** | |
| **Module Type** | ***CORE*** | | | **Theory**<br>**Lecture**<br>**Practical** | |
| **Module Code** | UOMU0203061 | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 75 | | | | |
| **Module Level** | 1 | | **Semester of Delivery** | 6 | |
| **Administering Department** | Building and construction techniques | | **College** | Al-Mustaqbal university | |
| **Module Leader** | Assist. lec Sally Selan Hussein | | **e-mail** | sally.selan.hussein@uomus.edu.iq | |
| **Module Leader's Acad. Title** | ***Senior Chief Engineer*** | | **Module Leader's Qualification** | ***None*** | |
| **Module Tutor** | ***None*** | | **e-mail** | ***None*** | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | 01/10/2025 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | None | **Semester** | |
| **Co-requisites module** | None | **Semester** | |
| **Module Aims, Learning Outcomes and Indicative Contents**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | | | |
| **Module Aims**<br>أهداف المادة الدراسية | Students will build on their knowledge of reinforced concrete design to understand the behavior of reinforced concrete and to design practical reinforced concrete components. | | |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | upon completion of this course the students will:<br>12. Learn the concept of analysis and design of concrete members,<br>13. Understand contemporary structural design concepts, critically evaluate design options and perform ACI code calculations.<br>14. Learn the concept of analysis and design of concrete members,<br>15. Understand contemporary structural design concepts, critically<br>16. Design RC Columns with due consideration of slenderness and biaxial effects<br>17. Design RC two-way slab systems using Direct Design Method<br>18. Design combined RC footings and retaining walls | | |

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| | 19. Design Deep beams and Corbels<br><br>20. Identify the necessity of deflection and crack control in satisfying serviceability<br>21. Apply relevant ACI Code provisions to ensure safety and serviceability of structural elements.<br>22. Identify and compute the main mechanical properties of concrete and steel.<br>23. Apply the strength method to design R.C. structural Members.<br>24. Analyze and design R.C. beams for flexure and shear. Analyze and design short and slender R.C. columns. 6. Analyze and design R.C. slabs.<br>25. Utilize advanced computer software packages (SAP2000 and/or ETABS) for the analysis and design of steel structures. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>Analysis and design of slabs[2hrs]<br>Types of slabs, Temperature and shrinkage reinforcement, Behavior of two-way edge supported slabs, Two-way column supported slabs, Direct design method for column supported slabs, Depth limitation of the ACI code, Shear design in flat plates and flat slabs. [10hrs]<br>Yield line analysis for slabs[5hrs]<br>Design and analysis of compression members[2hrs]<br>Prestressed Concrete:<br>Principles of prestressed concrete, Methods of prestressing, prestressing steel, concrete for prestressed construction; elastic flexural analysis, Flexural strength, Flexural design based on concrete stress limits; Shape selection, Tendon profiles. Loss of prestress; shear, diagonal tension and web reinforcement. [10hrs]<br>Strut and tie models:<br>Strut and tie methodology, ACI provisions for strut and tie models, Applications. [6hrs]<br>Seismic design:<br>Structural response, Seismic loading criteria, ACI special provisions for seismic design.<br>[6hrs] |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | Assessment is based on<br>1-Exams<br>2-Student feedback.<br>3- Tutorial |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 63 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 62 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.1 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## 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 |
| | **Tutorial** | 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** | 3 hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week** | **Syllabus** |
| **Week 1-4** | Analysis and design of slabs:<br>Types of slabs, Temperature and shrinkage reinforcement, Behavior of two-way edge supported slabs, Two-way column supported slabs, Direct design method for column supported slabs, Depth limitation of the ACI code, Shear design in flat plates and flat slabs. |

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| **Week 5-6** | Yield line analysis for slabs |
| **Week 7** | Design and analysis of compression members |
| **Week 8-10** | Prestressed Concrete:<br>Principles of prestressed concrete, Methods of prestressing, prestressing steel, concrete for prestressed construction; elastic flexural analysis, Flexural strength, Flexural design based on concrete stress limits; Shape selection, Tendon profiles. Loss of prestress; shear, diagonal tension and web reinforcement. |
| **Week 11-13** | Strut and tie models:<br>Strut and tie methodology, ACI provisions for strut and tie models, Applications |
| **Week 14** | Seismic design:Structural response, Seismic loading criteria, ACI special provisions for seismic design. |
| **Week 15** | **Preparatory week before the final Exam** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | **Text** | **Available in the Library?** |
|---|---|---|
| *Required Texts* | **1.** ACI 318 M-2014: Building Code Requirements for Structural Concrete and Commentary<br>**2.** "Design of Concrete Structures" by A.H. Nilson, D. Darwin, C.W. Dolan, 14th Ed., McGraw-Hill.<br>**3.** "Design of Reinforced Concrete ACI 318-05 Code Edition." J.C. McCormac and James Nelson, 7th Ed, Wiley. | Yes |
| *Recommended Texts* | "Reinforced concrete design" by Chu-Kia Wand and Charles G. Salmon. | No |
| *Websites* | | |

**APPENDIX:**

**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** | **FX** – Fail | مقبول بقرار | (45-49) | More work required but credit awarded |

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|---|---|---|---|---|
| **(0 – 49)** | **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.

ملاحظة: هذا النموذج تم وضعه وتقديمه من قبل مديرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي