

<b>Academic Year: 2023-2024</b>		<b>Semester: Fall</b>	<b>Starting Date: 15-10-2023</b>																								
<b>Course Name</b>	Design of R. C. Structures																										
<b>Module Language</b>	English																										
<b>Instructor</b>	Dr. Muhammad Ismaiel Omer																										
<b>Teaching Assistance(s)</b>	None																										
<b>College/University</b>	College of Engineering – Salahaddin University-Erbil																										
<b>Department</b>	Civil																										
<b>Semester Duration</b>	15 weeks																										
<b>Course Overview</b>	<p>Reinforced concrete may be the most usable material available for construction. It can be used for almost structures, great or small, buildings, bridges, pavements, dams, retaining walls, tunnels, drainage and irrigation facilities, tanks, and so on. The theory of reinforced concrete is an application of the laws of statics and mechanics of materials. The objective is to understanding of the behavior of structural concrete elements, and the basic performance of concrete and steel as structural material. On the other hand, the main business of the structural engineer is to design members and overall structures safety (satisfied the design rule), efficiency, and is capable of being built at a reasonable cost (economy).</p>																										
<b>Course Objectives</b>	<p>The main objective of these courses:</p> <ol style="list-style-type: none"> <li>To present the basic theory of structural mechanics of concrete and methods of design for bending, shear, torsion, axial, or a combination of them, development length of steel bars, cracks of concrete and the deflection of members.</li> <li>Provide the future engineers with the means of designing and analyzing of various reinforced concrete members like beam, columns, footing, and slab.</li> <li>Provide the practical requirements (code specifications) of design for each element separately.</li> </ol> <p>The application necessary to prepare students for more advance study for engineering practice are emphasized throughout</p>																										
<b>Course Contents</b>	<table> <thead> <tr> <th>Week</th> <th>Lecture</th> </tr> </thead> <tbody> <tr> <td>1st</td> <td>Ch1-Introduction and Overview</td> </tr> <tr> <td>2nd</td> <td>Ch2-Analysis &amp; Design of Rectangular Beams</td> </tr> <tr> <td>3rd</td> <td>Ch3-Analysis &amp; Design of T - Beams</td> </tr> <tr> <td>4th</td> <td>Ch4-Shear and Diagonal Tension</td> </tr> <tr> <td>5th</td> <td>Ch5-Columns Introduction</td> </tr> <tr> <td>6th</td> <td>Ch6-Columns Axial and Bending</td> </tr> <tr> <td>7th</td> <td>Ch7-Slender Columns-1</td> </tr> <tr> <td>8th</td> <td>Ch7-Slender Columns-2</td> </tr> <tr> <td>9th</td> <td>Midterm Exam</td> </tr> <tr> <td>10th</td> <td>Ch8-One way Stair and Tow way slab-1</td> </tr> <tr> <td>11th</td> <td>Ch8-One way Stair and Tow way slab-2</td> </tr> </tbody> </table>			Week	Lecture	1st	Ch1-Introduction and Overview	2nd	Ch2-Analysis & Design of Rectangular Beams	3rd	Ch3-Analysis & Design of T - Beams	4th	Ch4-Shear and Diagonal Tension	5th	Ch5-Columns Introduction	6th	Ch6-Columns Axial and Bending	7th	Ch7-Slender Columns-1	8th	Ch7-Slender Columns-2	9th	Midterm Exam	10th	Ch8-One way Stair and Tow way slab-1	11th	Ch8-One way Stair and Tow way slab-2
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	<p>12th Ch9-Building Frames-1</p> <p>13th Ch9-Building Frames-2</p> <p>14th Seminar Presentation</p> <p>15th Final Exam</p>
<b>Textbooks and References</b>	<p>1. M. Nadim Hassoun and Akthem Al-Manaseer "Structural Concrete Theory and Design" 7th Edition, Wily, 2020.</p> <p>2. ACI 318M-19 `` Building Code Requirements for Structural Concrete (ACI 18M-19) and Commentary (ACI 318 RM-19) ``American Concrete Institute Farmington Hills. 2019.</p>
<b>Teaching Style</b>	3 hrs. in Class
<b>Requirements for credit points</b>	<p>For the award of credit points, it is necessary to pass the module exam. It contains:</p> <p>An examination during the academic semester, Quizzes, Assignments, and Final examination.</p> <p><b>Student's attendance is required in all classes.</b></p>
<b>Credit ECTS</b>	6
<b>Grade Distribution</b>	<p>The following grade system is used for the evaluation of the module exam:</p> <p>The module exam is based on the summation of two categories of evaluations:</p> <p><b>First: (50%)</b> of the mark is based on the academic semester effort which includes</p> <ul style="list-style-type: none"> <li>- Midterm Exam = 20%.</li> <li>- Quizzes = 10%</li> <li>- Seminar = 10%</li> <li>- Assignments = 10%</li> </ul> <p><b>Second: (50%)</b> of the mark is based on the final examination that is comprehensive for the whole of the study materials reviewed during the academic semester.</p>
<b>Workload</b>	Workload 10hrs/w (150hrs/s): Contact face-to-face 3hrs/w (45hrs/s) and Non-Contact Self learning 7hrs/w (105hrs/s)