

<b>Department of Civil Engineering</b>			
<b>Design of Reinforced Concrete Structures I (61390)</b>			
<b>Total Credits</b>	<b>3</b>		
<b>major compulsory</b>			
<b>Prerequisites</b>	P1 : Structural Analysis I (61315)		
<b>Course Contents</b>			
Students are introduced to the definitions and design theories, analysis and design of structural elements for bending, shear force and axial force. Application on design of structural elements: slabs, beams, short columns and isolated (single) footings. Development of reinforcing steel.			
<b>Intended Learning Outcomes (ILO's)</b>		<b>Student Outcomes (SO's)</b>	<b>Contribution</b>
1	design reinforced concrete sections and elements for flexure.	C	40 %
2	design reinforced concrete sections and elements for shear.	C	15 %
3	Establish development and cut of bars for reinforcing flexural steel and do steel reinforcement details.	C	15 %
4	design of short columns for axial force and bending moments (uniaxial).	C	20 %
5	design of single footings.	C	10 %
<b>Textbook and/ or References</b>			
Textbook: Arthur H. Nilson, David Darwin and Charles W. Dolan: Design of concrete structures, fourteenth edition in SI units, 2010 References: 1- James K. Wight and James G. MacGregor: Reinforced Concrete Mechanics and Design, Fifth edition, Prentice Hall, 2008 2- Edward G. Naway: Reinforced Concrete a Fundamental Approach, Sixth edition, Prentice Hall, 2009 3- ACI Committee 318: Building Code Requirements for Structural Concrete (ACI 318-08) and Commentary (ACI 318R-08). American Concrete Institute, Farmington, MI, 2008			
<b>Assessment Criteria</b>		<b>Percent (%)</b>	
First Exam		20 %	
Second Exam		20 %	
Homeworks		10 %	
Projects		10 %	
Final Exam		40 %	
<b>Course Plan</b>			
<b>Week</b>	<b>Topic</b>		
1 &2	Properties of reinforced concrete		
3, 4, 5 ,6 &7	Design for flexure- beams and one way slabs		
8 &9	Design for shear		
10 &11	Development of reinforcing steel		
12, 13 &14	Design of short columns		
15	Design of single footing		