Techno India NJR Institute of Technology

Course File

CONCRETE STRUCTURES DESIGN (5CE4-21)

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RAJASTHAN TECHNICAL UNIVERSITY, KOTA
Syllabus
3rd Year- V Semester: B.Tech. (Civil Engineering)

5CE4-21: CONCRETE STRUCTURES DESIGN

Credit: 1.5   Max. Marks: 100(IA:60, ETE:40)

0L+0T+3P   End Term Exam: 3 Hours

SN	Contents	Hours
1	Revision of Typical problems of BMD and SFD	3
2	Analysis and Design of singly reinforced rectangular beam section for Flexure, based on Working stress design philosophy.	3
3	Analysis and Design of singly reinforced rectangular beam section for Flexure, based on Limit State design philosophy.	3
4	Analysis and Design of doubly reinforced rectangular beam section For flexure, based on Limit State design philosophy.	3
5	Analysis and Design of flanged beam section for flexure, based on Limit State design philosophy.	3
6	Problems on Limit state of serviceability for deflection as per codal Provisions of empirical coefficients.	3
7	Analysis and design of prismatic sections for shear using LSD	3
8	Problems on limit state of collapse in bond	3
9	Analysis and design of one way slabs using LSM,	3
10	Analysis and design of two way slabs using LSM,	3
11	Analysis and design of short axially loaded columns	3
12	Analysis and design of footing	3
13	Analysis and Design of beams for torsion as per codal method.	3
	TOTAL	**39**

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Dr. Pankaj Kumar Porwal
(Principal)

Course Overview:

Student will learn basics of "Design of concrete structures" from these 39 hours lab course. The student will able to understand the properties of concrete and steel and the behavior of reinforced concrete as a structural material and also, Students will be able to design of reinforced concrete structural members such as beams, slabs, footings, and columns.

Course Outcomes:

CO.NO.	Cognitive Level	Course Outcome
1	Application	Students will be able to identify the design mix and compute the Characteristic strength of concrete.
2	Comprehension	Students will be able to classify the basic philosophy of Working Stress and Limit State Design of RCC structures.
3	Synthesis	Students will be able to design different structural components like beams, columns, slabs etc.
4	Synthesis	Students will be able to prepare detailed reinforcement diagram of Each component using techniques involved in the course.
5	Application	Students will be able to compute shear, deflection and Development length.

Prerequisites:
1) Students will be able to identify the design mix and compute the characteristic strength of Concrete.
2) Students will be able understand the basic philosophy of Working Stress and Limit State Design of RCC structures.
3) Students will be able to design different structural components like beams, columns, slabs and footing etc.
4) Students will be able to compute shear, deflection and development length.
5) Students will be able to draw detailed reinforcement diagram of each component using techniques involved in the course.

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Course Outcome Mapping with Program Outcome:

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO421.1	3	3	3	3	2	2	2	1	1	1	2	3	2	1	1
CO422.2	3	2	2	3	2	1	2	1	1	1	1	1	2	1	1
CO423.3	2	2	2	1	2	2	2	2	1	1	2	1	2	1	1
CO424.4	2	2	2	2	1	1	0	0	0	1	0	0	2	1	1
CO425.5	2	2	2	1	2	2	2	2	1	1	2	1	2	1	1
CO425 (AVG)	2.4	2.2	2.2	2	1.8	1.6	1.6	1.2	0.8	1	1.4	1.2	2	1	1

Course Coverage Module Wise:

Lab No.	Exp. No.	Topic
1	1	Revision of Typical problems of BMD and SFD
2	2	Analysis and Design of singly reinforced rectangular beam section for Flexure, based on Working stress design philosophy.
3	3	Analysis and Design of singly reinforced rectangular beam section for Flexure, based on Limit State design philosophy
4	4	Analysis and Design of doubly reinforced rectangular beam section For flexure, based on Limit State design philosophy
5	5	Analysis and Design of flanged beam section for flexure, based on Limit State design philosophy
6	6	Problems on Limit state of serviceability for deflection as per codal Provisions of empirical coefficients.
7	6	Analysis and design of prismatic sections for shear using LSD
8	8	Problems on limit state of collapse in bond
9	9	Analysis and design of one way slabs using LSM
10	10	Analysis and design of two way slabs using LSM

Assessment Methodology:

1. Practical exam using Advance Surveying Lab software.
2. Internal exams and Viva Conduct.
3. Final Exam (practical paper) at the end of the semester.

TEACHING AND LEARNING RESOURCES UNIT-WISE

1. FUNDAMENTAL CONCEPTS OF DESIGN PHILOSOPHY OF RC MEMBERS

VideoTutorials:

http://www.nptelvideos.com/video.php?id=1648&c=11

http://www.nptelvideos.com/video.php?id=1644&c=11

http://www.nptelvideos.com/video.php?id=1645&c=11

http://www.nptelvideos.com/video.php?id=1640&c=11

Theory concepts:

https://drive.google.com/drive/u/0/folders/1xOW8yP5YXYPbFcWisWAclrf02pfcfgBC

https://drive.google.com/drive/u/0/folders/1qrfuXk48BAs1htlQQ3TsnJ5BNDUsfc3d

Sample Quiz:

https://www.onlineinterviewquestions.com/rcc-structures-design-mcq/

https://drive.google.com/drive/u/0/folders/12mtJqoOmzcPMiLx0b-LF5uP7yibAvDoQ

2. LIMIT STATE DESIGN: LIMIT STATE DESIGN AND SERVICEABILITY

VideoTutorials:

http://www.nptelvideos.com/video.php?id=1641&c=11

http://www.nptelvideos.com/video.php?id=1635&c=11

http://www.nptelvideos.com/video.php?id=1643&c=11

http://www.nptelvideos.com/video.php?id=1642&c=11

http://www.nptelvideos.com/video.php?id=1634&c=11

http://www.nptelvideos.com/video.php?id=1639&c=11

Theory concepts:

https://drive.google.com/drive/u/0/folders/1xOW8yP5YXYPbFcWisWAclrf02pfcfgBC

https://drive.google.com/drive/u/0/folders/1qrfuXk48BAs1htlQQ3TsnJ5BNDUsfc3d

Sample Quiz:

https://edurev.in/course/quiz/attempt/-1_Test-RCC--Concrete-Structures--1-/4146f869-86bb-433f-8751-4f3d06ea7c84

https://teswesm.com/online-test/design-of-concrete-structures-mcqs-set-2/205/20-20

3. SLABS: ANALYSIS AND DESIGN OF ONE WAY USING LSM

VideoTutorials:

http://www.nptelvideos.com/video.php?id=1646&c=11

Theory concepts:

https://drive.google.com/drive/u/0/folders/1xOW8yP5YXYPbFcWisWAclrf02pfcfgBC

https://drive.google.com/drive/u/0/folders/1qrfuXk48BAs1htlQQ3TsnJ5BNDUsfc3d

Sample Quiz:

https://www.onlineinterviewquestions.com/rcc-structures-design-mcq/

4. DESIGN OF COLUMNS AND FOOTING AND TORSION:

VideoTutorials:

http://www.nptelvideos.com/video.php?id=1637&c=11

http://www.nptelvideos.com/video.php?id=1636&c=11

http://www.nptelvideos.com/video.php?id=1622&c=11

Theory concepts:

https://drive.google.com/drive/u/0/folders/1xOW8yP5YXYPbFcWisWAclrf02pfcfgBC

https://drive.google.com/drive/u/0/folders/1qrfuXk48BAs1htlQQ3TsnJ5BNDUsfc3d

Sample Quiz:

https://www.examveda.com/civil-engineering/practice-mcq-question-on-rcc-structuresdesign/

https://expertmcqs.com/rcc-structures-design-mcq-test-online-quiz/