

BANGLADESH SWEDEN POLYTECHNIC INSTITUTE, KAPTAI
SEMESTER PLAN
CONSTRUCTION TECHNOLOGY

Teacher Name: Md. Rashidul Islam(R.I) **Subject :** Design of Structure -2

THEORETICAL

Week No.	Content No.	Brief Description of Content
01	Understand the concept of floor/roof slab.	1.1 Describe different types of reinforced cement concrete floor/roof slab. 1.2 State the loads to be considered in designing reinforced cement concrete floor slabs. 1.3 State the way to determine the dead load and live load. 1.4 Compare between one-way and two-way solid reinforced cement concrete slab.
02-03	Understand the principles of designing reinforced cement concrete one-way solid slab.	2.1 State the minimum thickness of reinforced cement concrete one-way slab. 2.2 Explain the necessity of shrinkage and temperature reinforcement in one-way slab. 2.3 Mention the steps to be followed in designing reinforced cement concrete one-way slab. 2.4 Design reinforced cement concrete one-way slab with supplied data in both WSD and USD methods. 2.5 Design a reinforced cement concrete cantilever slab in WSD method. 2.6 Design a one-way reinforced brick (RB) slab in WSD method. 2.7 Calculate the load carrying capacity of a one way slab with supplying data.
04	1ST Class Test	Chapter 01 to 02
	Understand the principles of designing reinforced cement concrete two-way slab.	3.1 State the minimum thickness of reinforced cement concrete two-way slab. 3.2 Explain the use of bending moment coefficient in designing reinforced cement concrete two way slab. 3.3 State the meaning of column strip and middle strip in two-way slab. 3.4 Design reinforced cement concrete two-way slab with supplied data in WSD method. 3.5 Explain the necessity of corner reinforcement in two-way slab. 3.6 Design a reinforced cement concrete balcony slab in WSD method . 3.7 Calculate the load carrying capacity of a two way slab with supplying data.
05	. Understand the principles of designing reinforced cement concrete stair slab.	4.1 List various types of stair. 4.2 Mention the relation between tread and rise according to American standard and BNBC. 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.

06	Understand the principles of designing reinforced cement concrete Axially Loaded columns.	<p>5.1 Describe different types of reinforced cement concrete column.</p> <p>5.2 State the minimum size and minimum number of rod required for tied column and spiral column.</p> <p>5.3 Explain the effective length of column.</p> <p>5.4 Describe reduction factor of column.</p> <p>5.5 Determine the spacing of lateral ties and spirals of column.</p> <p>5.6 Determine the safe load on column (by using table).</p> <p>5.7 Design a reinforced cement concrete tied column.</p> <p>5.8 Design a reinforced cement concrete spiral column.</p>
	Quiz Test	chapter-01 to 05

07	6. Understand the principles of designing reinforced cement concrete footing.	<p>6.1 Determine the width of foundation bed of spread footing and RCC wall footing.</p> <p>6.2 Describe the critical section for moment, shear and bond of brick wall footing and concrete wall footing.</p> <p>6.3 Design a reinforced cement concrete footing for brick wall.</p> <p>6.4 Describe the critical section for moment, shear and bond of concrete column footing.</p> <p>6.5 Design the independent reinforced cement concrete square and rectangular column (blocked) footing.</p> <p>6.6 Design the independent reinforced cement concrete square and rectangular column (sloped) footing.</p> <p>6.7 Design of a combined footing.</p>
	2nd Class Test	Chapter 03-07
08-09	Understand the principles of designing reinforced cement concrete cantilever retaining wall.	<p>7.1 Describe the different component of a cantilever retaining wall.</p> <p>7.2 Calculate the earth pressure related to cantilever non-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.</p> <p>7.4 Explain the factors affecting the stability of cantilever retaining wall.</p> <p>7.5 Determine the maximum and minimum pressure on the foundation bed due to different condition of eccentricity.</p> <p>7.6 Design a reinforced cement concrete cantilever non-surcharged retaining wall.</p> <p>7.7 Check the stability of cantilever non-surcharged retaining wall.</p>
10	Understand the concept of pre-stressed concrete.	<p>8.1 Define pre-stressed concrete.</p> <p>8.2 Compare the advantages and limitations of reinforced cement concrete and pre-stressed concrete.</p> <p>8.3 Describe the properties of concrete used for pre-stressed concrete.</p> <p>8.4 Describe the properties of steel strand used for pre-stressed concrete.</p> <p>8.5 Describe the procedure of pre-stressing the wire/tendon pre-tensioning.</p> <p>8.6 Describe the procedure of pre-stressing the wire/tendon post-tensioning.</p> <p>8.7 Mention the uses of pre-stressed concrete in Bangladesh.</p>

11	9. Understand the typical drawing of miscellaneous reinforced cement concrete structure.	9.1 Explain the Re-bar placement of the following structures: a. Raft/Mat foundation b. Combined footing and cantilever footing c. Pile with pile cap c. Basement floor d. Column and Beam Connection e. Two-span box culvert f. Bridge deck slab of T-beam g. Counterfort retaining wall h. Flat slab & Flat plate slab i. Ramp j. Helical stair slab k. spiral stair slab l. Overhead water tank of rectangular and dome shaped. m. Under ground water reservoir of square, rectangular and circular shape
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Bangladesh Sewden polytechnic Institute, Kaptai.

Semester plan

Department :Construction Technology

Md.Rashidul Islam (R.I)

Subject: Design of Structure -2

Parctical

Si.n o	Job no	Week	Description
01	01	1 st	Prepare a model of one-way slab reinforcement as per drawing (simply supported/Semicontinuous/Fully continuous).
02	02	2 nd	Prepare a model of cantilever slab reinforcement as per drawing.
03	03	3 rd	Prepare a model of two-way slab reinforcement as per drawing.
04	04	4 th	Prepare a model for RCC stair slab reinforcement as per drawing.
05	05	5 th	5. Prepare a model of square/rectangular tied column with footing as per drawing
06	06	6 th	Prepare a model of spiral column with footing as per drawing.
07	07	7 th	Prepare a model for RCC wall footing as per drawing.
08	08	8 th	Prepare a model for cantilever retaining wall as per drawing.
09	09	9 th	Note-1: Step to be followed: * Collect the MS rod. * Straight the MS rod
10	10	10 th	Class teacher may arrange a field/industry visit to see the practical reinforcement fabrication works of any RCC structure or any construction project. * Make suitable groups of student

REFERENCE BOOKS

1. Design of Concrete Structure - Winter, Urquahert and Nelson
2. Treasure of RCC - Shushil Kumar
3. Design of RCC Structure - Abul Faraz Khan
4. Simplified Design of Reinforced Concrete - H Parker

