

Subject Teacher : M. Zahidul Islam
Subject Name : DESIGN OF STRUCTURE – II
Subject Code : 66474
Technology : Civil
Semester : 7th
Reference Book : DESIGN OF STRUCTURE – II

Marks	Grade Point	Letter Grade	Marks	Grade Point	Letter Grade
80>	4.00	A+	55-59	2.75	B-
75-79	3.75	A	50-54	2.50	C+
70-74	3.50	A-	45-49	2.25	C
65-69	3.25	B+	40-44	2.00	D
60-64	3.00	B	0-39	0.00	F

Mark Distribution (for 150 Marks)			
Theory Marks		Practical Marks	
Midterm	20	PC	25
Class test	05	PF	25
Quiz test	05	-	-
Final	120	-	-
Total	150	Total	50

INTENTION

Class Time Distribution (90 Minutes)	
Follow up absent students	5
Previous class review	10
Present class topic discussion	60
Present class topic review	10
Next class topic	5
Total	90

- ☐ ☐ To be able to select the suitable reinforcement and section required for reinforced Cement concrete solid floor / roof slab and column.
- ☐ ☐ ☐ To be able to select the suitable reinforcement and section required for reinforced Cement concrete stair slab.
- ☐ ☐ To be able to select the suitable reinforcement and section required for reinforced Cement concrete footing for brick wall and concrete wall.
- ☐ ☐ To be able to select the suitable reinforcement and section required for reinforced Cement concrete column footing.
- ☐ ☐ To be able to select the suitable reinforcement and section required for reinforced Cement concrete cantilever retaining wall.
- ☐ ☐ To be able to supervise the placement of reinforcement for all types of reinforced Cement concrete works.
- ☐ ☐ To be able to acquire preliminary knowledge about pre-stressed concrete.

SHORT DESCRIPTION

Design of reinforced cement concrete one-way & two-way solid slab, stair slab, column, wall footing, column footing and cantilever retaining wall; Pre-stressed concrete and Miscellaneous RCC structures.

THEORY				
Lecture	Chapter	Supporting Equipment	Topic	Benefits
01	Understand the concept of floor slab.	https://www.youtube.com/watch?v=8-v6hgl_ERE	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.	To Achieve knowledge on the concept of floor slab.
02	Understand the principles of designing reinforced cement concrete one-way solid slab.	https://www.youtube.com/watch?v=bAbaxBRehc8	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. 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. 2.6 Design a reinforced cement concrete balcony slab in WSD	To Achieve knowledge on the principles of designing reinforced cement concrete one-way solid slab.

			method. 2.7 Design a one-way reinforced brick (RB) slab in WSD method.	
	Practical Class	MS ROAD, GI WIRE, RAIL, ROAD CUTTER, CLARER, HAMMER, WIRE BINDER	Prepare a model of one-way slab reinforcement as per drawing. (simply supported/Semi-continuous/Fully continuous)	TO KNOW HOW TO BUILD ONE WAY SLAB.
	Review Class		Chapter: 1-2 (Regarding students problem)	To know clearly the upward lessons.
	Quiz Test / Class Test	Theory Base/ Practical Base Should mentioned	Chapter 1 & Chapter 2	To know the condition of the students.
03	Understand the principles of designing reinforced cement concrete two-way solid slab.	Computer, Projector, Internet You Tube Link: https://www.youtube.com/results?search_query=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3D0GjVE2KNNMY	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. 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.	To Achieve knowledge on the principles of designing reinforced cement concrete two-way solid slab.
	Practical Class	MS ROAD, GI WIRE, RAIL, ROAD CUTTER, CLARER, HAMMER, WIRE BINDER	Prepare a model of two-way slab reinforcement as per drawing.	TO KNOW HOW TO BUILD TWO WAY SLAB.
04	Understand the principles of designing reinforced cement concrete stair slab.	Computer, Projector, Internet	4.1 List various kinds of stair. 4.2 Mention the relation in between tread and rise according to American standard and Indian standard. 4.3 State the formula used in calculating weight of waist slab and steps. 4.4 Design reinforced cement	To Achieve knowledge on the principles of designing reinforced cement concrete stair slab.

		You Tube Link: https://www.youtube.com/watch?v=-FYzoeETI-A	concrete stair slab in WSD method.	
	Review Class		Chapter: 3-4 (Regarding students problem)	To know clearly the upward lessons.
	Quiz Test / Class Test	Theory Base/ Practical Base Should mentioned	Chapter 3 & Chapter 4	To know the condition of the students.
MID EXAM				

05	Understand the principles of designing reinforced cement concrete column.	Computer, Projector, Internet You Tube Link: https://www.youtube.com/watch?v=KBL5qGFmr0w	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. 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.	To Achieve knowledge on principles of designing reinforced cement concrete column.
	Practical Class	MS ROAD, GI WIRE, RAIL, ROAD CUTTER, CLARER, HAMMER, WIRE BINDER	Prepare a model of square/rectangular tied column with footing as per drawing.	TO KNOW HOW TO BUILD COLUMN.
	Understand the principles of designing reinforced cement concrete footing.	You Tube Link: https://www.youtube.com/watch?v=C3OMuBAblvQ	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	

06			concrete wall footing. 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.	To Achieve knowledge on principles of designing reinforced cement concrete footing.
	Practical Class	MS ROAD, GI WIRE, RAIL, ROAD CUTTER, CLARER, HAMMER, WIRE BINDER	Prepare a model for RCC wall footing as per drawing.	TO KNOW HOW TO BUILD RCC WALL FOOTING.
	Review Class		Chapter: 4-6 (Regarding students problem)	To know clearly the upward lessons.
	Quiz Test / Class Test	Theory Base/ Practical Base Should mentioned	Chapter 4, Chapter 5 & Chapter 6	To know the condition of the students.
07	Understand the principles of designing reinforced cement concrete cantilever retaining wall.	https://www.youtube.com/watch?v=V5SmsQHJo8Q	7.1 Name the different types of retaining wall with typical sketches. 7.2 Calculate the earth pressure related to cantilever non-surcharged retaining wall and surcharged retaining wall. 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. 7.4 Explain the factors affecting the stability of cantilever retaining wall. 7.5 Determine the maximum and minimum pressure on the foundation bed due to	To Achieve knowledge on principles of designing reinforced cement concrete cantilever retaining wall.

			different condition of eccentricity. 7.6 Design reinforced cement concrete cantilever non-surcharged retaining wall and surcharged retaining wall. 7.7 Check the stability of cantilever non-surcharged retaining wall and surcharged retaining wall.	
	Practical Class	MS ROAD, GI WIRE, RAIL, ROAD CUTTER, CLARER, HAMMER, WIRE BINDER	Prepare a model of spiral column with footing as per drawing.	TO KNOW HOW TO BUILD RCC WALL FOOTING.
08	Understand the concept of pre stressed concrete.	You Tube Link: https://www.youtube.com/watch?v=5gHoqgwv61A	8.1 Define prestressed concrete. 8.2 Compare the advantages, disadvantages and limitations of reinforced cement concrete and pre-stressed concrete. 8.3 Describe the properties of concrete used for prestressed concrete. 8.4 Describe the properties of steel strand used for prestressed concrete. 8.5 Describe the procedure of pre-stressing the wire/tendon pre-tensioning. 8.6 Describe the procedure of pre-stressing the wire/tendon post-tensioning. 8.7 Mention the uses of pre-stressed concrete in Bangladesh.	To Achieve knowledge on concept of prestressed concrete.
09	Understand the typical drawing of miscellaneous reinforced cement concrete structure.	Computer, Projector, Internet You Tube Link: https://www.youtube.com/watch?v=lpkeYbE4ULM	Explain the reinforcement placement of the following structures: a. Raft or Mat foundation b. Combined footing and cantilever footing c. Basement floor d. Column and Beam Connection	To Achieve knowledge on typical drawing of miscellaneous reinforced cement concrete structure.

			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 Class		Chapter: 07-09 (Regarding students problem)	To know clearly the upward lessons.
	Quiz Test / Class Test	Theory Base/ Practical Base Should mentioned	Chapter 07, Chapter 08 & Chapter 09	To know the condition of the students.
REVIEW CLASS				
	Presentation	Laptop, projector	Short presentation by group or individual student.	
FINAL EXAM				