

BANGLADESH SWEDEN POLYTECHNIC INSTITUTE, KAPTAI
SEMESTER PLAN FOR THEORETICAL CONTENT
TECHNOLOGY: CONSTRUCTION TECHNOLOGY

Subject Name: Design of Structure -2 (Subject Code: 6474)

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Week No.	Content No.	Lesson No.	Class/ Quiz Test	Brief Description of Content
1	1.1-1.3	01-03		1.1 Describe different types of reinforced cement concrete floor slab. 1.2 State the loads to be considered in designing reinforced cement concrete floor slabs. 1.3 Compare between reinforced cement concrete one-way and two-way solid slab.
2	2.1-2.3	04-06		2.1 State the minimum thickness of reinforced cement concrete one-way solid slab. 2.2 Explain the necessity of shrinkage and temperature reinforcement in one-way solid slab. 2.3 Mention the steps to be followed in designing reinforced cement concrete one-way solid slab.
3	2.4-2.5	07-09	Quiz-01	2.4 Design reinforced cement concrete one-way solid slab with supplied data in both WSD and USD methods. 2.5 Design a reinforced cement concrete cantilever solid slab in WSD method.
4	2.6-2.7	10-12		2.6 Design a reinforced cement concrete balcony slab in WSD method. 2.7 Design a one-way reinforced brick(RB) slab in WSD method.
5	3.1-3.3	13-15		3.1 State the minimum thickness of reinforced cement concrete two-way solid slab. 3.2 Explain the use of bending moment coefficient in designing reinforced cement concrete two-way solid slab. 3.3 State the meaning of column strip and middle strip in two-way solid slab.
6	3.1-3.5	16-18	Class Test-01	3.4 Design reinforced cement concrete two-way solid slab with supplied data in WSD method. 3.5 Explain the necessity of corner reinforcement in two-way solid slab.
7	4.1-4.2	19-21		4.1 List various kinds of stair. 4.2 Mention the relation in between tread and rise according to American standard and Indian standard.
8	4.3-4.4	22-24		4.3 State the formula used in calculating weight of waist slab and steps. 4.4 Design reinforced cement concrete stair slab in WSD method.
9	5.15.4	25-27	Quiz-02	5.1 Describe different types of reinforced cement concrete column. 5.2 State the minimum size and minimum number of rod required for tied column and spiral column. 5.3 Explain the effective length of column. 5.4 Describe reduction factor of column.
10	5.5-5.8	28-30		5.5 Determine the spacing of lateral ties and spirals of column. 5.6 Determine the safe load on column (by using table). 5.7 Design reinforced cement concrete tied column. 5.8 Design reinforced cement concrete spiral column.
11	6.1-6.3	31-33		6.1 Explain safe bearing capacity of soil. 6.2 Determine the width of foundation bed of spread footing and RCC wall footing. 6.3 Describe the critical section for moment, shear and bond of brick wall footing and concrete wall footing.
12	6.4-6.7	34-36	Class Test-02	6.4 Design reinforced cement concrete footing for brick wall and concrete wall. 6.5 Describe the critical section for moment, shear and bond of concrete column footing. 6.6 Design the independent reinforced cement concrete column(blocked) footing. 6.7 Design the independent reinforced cement concrete column (sloped) footing.

13	7.1-7.4	37-39		<p>7.1 Name the different types of retaining wall with typical sketches.</p> <p>7.2 Calculate the earth pressure related to cantilever non surcharged retaining wall and surcharged retaining wall.</p> <p>7.3 Find out the position of the resultant pressure of weight of retaining wall and earth pressure for non surcharged retaining wall and surcharged retaining wall.</p> <p>7.4 Explain the factors affecting the stability of cantilever retaining wall.</p>
14	7.5-7.7	40-42		<p>7.5 Determine the maximum and minimum pressure on the foundation bed due to different condition of eccentricity.</p> <p>7.6 Design reinforced cement concrete cantilever non surcharged retaining wall and surcharged retaining wall.</p> <p>7.7 Check the stability of cantilever non-surcharged retaining wall and surcharged retaining wall.</p>
15	8.1-8.4	43-45	Class Test-03	<p>8.1 Define prestressed concrete.</p> <p>8.2 Compare the advantages, disadvantages and limitations of reinforced cement concrete and prestressed concrete.</p> <p>8.3 Describe the properties of concrete used for prestressed concrete.</p> <p>8.4 Describe the properties of steel strand used for prestressed concrete.</p>
16	8.5-8.7	46-48		<p>8.5 Describe the procedure of prestressing the wire/tendon pre-tensioning.</p> <p>8.6 Describe the procedure of prestressing the wire/tendon post-tensioning.</p> <p>8.7 Mention the uses of prestressed concrete in Bangladesh.</p> <p>Explain the reinforcement placement of the following structures:</p> <ol style="list-style-type: none"> a. Raft or Mat foundation b. Combined footing and cantilever footing c. Basement floor d. Column and Beam Connection e. Two-span box culvert f. Bridge deck slab of T-beam g. Sluice gate h. Counter fort retaining wall i. Flat slab & Flat plate slab j. Ramp k. Helical stair slab l. spiral stair slab m. Overhead water tank of rectangular and dome shaped. n. Under ground water reservoir of rectangular .
REVIEW THE SYLLABUS				

REFERENCE BOOKS

- 1 Design of Concrete Structure - Winter, Urquahert and Nelson
- 2 Design of RCC Structure - Abul Faraz Khan