



SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

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Department of Civil Engineering		LP: Rev. No: 03 Date: 23/07/2022
B.E/B.Tech/M.E/M.Tech : Civil Engineering		
Regulation:2018		
PG Specialisation	: NA	
Sub. Code / Sub. Name	: CE18021/ Repair and Rehabilitation of Structures	
Unit	: I	

Unit Syllabus: Maintenance and Repair Strategies

9

Maintenance, Repair and Rehabilitation, Facets of Maintenance, importance of Maintenance, Various aspects of Inspection, Assessment procedure for evaluating a damaged structure, causes of deterioration.

Objective: To impart knowledge about Maintenance and Repair Strategies.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Maintenance: Definition, types of maintenance	5-Ch.13; Pg.319-320, 6-Ch.1; Pg.6	PPT
2	Definition of Repair and Rehabilitation	5-Ch.10 & 11; Pg.251 & 267	PPT
3	Facets of Maintenance	5-Ch.13; Pg.319-320	PPT
4	Importance of Maintenance	5-Ch.13; Pg.320-321	PPT
5	Various aspects of Inspection	1-Ch.2; Pg.15&22, 5-Ch.4; Pg.75-79 6-Ch.4; Pg.55-58	PPT
6	Assessment procedure for evaluating a damaged structure	5-Ch.4; Pg.79-82 6-Ch.4; Pg.61-80	PPT
7	Assessment procedure for evaluating a damaged structure	5-Ch.4; Pg.79-82 6-Ch.4; Pg.61-80	PPT
8	Causes of deterioration of structures	1-Ch.2; Pg.15-21, 5-Ch.1,2; Pg.5-44 6-Ch.3; Pg.39-54	PPT
9	Causes of deterioration of structures	1-Ch.2; Pg.15-21, 5-Ch.1,2; Pg.5-44 6-Ch.3; Pg.39-54	PPT
Content beyond syllabus covered (if any):			

* Session duration: 50 minutes



Sub. Code / Sub. Name: CE18021/ Repair and Rehabilitation of Structures

Unit : II

Unit Syllabus: Strength and Durability of Concrete

9

Quality assurance for concrete – Strength, Durability and Thermal properties, of concrete - Cracks, different types, causes – Effects due to climate, temperature, Sustained elevated temperature, Corrosion - Effects of cover thickness.

Objective: To impart knowledge about strength and durability of the concrete.

Session No *	Topics to be covered	Ref	Teaching Aids
10	Quality assurance for concrete	4-Ch.9; Pg.186-191, 2-Ch.11; Pg.460-462	PPT
11	Concrete properties-Strength	2-Ch.7; Pg.298-317	PPT
12	Concrete properties- Durability	4-Ch.8; Pg.173-178	PPT
13	Concrete properties- Thermal properties	4-Ch.8; Pg.182-183	PPT
14	Cracks and different types of cracks	2-Ch.9; Pg.358-360	PPT
15	Causes of cracks: Effects due to climate	2-Ch.9; Pg.363,383	PPT
16	Effects due to temperature and sustained elevated temperature	2-Ch.9; Pg.382-387	PPT
17	Effects due to corrosion	2-Ch.9; Pg.402-404	PPT
18	Effects of cover thickness	2-Ch.9; Pg.409-411	PPT
Content beyond syllabus covered (if any):			

* Session duration: 50 mins



Sub. Code / Sub. Name: CE18021/ Repair and Rehabilitation of Structures

Unit : III

Unit Syllabus: Special Concretes

9

Polymer concrete, Sulphur infiltrated concrete, Fibre reinforced concrete, High strength concrete, High performance concrete, Vacuum concrete, Self compacting concrete, Geopolymer concrete, Reactive powder concrete, Concrete made with industrial wastes.

Objective: To impart knowledge about special types of concrete.

Session No *	Topics to be covered	Ref	Teaching Aids
19	Polymer concrete	1-Ch.4; Pg.38-55 2-Ch.12; Pg.532-537 4-Ch.14; Pg.468-476 5-Ch.9;Pg.214-221	PPT
20	Sulphur infiltrated concrete	2-Ch.12; Pg.525-526 4-Ch.14; Pg.476-480	PPT
21	Fibre reinforced concrete	2-Ch.12; Pg.526-532 5-Ch.9;Pg.221-231 4-Ch.14; Pg.443-468	PPT
22	High strength concrete and High performance concrete	2-Ch.7; Pg.318-322	PPT
23	Vacuum concrete	2-Ch.12; Pg.558-560 4-Ch.14; Pg.412-414	PPT
24	Self compacting concrete	2-Ch.12; Pg.572-590	PPT
25	Geopolymer concrete	2-Ch.12; Pg.600-601	PPT
26	Reactive powder concrete	1-Ch.4; Pg.44-45 4-Ch.14; Pg.421	PPT
27	Concrete made with industrial wastes	4-Ch.14; Pg.424-425 2-Ch.12; Pg.505-510	PPT
Content beyond syllabus covered (if any):			

* Session duration: 50 mins



Sub. Code / Sub. Name: CE18021/ Repair and Rehabilitation of Structures

Unit : IV

Unit Syllabus: Techniques for Repair and Protection Methods

9

Non-destructive Testing Techniques, Epoxy injection, Shoring, Underpinning, Corrosion protection techniques – Corrosion inhibitors, Corrosion resistant steels, Coatings to reinforcement, cathodic protection.

Objective: To impart knowledge about techniques for repair and protection methods.

Session No *	Topics to be covered	Ref	Teaching Aids
28	Non-destructive Testing Techniques	1-Ch.2; Pg.24-30 2-Ch.10; Pg.437-452 5-Ch.5; Pg.86-103 6-Ch.4; Pg.66-77	PPT
29	Non-destructive Testing Techniques	1-Ch.2; Pg.24-30 2-Ch.10; Pg.437-452 5-Ch.5; Pg.86-103 6-Ch.4; Pg.66-77	PPT
30	Epoxy injection	1-Ch.11; Pg.165 5-Ch.10; Pg.256-257 & Ch.11; Pg.279-280 6-Ch.8; Pg.186-190	PPT
31	Shoring and Underpinning	6-Ch.11; Pg.254-258	PPT
32	Corrosion protection techniques	2-Ch.9; Pg.402-408 5-Ch.3; Pg.54-56	PPT
33	Corrosion inhibitors	2-Ch.9; Pg.405 5-Ch.3; Pg.55	PPT
34	Corrosion resistant steels	2-Ch.9; Pg.408 5-Ch.3; Pg.54-55	PPT
35	Coatings to reinforcement	2-Ch.9; Pg.406 5-Ch.3; Pg.54	PPT
36	Cathodic protection	2-Ch.9; Pg.408 5-Ch.3; Pg.55	PPT

Content beyond syllabus covered (if any):

* Session duration: 50 mins



Sub. Code / Sub. Name: CE18021/ Repair and Rehabilitation of Structures

Unit : V

Unit Syllabus: Repair, Rehabilitation and Retrofitting of Structures 9

Strengthening of Structural elements, Repair of structures distressed due to corrosion, fire, Leakage, earthquake – Demolition Techniques - Engineered demolition methods - Case studies.

Objective: To impart knowledge about repair, rehabilitation and retrofitting of structures and demolition techniques.

Session No *	Topics to be covered	Ref	Teaching Aids
37	Strengthening of Structural elements	1-Ch.4; Pg.53.-54 4-Ch.17; Pg.647-650 5-Ch.12; Pg.286-298	PPT
38	Repair of structures distressed due to corrosion	1-Ch.7; Pg.88.-89	PPT
39	Repair of structures distressed due to fire	1-Ch.7; Pg.89 4-Ch.17; Pg.642-644	PPT
40	Repair of structures distressed due to leakage	1-Ch.7; Pg.105-125 4-Ch.17; Pg.637-638	PPT
41	Repair of structures distressed due to earthquake	5-Ch.12; Pg.303-305	PPT
42	Demolition techniques	5-Ch.17; Pg.345-352	PPT
43	Engineered demolition methods	5-Ch.17; Pg.349-352	PPT
44	Engineered demolition methods	5-Ch.17; Pg.349-352	PPT
45	Case studies	7	PPT

Content beyond syllabus covered (if any):

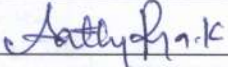
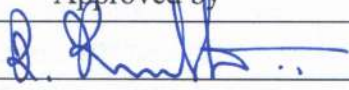
* Session duration: 50 mins



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REFERENCES:

1. Allen R.T. & Edwards S.C, Repair of Concrete Structures, Blakie and Sons, UK, 1987.
2. Shetty M.S., "Concrete Technology - Theory and Practice", S.Chand and Company, 2008.
3. CPWD and Indian Buildings Congress, Hand book on Seismic Retrofit of Buildings, Narosa Publishers, 2008.
4. Gambhir.M.L., "Concrete Technology", McGraw Hill, 2013
5. B.Vidivelli, "Rehabilitation of Concrete Structures", Standard Publishers, New Delhi, 2007.
6. P.S. Gahlot and Sanjay Sharma, "Building Repair and Maintenance Management", CBS Publishers, 2006.
- 7.<http://timesofindia.indiatimes.com/city/chennai/Chennais-Moulivakkam-building-demolished-in-three-seconds/articleshow/55207993.cms>

	Prepared by	Approved by
Signature		
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Designation	Assistant Professor	Professor & Head of the Department
Date	23/07/2022	23/07/2022
Remarks *:		
Remarks *:		

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD