



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

THEORY COURSE FILE CONTENTS

Check list Course Outcomes Attainment

S. No.	Contents	Available (Y/N/NA)	Date of Submission	Signature of HOD
1.	Authenticated Syllabus Copy	Y	05/04/2021	
2.	Individual Time Table	Y		
3.	Students' Name List (Approved Copy)	Y		
4.	Course Plan, PO, PSO, COs, CO-PO Mapping, COA Plan, Session Plan and Periodic Monitoring	Y		
5.	Previous Year End Semester Question Papers	Y		
6.	Question Bank (All Units - Part A, Part B & C)	Y		
7.	Dissemination of Syllabus and Course Plan to Students	Y		
8.	Lecture Notes - Unit I, II & III	Y		
9.	Sample Documents and Evaluation Sheet for Internal Assessment – Tutorials / Assignments / Class Test / Open Book Test / Quiz / Project / Seminar / Role Play if any (Before Mid Term)	Y	31/08/2021	
10.	Mid Term Examination A. Question Paper / Any Other Assessment Tools Used B. Sample Answer Scripts (Best, Average, Poor) if required C. Evaluation Sheet D. Slow Learners List and Remedial Measures	Y		
11.	Lecture Notes – Unit IV & V	Y	31/08/2021	
12.	Sample Documents and Evaluation Sheet for Internal Assessment – Tutorials / Assignments / Class Test / Open Book Test / Quiz / Project / Seminar / Role Play if any (After Mid Term)	Y		
13.	Course End Survey (Indirect Assessment) & Consolidation	Y		
14.	End Term Examination A. Question Paper & Answer Key B. Sample Answer Scripts (Best, Average, Poor) if required	Y		



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	C. Evaluation Sheet D. Slow Learners List and Remedial Measures.			
15.	Content Beyond the Syllabus (Proof)	Y		
16.	Innovative Teaching Tools Used for TLP	Y		
17.	Details of Visiting Faculty Session / Industry Expert / Guest Lecture / Seminar / Field Visit / Webinars / Flipped Class Room / Blended Learning / Online Resources etc.	Y		
18.	Consolidated Mark Statement	Y		
19.	CO Attainment (Mid Term + Internal Assessment + End Term)	Y	31/08/2021	
20.	Gap Analysis & Remedial Measures	Y		
21.	CO - PO Attainment	Y		
22.	Class Record (Faculty Logbook)	Y		

Signature of HOD/ Dean

Date: 05/04/2021

Signature of Faculty

Date: 05/04/2021



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Syllabus Copy

CEM21014	Advanced Construction Techniques	L	T	P	C
Version 1.0		3	0	0	3
Pre-requisites/Exposure	Modern Construction Material, Construction Equipment and Management				
Co-requisites	Maintenance and Rehabilitation of Structures				

Course Objectives

1. To study and understand about latest construction techniques applied to engineering construction for sub structure, super structure and special structures.
2. To study about rehabilitation, strengthening and demolition techniques.

Course Content

UNIT I: 9 Lecture Hours

Sub Structure Construction: Trenchless techniques, box jacking, pipe jacking, Pipe line Laying, under water construction of diaphragm walls, tunneling techniques, piling techniques, driving well and caisson foundations, cable anchoring and grouting, sinking cofferdam, shoring for deep cutting, well points.

Unit II: 9 Lecture Hours

Super Structure Construction: Vacuum dewatering of concrete flooring, concrete paving technology, techniques of construction for continuous concreting operation in tall buildings of various shapes and varying sections, suspended form work, launching techniques for large span heavy decks, Pre stressing in high rise structures – erection techniques for tall structures.

Unit III: 9 Lecture Hours

Repair Construction: Micro piling for strengthening floor and shallow profile, aerial transporting, handling, erecting lightweight components on tall structures, mud jacking grout through slab foundation, sub grade, water proofing.

Unit IV: 9 Lecture Hours

Construction of Special Structures: Erection of lattice towers and rigging of transmission line structures, construction sequence in cooling towers, silos, chimney, sky scrapers, bow string bridges, cable stayed bridges - construction sequence and methods in domes and pre stress domes – erection of articulated structures.

Unit V: 9 Lecture Hours



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Latest Techniques: Advanced construction techniques in offshore construction practice – construction sequence and methods in RCC domes and prestressed domes – sequence in demolition and dismantling.

Reference Books

1. Robert Wade Brown, “Practical Foundation Engineering Handbook”, McGraw-Hill, New York, 1995
2. Jerry Irvine, “Advanced Construction Techniques”, CA Rockett, 1984
3. Patrick Powers. J., “Construction Dewatering: New Methods and Applications”, John Wiley & Sons, New York, 1992.

Web Resources

1. <https://nptel.ac.in/courses/105/106/105106144/> dated: 02/04/2021

Faculty Individual Time Table



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ADAMAS UNIVERSITY, KOLKATA									
SCHOOL OF ENGINEERING & TECHNOLOGY									
DEPARTMENT OF CIVIL ENGINEERING									
Programme: M. Tech (Construction Engineering & Management)									
Course Code & Course: ECE61142 & Advanced Construction Techniques Faculty Coordinator: Bidhan Ghosh									
Day & Time	9:30-10:25	10:30-11:25	11:30-12:25	12:25-13:30	13:30-14:25	14:30-15:25	15:30-16:25	16:30-17:25	17:30-18:25
Monday				LUNCH BREAK					
Tuesday		Advanced Construction Techniques							
Wednesday		Advanced Construction Techniques							
Thursday									
Friday					Advanced Construction Techniques				
Saturday									

Signature of HOD

Date: 05/04/2021

Signature of Class Coordinator

Date: 05/04/2021



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Students Name List

Roll Number	Registration Number	Name of the Student
PG/02/MTCOEM/2020/001	AU/2020/0004499	Anindya Ghosh

Signature of HOD/Dean

Date: 05/04/2021

Signature of Class Coordinator

Date: 05/04/2021



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COURSE PLAN

Target	60% (marks)
Level-1	50% (population)
Level-2	60% (population)
Level-3	70% (population)

1. Method of Evaluation

UG	PG
Internal Assessment (30%) (Quizzes/Tests, Assignments & Seminars etc.)	Internal Assessment (30%) (Quizzes/Tests, Assignments & Seminars etc.)
Mid Semester Examination (20%)	Mid Semester Examination (20%)
End Semester Examination (50%)	End Semester Examination (50%)

*Keep as per Program (UG/PG)

2. Passing Criteria

Scale	PG	UG
Out of 10 Point Scale	CGPA – “5.00” Min. Individual Course Grade – “C” Passing Minimum – 40	CGPA – “5.00” Min. Individual Course Grade – “C” Passing Minimum – 35

*Keep as per Program (UG/PG)

3. Pedagogy

- **Direct Instruction**
- Kinesthetic Learning
- **Flipped Classroom**
- Differentiated Instruction
- Expeditionary Learning
- Inquiry Based Learning
- Game Based Learning
- Personalized Learning

4. Topics introduced for the first time in the program through this course

- (New Topics Related to this Course – Syllabus Revision if any/Content Beyond Syllabus)

5. References:

Text Books	Web Resources	Journals	Reference Books
-	01	-	03

Signature of HOD/Dean

Signature of Faculty



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GUIDELINES TO STUDY THE SUBJECT

Instructions to Students:

1. Go through the 'Syllabus' in the LMS in order to find out the Reading List.
2. Get your schedule and try to pace your studies as close to the timeline as possible.
3. Get your on-line lecture notes (Content, videos) at Lecture Notes section. These are our lecture notes. Make sure you use them during this course.
4. check your LMS regularly
5. go through study material
6. check mails and announcements on blackboard
7. keep updated with the posts, assignments and examinations which shall be conducted on the blackboard
8. Be regular, so that you do not suffer in any way
9. **Cell Phones and other Electronic Communication Devices:** Cell phones and other electronic communication devices (such as Blackberries/Laptops) are not permitted in classes during Tests or the Mid/Final Examination. Such devices MUST be turned off in the class room.
10. **E-Mail and online learning tool:** Each student in the class should have an e-mail id and a pass word to access the LMS system regularly. Regularly, important information – Date of conducting class tests, guest lectures, via online learning tool. The best way to arrange meetings with us or ask specific questions is by email and prior appointment. All the assignments preferably should be uploaded on online learning tool. Various research papers/reference material will be mailed/uploaded on online learning platform time to time.
11. **Attendance:** Students are required to have minimum attendance of 75% in each subject. Students with less than said percentage shall NOT be allowed to appear in the end semester examination.

This much should be enough to get you organized and on your way to having a great semester! If you need us for anything, send your feedback through e-mail bidhan.ghosh@adamasuniversity.ac.in Please use an appropriate subject line to indicate your message details.

There will no doubt be many more activities in the coming weeks. So, to keep up to date with all the latest developments, please keep visiting this website regularly.



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RELATED OUTCOMES

1. The expected outcomes of the Program are:

PO1	Domain Knowledge: Apply comprehensive knowledge of theories, concepts and principles for effective control and management of construction industry projects.
PO2	Problem Analysis: Identify and analyze the strategic importance of construction projects and its problems in the perspectives of client, context and constraints and obtain solution using mathematics, engineering and management principles.
PO3	Design/Development of Solutions: Planning, scheduling, and control of construction projects by managing resources and constraints with appropriate consideration for the public health and safety, and the cultural, societal, and economical considerations.
PO4	Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern IT prediction and simulation tools for construction projects.
PO6	Project Management, Governance and Finance: Create comprehensive understanding of the techniques associated with the management of resources and finance, assessment and management of risk and subsequent corporate governance as appropriate to a project manager operating in the construction industry.
PO7	Ethics and Environment: Understand the impact of residential, commercial, industrial and infrastructural projects in societal, ethical and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO9	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO10	Life-long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

2. The expected outcomes of the Specific Program are: (up to 3)



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PSO1	PG itself is a specific specialisation program. Henceforth no PSO is required.
PSO2	
PSO3	

3. The expected outcomes of the Course are: (minimum 4 and maximum 6)

CO1	Understand about various techniques for sub structure construction work.
CO2	Compile knowledge about different type of techniques related to super structure construction
CO3	Develop concepts about repair based construction work for satisfactory maintenance of structures.
CO4	Define and understand various important construction activities related to special structures.
CO5	Discuss recent advancement/trends in new constructions and demolition techniques.

4. Co-Relationship Matrix

Indicate the relationships by 1- Slight (Low) 2- Moderate (Medium) 3-Substantial (High)

Program Outcomes Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10
CO1	3	3	3	3	-	-	3	3	-	3
CO2	3	3	3	3	-	-	3	3	-	3



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C03	3	3	3	3	-	-	3	3	-	3
C04	3	3	3	3	-	-	3	3	-	3
C05	3	3	3	3	-	-	3	3	-	3
Average	3	3	3	3	-	-	3	3	-	3

5. Course Outcomes Assessment Plan (COA):

Course Outcomes	Internal Assessment* (30 Marks)		Mid Term Exam (20 Marks)	End Term Exam (50 Marks)	Total (100 Marks)
	Before Mid Term	After Mid Term			
C01	5	NA	7	8	20
C02	5	NA	7	8	20
C03	3	3	6	8	20
C04	NA	7	NA	13	20
C05	NA	7	NA	13	20
Total	13	17	20	50	100

* Internal Assessment – Tools Used: Tutorial, Assignment, Seminar, Class Test etc.



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OVERVIEW OF COURSE PLAN OF COURSE COVERAGE

Course Activities:

S. No.	Description	Planned			Actual			Remarks
		From	To	No. of Session	From	TO	No. of Session	
1.	Sub Structure Construction	06.04.2021	27.04.2021	9	06.04.2021	27.04.2021	9	
2.	Super Structure Construction	28.04.2021	25.05.2021	9	28.04.2021	25.05.2021	9	
3.	Repair Construction	26.05.2021	15.06.2021	9	26.05.2021	15.06.2021	9	
4.	Construction of Special Structures	16.06.2021	06.07.2021	9	16.06.2021	06.07.2021	9	
5.	Latest Techniques	07.07.2021	28.07.2021	9	07.07.2021	28.07.2021	9	

Total No. of Instructional periods available for the course: 45 Sessions

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SESSION PLAN

UNIT-I

Session Plan				Actual Delivery			
Lect.	Date	Topics to be Covered	CO Mapped	Lect.	Date	Topics Covered	CO Achieved
1	06.04.2021	Box jacking - pipe jacking	CO1	1	06.04.2021	Box jacking - pipe jacking	CO1
2	07.04.2021	Under water construction of diaphragm walls and basement	CO1	2	07.04.2021	Under water construction of diaphragm walls and basement	CO1
3	09.04.2021	Tunneling & Piling techniques	CO1	3	09.04.2021	Tunneling & Piling techniques	CO1
4	13.04.2021	Driving well and caisson	CO1	4	13.04.2021	Driving well and caisson	CO1
5	16.04.2021	Sinking cofferdam	CO1	5	16.04.2021	Sinking cofferdam	CO1
6	20.04.2021	Cable anchoring and grouting	CO1	6	20.04.2021	Cable anchoring and grouting	CO1
7	21.04.2021	Driving diaphragm walls, sheet piles	CO1	7	21.04.2021	Driving diaphragm walls, sheet piles	CO1
8	23.04.2021	Shoring for deep cutting	CO1	8	23.04.2021	Shoring for deep cutting	CO1
9	27.04.2021	Large reservoir construction well points	CO1	9	27.04.2021	Large reservoir construction well points	CO1



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SESSION PLAN
UNIT-II

Session Plan				Actual Delivery			
Lect.	Date	Topics to be Covered	CO Mapped	Lect.	Date	Topics Covered	CO Achieved
1	28.04.2021	Vacuum dewatering of concrete flooring	CO2	1	28.04.2021	Vacuum dewatering of concrete flooring	CO2
2	30.04.2021	Concrete paving technology	CO2	2	30.04.2021	Concrete paving technology	CO2
3	04.05.2021	Techniques of construction for continuous concreting operation in tall buildings of various shapes and varying sections	CO2	3	04.05.2021	Techniques of construction for continuous concreting operation in tall buildings of various shapes and varying sections	CO2
4	05.05.2021	Techniques of construction for continuous concreting operation in tall buildings of various shapes and varying sections	CO2	4	05.05.2021	Techniques of construction for continuous concreting operation in tall buildings of various shapes and varying sections	CO2
5	07.05.2021	Launching techniques	CO2	5	07.05.2021	Launching techniques	CO2
6	11.05.2021	Suspended form work – erection techniques of tall structures	CO2	6	11.05.2021	Suspended form work – erection techniques of tall structures	CO2
7	12.05.2021	large span structures – launching techniques for heavy decks	CO2	7	12.05.2021	large span structures – launching techniques for heavy decks	CO2
8	14.05.2021	Insitu prestressing in high rise structures	CO2	8	14.05.2021	Insitu prestressing in high rise structures	CO2



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9	25.05.2021	Insitu prestressing in high rise structures	CO2	9	25.05.2021	Insitu prestressing in high rise structures	CO2
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Remarks:

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SESSION PLAN **UNIT-III**

Session Plan				Actual Delivery			
Lect.	Date	Topics to be Covered	CO Mapped	Lect.	Date	Topics Covered	CO Achieved
1	26.05.2021	Mud jacking grout through slab foundation	C03	1	26.05.2021	Mud jacking grout through slab foundation	C03
2	28.05.2021	Micropiling for strengthening floor and shallow profile	C03	2	28.05.2021	Micropiling for strengthening floor and shallow profile	C03
3	01.06.2021	Micropiling for strengthening floor and shallow profile	C03	3	01.06.2021	Micropiling for strengthening floor and shallow profile	C03
4	02.06.2021	Aerial transporting handling erecting lightweight components on tall structures	C03	4	02.06.2021	Aerial transporting handling erecting lightweight components on tall structures	C03
5	04.06.2021	Aerial transporting handling erecting lightweight components on tall structures	C03	5	04.06.2021	Aerial transporting handling erecting lightweight components on tall structures	C03
6	08.06.2021	Pipeline laying - protecting sheet piles	C03	6	08.06.2021	Pipeline laying - protecting sheet piles	C03
7	09.06.2021	Screw anchors - sub grade water proofing	C03	7	09.06.2021	Screw anchors - sub grade water proofing	C03



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8	11.06.2021	Underpinning	C03	8	11.06.2021	Underpinning	C03
9	15.06.2021	Crack stabilization techniques	C03	9	15.06.2021	Crack stabilization techniques	C03

Remarks:

Signature of Faculty

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SESSION PLAN
UNIT-IV

Session Plan				Actual Delivery			
Lect.	Date	Topics to be Covered	CO Mapped	Lect.	Date	Topics Covered	CO Achieved
1	16.06.2021	Erection of lattice towers and rigging of transmission line structures	CO4	1	16.06.2021	Erection of lattice towers and rigging of transmission line structures	CO4
2	18.06.2021	Construction sequence in cooling towers, silos, chimney	CO4	2	18.06.2021	Construction sequence in cooling towers, silos, chimney	CO4
3	22.06.2021	Sky scrapers, bow string bridges, cable stayed bridges	CO4	3	22.06.2021	Sky scrapers, bow string bridges, cable stayed bridges	CO4
4	23.06.2021	Launching and pushing of box decks	CO4	4	23.06.2021	Launching and pushing of box decks	CO4
5	25.06.2021	Construction principle of domes	CO4	5	25.06.2021	Construction principle of domes	CO4
6	29.06.2021	Support structure for heavy equipment and conveyor and machinery in heavy industries	CO4	6	29.06.2021	Support structure for heavy equipment and conveyor and machinery in heavy industries	CO4
7	30.06.2021	Support structure for heavy equipment and conveyor and machinery in heavy industries	CO4	7	30.06.2021	Support structure for heavy equipment and conveyor and machinery in heavy industries	CO4
8	02.07.2021	Erection of articulated structure	CO4	8	02.07.2021	Erection of articulated structure	CO4
9	06.07.2021	Braced domes and space decks	CO4	9	06.07.2021	Braced domes and space decks	CO4

Remarks:

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SESSION PLAN
UNIT-V

Session Plan				Actual Delivery			
Lect.	Date	Topics to be Covered	CO Mapped	Lect.	Date	Topics Covered	CO Achieved
1	07.07.2021	Advanced construction techniques for offshore structures	C05	1	07.07.2021	Advanced construction techniques for offshore structures	C05
2	09.07.2021	Advanced construction techniques for offshore structures	C05	2	09.07.2021	Advanced construction techniques for offshore structures	C05
3	13.07.2021	Advanced construction techniques for offshore structures	C05	3	13.07.2021	Advanced construction techniques for offshore structures	C05
4	14.07.2021	Construction sequence and methods in RCC domes and prestress domes	C05	4	14.07.2021	Construction sequence and methods in RCC domes and prestress domes	C05
5	16.07.2021	Construction sequence and methods in RCC domes and prestress domes	C05	5	16.07.2021	Construction sequence and methods in RCC domes and prestress domes	C05
6	20.07.2021	Advanced techniques of demolition	C05	6	20.07.2021	Advanced techniques of demolition	C05
7	23.07.2021	Advanced techniques of demolition	C05	7	23.07.2021	Advanced techniques of demolition	C05
8	27.07.2021	Sequence in demolition and dismantling	C05	8	27.07.2021	Sequence in demolition and dismantling	C05
9	28.07.2021	Sequence in demolition and dismantling	C05	9	28.07.2021	Sequence in demolition and dismantling	C05



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PERIODIC MONITORING

Actual date of completion and remarks, if any

Components		From	To	From	To
Duration (Mention from and to Dates)		05.04.2021	21.05.2021	24.05.2021	21.08.2021
Percentage of Syllabus covered		50%		50%	
Lectures	Planned	1	23	24	45
	Taken				
Tutorials	Planned	NA			
	Taken				
Test/Quizzes/ Mid Semester/ End Semester	Planned	1	1 (MID)	1	1 (END)
	Taken				
	CO's Addressed	CO1 & CO2	CO1, CO2 & CO3	CO4 & CO5	CO1, CO2, CO3, CO4 & CO5
	CO's Achieved				
Assignments	Planned	1	1		1
	Taken				
	CO's Addressed	CO1 & CO2	CO3	CO3	CO4 & CO5
	CO's Achieved				
Signature of Faculty					
Head of the Department					
OBE Coordinator					

Signature of HOD/ Dean

Date 05/04/2021

Signature of Faculty

Date 05/04/2021



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

PERIODIC MONITORING

Attainment of the Course (Learning) Outcomes:

Components	Attainment level	Action Plan	Remarks
Assignment	C01:	Submission Target 16.05.2021	Assignment Questions covered the Sub Structure and Super Structure Construction
	C02:		
	C03:	Submission Target 25.06.2021	Assignment Questions covered the Repair Construction
	C04:	Submission Target 30.07.2021	Assignment Questions covered the Special Structure & Latest Techniques in Construction
	C05:		
Quiz/Test etc.	C01:	Conducted on 15.05.2021	Sub Structure and Super Structure Construction
	C02:		
	C03:	----	
	C04:	Conducted on 28.07.2021	Special Structure & Latest Techniques in Construction
	C05:		
Mid Semester	C01:	Scheduled on	Question bank given to understand pattern
	C02:		
	C03:		
	C04:	-----	
	C05:	----	
End Semester	C01:	Scheduled on	Question bank given to understand pattern
	C02:		
	C03:		
	C04:		
	C05:		
Any Other	C01:	NA	
	C02:		
	C03:		
	C04:		
	C05:		

Signature of HOD/ Dean

Date 05/04/2021

Signature of Faculty

Date 05/04/2021



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course	: Advanced Construction Techniques	L:3
8. Program	: M. Tech (Construction Engineering & Management)	T: 0
9. Target	: 60%	P: 0
		C: 3

Previous Year Question Papers – Set 1



ADAMAS UNIVERSITY

SCHOOL OF ENGINEERING AND TECHNOLOGY

END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: M. Tech

Semester: II

Stream: CEM

PAPER TITLE: Advanced Construction Techniques

PAPER CODE: ECE61142

Maximum Marks: 40

Time duration: 3 hours

Total No of questions:12

Total No of Pages: 01

Instruction for the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

Answer all the Groups

Group A

Answer all the questions of the following

5×1 = 5

1.
 - a) Define Cofferdam.
 - b) What are the techniques used for erection of the tall structure?
 - c) When will you recommend for aerial transferring of structural elements?
 - d) Difference between Bow String Bridges and Cable Stayed Bridges.
 - e) Define Dome Structures.

GROUP -B

(Short Answer Type Questions)

Answer *any three* of the following

3×5 = 15

2. Discuss dewatering with well points.
3. Write short note on concrete paving techniques.
4. Elucidate mud jacking on slab foundation.
5. Explicate articulated structure.



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course	: Advanced Construction Techniques	L:3
8. Program	: M. Tech (Construction Engineering & Management)	T: 0
9. Target	: 60%	P: 0
		C: 3

GROUP –C
(Long Answer Type Questions)

Answer *any two* of the following 2×10 = 20

6. Discuss different underwater construction techniques in detail.
7. Explain the construction techniques for continuous concreting in tall buildings.
8. Discuss in detail about the advanced demolition techniques and requirements in dismantling structures.

Previous Year Question Papers – Set 2



ADAMAS UNIVERSITY

SCHOOL OF ENGINEERING AND TECHNOLOGY

END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: M. Tech

Semester: II

Stream: CEM

PAPER TITLE: Advanced Construction Techniques

PAPER CODE: ECE61142

Maximum Marks: 40

Time duration: 3 hours

Total No of questions: 12

Total No of Pages: 01

Instruction for the Candidate:

4. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam.
5. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
6. Assumptions made if any, should be stated clearly at the beginning of your answer.

Answer all the Groups

Group A

Answer all the questions of the following

5×1 = 5

9.
 - a) Under which situation Under Reamed piles are required.
 - b) Define Suspended Formwork.
 - c) What is meant as Micro Piling?
 - d) What are the methods of construction of Domes?



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course	: Advanced Construction Techniques	L:3
8. Program	: M. Tech (Construction Engineering & Management)	T: 0
9. Target	: 60%	P: 0
		C: 3

e) Differentiate Demolition and Dismantling.

GROUP –B
(Short Answer Type Questions)

Answer *any three* of the following

3×5 = 15

10. What is tilt and shift in construction of caissons? How can you rectify the tilting of caissons?
11. Write a short note on Mason's Scaffolding.
12. Enumerate sub grade waterproofing techniques.
13. Explain controlled demolition of structure with a flowchart.

GROUP –C
(Long Answer Type Questions)

Answer *any two* of the following

2×10 = 20

14. Discuss the launching techniques for heavy decks with the help of sketches.
15. Describe the various steps involved in the erection of lattice towers.
16. Explain in detail about the construction sequence of Domes.



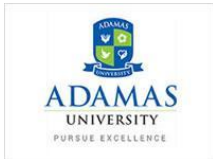
Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

Question Bank Sample

 ADAMAS UNIVERSITY PURSUE EXCELLENCE				
School: School of Engineering & Technology Course Code: CEM21014 Program: M. Tech (Construction Engineering & Management)			Department: Civil Engineering Course Name: Advanced Construction Techniques Semester: II	
UNIT NUMBER: I			UNIT NAME: Sub Structure Construction	
Sl. No	Question	Level of Difficulty (Easy/ Medium/ Difficult)	Knowledge Level (Bloom's Taxonomy)	Course Outcome (CO)
Part A (Multiple Choice Questions) (1 mark each)				
1.	An -----is an oldest type of machine which removes earth. a) Escalator b) Excavator c) Elevator d) Bulldozer	Easy	R	CO1
2.	-----consists of driving either a hollow tube or a steel rod or an iron rod into the ground. a) Trail pits b) Test piles c) Probing d) Digging	Medium	R	CO1
3.	A square pit, known as -----with side as about 1.50 m, is excavated upto a depth at which sufficiently hard soil is available. a) Test pits b) Probing c) Test piles d) Deep boring	Difficult	R	CO1



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

	Part B (Definition/Naming Questions) (2 marks each)			
1.	Define Cofferdam.	Easy	R	CO1
2.	What is meant as Micro Piling?	Medium	U	CO1
3.	Under which situation Under Reamed piles are required.	Difficult	Ap	CO1
	Part C (Short Questions) (3-4 marks each)			
1.	Recommend suitable tunnelling techniques which can be adopted in soft rock.	Easy	R	CO1
2.	Explain in brief factors affecting selection of type of pile.	Medium	U	CO1
3.	Describe uses of Cofferdam.	Difficult	Ap	CO1
	Part D (Explanation Based Questions) (5 marks each)			
1.	Explain in brief various cased cast in situ concrete piles with neat sketches.	Easy	U	CO1
2.	Explain pre cast concrete piles with merits and demerits.	Medium	U	CO1
3.	Explain in detail under reamed piles with neat sketches.	Difficult	U	CO1
	Part E (Reasoning/ Problem Based Questions) (5 marks each)			
1.	Enumerate the design features of Cofferdam.	Easy	U	CO1
2.	Write the importance of economic height of Cofferdam.	Medium	An	CO1
3.	Describe the floating phenomenon of Cassion.	Difficult	An	CO1
	Part F (Application Based Questions) (5-10 marks each)			



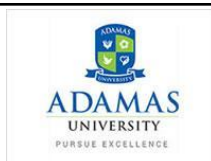
Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

1.	Explain in detail pneumatic caissons.	Easy	Ap	CO1
2.	Explain in detail pumping from well points with neat sketches.	Medium	Ap	CO1
3.	Explain in detail reduction of ground water flow by grouting.	Difficult	Ap	CO1
Part G (Short Notes) (5 marks each)				
1.	Writes notes on Box cassion.	Easy	U	CO1
2.	Writes notes on Monoliths.	Medium	U	CO1
3.	Writes notes on prevention of leakage in coffer dams.	Difficult	U	CO1



School: School of Engineering & Technology

Department: Civil Engineering

Course Code: CEM21014

Course Name: Advanced Construction Techniques

Program: M. Tech (Construction Engineering & Management)

Semester: II

UNIT NUMBER: II

UNIT NAME: Super Structure Construction

Sl. No.	Question	Level of Difficulty (Easy/ Medium/ Difficult)	Knowledge Level (Bloom's Taxonomy)	Course Outcome (CO)
Part A (Multiple Choice Questions) (1 mark each)				
1.	----- is the process in which we cover the structural members of a building to increase the strength of the building.	Easy	R	CO2



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

	(a) Jacketing (b) scaffoldings (c) Shoring (d) Sesmic Retrofitting			
2.	----- is the practice of assembling components of a structure in a factory or other manufacturing site, and transporting complete assemblies or sub-assemblies to the construction site where the structure is to be located. (a) fabrication (b) Prefabrication (c) Damping (d) Scaffolding	Medium	R	CO2
3.	When a construction is done above the 1.5m height then a temporary structure is needed to support the labours to continue the construction process. These structures are called -----. (a) seismic weight (b) building configuration (c) scaffoldings (d) fibers	Difficult	R	CO2
Part B (Definition/Naming Questions) (2 marks each)				
1.	Define Suspended Formwork.	Easy	R	CO2
2.	What are the techniques used for erection of the tall structure?	Medium	U	CO2
3.	What is meant by dewatering?	Difficult	Ap	CO2
Part C (Short Questions) (3-4 marks each)				
1.	Write short note on tall structures.	Easy	R	CO2
2.	Describe the Formwork for columns.	Medium	U	CO2
3.	Describe the Formwork for floors.	Difficult	Ap	CO2



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

Part D (Explanation Based Questions) (5 marks each)

1.	Discuss any slip form usages.	Easy	U	CO2
2.	Discuss the importance of support structure for heavy equipment.	Medium	U	CO2
3.	Explain any concreting method in tall buildings.	Difficult	U	CO2

Part E (Reasoning/ Problem Based Questions) (5 marks each)

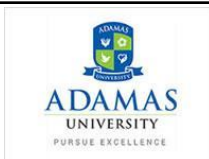
1.	Evaluate the advantages of Vacuum dewatering concrete.	Easy	U	CO2
2.	List out any technique employed for strengthening of floor.	Medium	An	CO2
3.	Explain the technology involved in concrete paving technology.	Difficult	An	CO2

Part F (Application Based Questions) (5-10 marks each)

1.	Discuss the launching techniques for heavy decks with the help of sketches.	Easy	Ap	CO2
2.	Discuss the launching techniques for heavy decks with the help of sketches.	Medium	Ap	CO2
3.	Explain the erection and operation of tower cranes.	Difficult	Ap	CO2

Part G (Short Notes) (5 marks each)

1.	Write notes on concrete paving techniques.	Easy	U	CO2
2.	Write notes on Economy in formworks.	Medium	U	CO2
3.	Write notes on Requirements of a good formworks.	Difficult	U	CO2





Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

School: School of Engineering & Technology			Department: Civil Engineering	
Course Code: CEM21014			Course Name: Advanced Construction Techniques	
Program: M. Tech (Construction Engineering & Management)			Semester: II	
UNIT NUMBER: III			UNIT NAME: Repair Construction	
Sl. No.	Question	Level of Difficulty (Easy/Medium/Difficult)	Knowledge Level (Bloom's Taxonomy)	Course Outcome (CO)
1.	----- is a flexible material which is commonly used for the damp proofing. a) Hot bitumen b) Bituminous felts c) Mastic asphalt d) Metal sheets	Easy	R	CO3
2.	The process by which buildings are made more resistant to earthquake is the-----. a) retrofitting b) emanation c) soundproof d) centrally heating	Medium	R	CO3
3.	----- is a technique used to reinforce and strengthen the existing ground. a) Soil Nailing b) Reinforcing c) Acoustic d) Wire mesh	Difficult	R	CO3
Part B (Definition/Naming Questions) (2 marks each)				
1.	What are the techniques used for erection operation of light weight component on Tall structure?	Easy	R	CO3
2.	When will you recommend for aerial transferring of structural elements?	Medium	U	CO3
3.	Depict the uses of Water proofing material.	Difficult	Ap	CO3
Part C (Short Questions) (3-4 marks each)				
1.	Elucidate mud jacking on slab foundation.		R	CO3



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

		Easy		
2.	Explain in brief repair and restoration.	Medium	U	CO3
3.	Depict the concept of retrofitting.	Difficult	Ap	CO3
Part D (Explanation Based Questions) (5 marks each)				
1.	Explain the corrosion mechanism assumed in structure.	Easy	U	CO3
2.	Describe in brief strengthening (retrofitting) of Reinforced Concrete members.	Medium	U	CO3
3.	Discuss about utilization of polymers coating for rebar during repair foamed concrete.	Difficult	U	CO3
Part E (Reasoning/ Problem Based Questions) (5 marks each)				
1.	Enumerate sub grade waterproofing techniques.	Easy	U	CO3
2.	List out any micropiling technique employed for strengthening of floor.	Medium	An	CO3
3.	Depict the procedure for repairing major cracks.	Difficult	An	CO3
Part F (Application Based Questions) (5-10 marks each)				
1.	Discuss about effects of cover thickness and cracking related to corrosion.	Easy	Ap	CO3
2.	Explain the erection operation of light weight component on Tall structure.	Medium	Ap	CO3
3.	Explain about assessment procedure for evaluating damaged structure causes of deterioration. Also explain any one testing techniques useful for damage assessment.	Difficult	Ap	CO3
Part G (Short Notes) (5 marks each)				
1.	Write notes regarding thermal properties on cracking.	Easy	U	CO3
2.	Write notes on Guniting & Shotcrete.	Medium	U	CO3



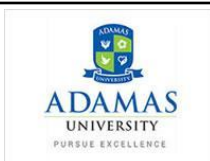
Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

3.	Write notes on Shoring & Underpinning.	Difficult	U	CO3
----	--	-----------	---	-----



School: School of Engineering & Technology Department: Civil Engineering Course Code: CEM21014 Course Name: Advanced Construction Techniques Program: M. Tech (Construction Engineering & Management) Semester: II				
UNIT NUMBER: I V		UNIT NAME: Construction of Special Structures		
Sl. No.	Question	Level of Difficulty (Easy/ Medium/ Difficult)	Knowledge Level (Bloom's Taxonomy)	Course Outcome (CO)
Part A (Multiple Choice Questions) (1 mark each)				
1.	The concrete shell roof has been widely used to cover _____. a) small floor space b) medium floor space a) large floor space b) end floor space	Easy	R	CO4
2.	Reinforced concrete shells are ideally suited to cover floor spaces of up to _____. a) 15 mm b) 25 mm c) 30 mm d) 40 mm	Medium	R	CO4
3.	The parabolic profile of the cables in the edge beam counteracts the _____. a) Tension b) Compression c) Deflection d) Torsion	Difficult	R	CO4
Part B (Definition/Naming Questions) (2 marks each)				



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

1.	Define Dome structure.	Easy	R	CO4
2.	Define Articulated structure.	Medium	U	CO4
3.	Define shell structure.	Difficult	Ap	CO4
Part C (Short Questions) (3-4 marks each)				
1.	State the design factor to be considered for Cooling tower.	Easy	R	CO4
2.	State the design factor to be considered for cable stayed bridge.	Medium	U	CO4
3.	State the design factor to be considered for Shell.	Difficult	Ap	CO4
Part D (Explanation Based Questions) (5 marks each)				
1.	State the design factor to be considered for Articulated structure.	Easy	U	CO4
2.	State the design factor to be considered for Bow string bridge.	Medium	U	CO4
3.	State the design factor to be considered for Sky scrapers.	Difficult	U	CO4
Part E (Reasoning/ Problem Based Questions) (5 marks each)				
1.	Difference between Bow String Bridges and Cable Stayed Bridges.	Easy	U	CO4
2.	Difference between shell and dome.	Medium	An	CO4
3.	State the design factor to be considered for Chimney.	Difficult	An	CO4
Part F (Application Based Questions) (5-10 marks each)				
1.	Describe the various steps involved in the erection of lattice towers.	Easy	Ap	CO4



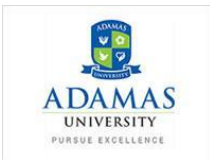
Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

2.	Discuss the construction sequence & techniques adopted for Cooling tower.	Medium	Ap	CO4
3.	Explain in detail about the construction sequence of RCC Domes.	Difficult	Ap	CO4
Part G (Short Notes) (5 marks each)				
1.	Explicate articulated structure.	Easy	U	CO4
2.	Write notes on methods of construction of RCC Domes	Medium	U	CO4
3.	Write notes on rigging of transmission line.	Difficult	U	CO4



School: School of Engineering & Technology Course Code: CEM21014 Program: M. Tech (Construction Engineering & Management)			Department: Civil Engineering Course Name: Advanced Construction Techniques Semester: II		
UNIT NUMBER: V			UNIT NAME: Latest Techniques		
Sl. No.	Question	Level of Difficulty (Easy/ Medium/ Difficult)	Knowledge Level (Bloom's Taxonomy)	Course Outcome (CO)	
Part A (Multiple Choice Questions) (1 mark each)					
1.	A drillship is a mobile vessel that is able to drill in _____. (a) shallow water less than 100 m (b) swamps and marshlands (c) a towing operation (d) deep waters exceeding 1000 m	Easy	R	CO5	



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
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9. Target : 60% P: 0
C: 3

2.	A semi-sub offshore platform is permanently stationed in the deep ocean employing a/an _____. (a) seismic system (b) automatic pilot (c) dynamic positioning system (d) anchor system	Medium	R	CO5
3.	MOSES is an application software suitable for _____. (a) simulating loadout operation of a jacket sub-structure (b) fairing the geometric shape of a concrete gravity base platform (c) simulating an abortion operation on the platform (d) drawing a shell expansion plan of a jack-up platform	Difficult	R	CO5
Part B (Definition/Naming Questions) (2 marks each)				
1.	Define demolition.	Easy	R	CO5
2.	Define dismantling.	Medium	U	CO5
3.	Define dome structure.	Difficult	Ap	CO5
Part C (Short Questions) (3-4 marks each)				
1.	What are the common ways of demolition?	Easy	R	CO5
2.	What are the common ways of dismantling?	Medium	U	CO5
3.	Differentiate Demolition and Dismantling.	Difficult	Ap	CO5
Part D (Explanation Based Questions) (5 marks each)				
1.	Why does dismantling happen?	Easy	U	CO5
2.	What is used to demolish a building.	Medium	U	CO5
3.	What is the process of dismantling?	Difficult	U	CO5



Year: I
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Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

Part E (Reasoning/ Problem Based Questions) (5 marks each)

1.	What is used to dismantle a building.	Easy	U	CO5
2.	Why does demolition happen?	Medium	An	CO5
3.	What is the process of demolition?	Difficult	An	CO5

Part F (Application Based Questions) (5-10 marks each)

1.	Discuss the construction sequence & techniques adopted for Prestressed dome.	Easy	Ap	CO5
2.	State the design factor to be considered for Prestressed dome.	Medium	Ap	CO5
3.	Discuss the construction sequence & techniques adopted for Offshore construction.	Difficult	Ap	CO5

Part G (Short Notes) (5 marks each)

1.	Write notes on methods of construction of RCC Domes	Easy	U	CO5
2.	Write notes on Offshore structure.	Medium	U	CO5
3.	Describe any part of an Offshore structure.	Difficult	U	CO5



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course	: Advanced Construction Techniques	L:3
8. Program	: M. Tech (Construction Engineering & Management)	T: 0
9. Target	: 60%	P: 0
		C: 3

Lecture Notes

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Internal Assessment – Assignment I

PART A SHORT ANSWERS	
1	Recommend suitable tunnelling techniques which can be adopted in soft rock. (C01)
2	Explain in brief factors affecting selection of type of pile. (C01)
3	Describe uses of Cofferdam. (C01)
4	Explain in brief various cased cast in situ concrete piles with neat sketches. (C01)
5	Explain pre cast concrete piles with merits and demerits. (C01)
6	Write short note on tall structures. (C02)
7	Describe the Formwork for columns. (C02)
8	Describe the Formwork for floors. (C02)
PART B LONG ANSWERS	



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

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9. Target : 60% P: 0
C: 3

1	Explain in detail pneumatic caissons. (CO1)
2	Explain in detail pumping from well points with neat sketches. (CO1)
3	Explain in detail reduction of ground water flow by grouting. (CO1)
4	Enumerate the design features of Cofferdam. (CO1)
5	Write the importance of economic height of Cofferdam. (CO1)
6	Discuss the launching techniques for heavy decks with the help of sketches. (CO2)
7	Discuss the launching techniques for heavy decks with the help of sketches. (CO2)
8	Explain the erection and operation of tower cranes. (CO2)

Assignment II

PART A SHORT ANSWERS	
1	Elucidate mud jacking on slab foundation. (CO3)
2	Explain in brief repair and restoration. (CO3)
3	Depict the concept of retrofitting. (CO3)
4	Explain the corrosion mechanism assumed in structure. (CO3)
5	State the design factor to be considered for Articulated structure. (CO4)
6	State the design factor to be considered for Bow string bridge. (CO4)
7	State the design factor to be considered for Sky scrapers. (CO4)



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

8	Difference between shell and dome. (C04)
PART B LONG ANSWERS	
1	Discuss about effects of cover thickness and cracking related to corrosion. (C03)
2	Explain the erection operation of light weight component on Tall structure. (C03)
3	Explain about assessment procedure for evaluating damaged structure causes of deterioration. Also explain any one testing techniques useful for damage assessment. (C03)
4	Describe the various steps involved in the erection of lattice towers. (C04)
5	Discuss the construction sequence & techniques adopted for Cooling tower. (C04)
6	Explain in detail about the construction sequence of RCC Domes. (C04)

Assignment III

PART A SHORT ANSWERS	
1	What are the common ways of demolition? (C05)
2	What are the common ways of dismantling? (C05)
3	Differentiate Demolition and Dismantling. (C05)
4	Why does dismantling happen? (C05)
5	What is used to demolish a building. (C05)
6	What is the process of dismantling? (C05)



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

PART B LONG ANSWERS	
1	Discuss the construction sequence & techniques adopted for Prestressed dome (C05)
2	State the design factor to be considered for Prestressed dome. (C05)
3	Discuss the construction sequence & techniques adopted for Offshore construction. (C05)

Class Test I

1. What is meant as Micro Piling? (C01)
2. Under which situation Under Reamed piles are required? (C01)
3. What are the techniques used for erection of the tall structure? (C02)
4. What is meant by dewatering? (C02)
5. Write short note on tall structures. (C02)

Class Test-1 Answer Script



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course	: Advanced Construction Techniques	L:3
8. Program	: M. Tech (Construction Engineering & Management)	T: 0
9. Target	: 60%	P: 0
		C: 3

Class Test II

1. State the design factor to be considered for Cooling tower. (CO4)
2. State the design factor to be considered for cable stayed bridge. (CO4)
3. State the design factor to be considered for Shell. (CO4)
4. What are the common ways of demolition? (CO5)
5. What are the common ways of dismantling? (CO5)

Class Test-2 Answer Script



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course	: Advanced Construction Techniques	L:3
8. Program	: M. Tech (Construction Engineering & Management)	T: 0
9. Target	: 60%	P: 0
		C: 3

[Answer Key](#)

[Answer Script Sample](#)



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

Evaluation Sheet – Internal Assessment

Roll Number	Registration Number	Name of the Student	Internal Assessment (30)				
			Assign ment	Class Test	Case Study	etc.	Total
			15	13	-	-	28
PG/02/MTCOE M/2020/001	AU/2020/0004499	Anindya Ghosh					

Signature of HOD/Dean

Signature of Faculty

Date: 31/08/2021

Date: 31/08/2021



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

Evaluation Sheet – Mid Semester

Roll Number	Registration Number	Name of the Student	Marks (20)
PG/02/MTCOEM/2020/001	AU/2020/0004499	Anindya Ghosh	18

Signature of HOD/Dean

Date: 31/08/2021

Signature of Faculty

Date: 31/08/2021



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

Planning for Remedial Classes – Mid Semester

Sl. No.	Name of Student	Roll No.	Reg. No.	Mid Sem Marks	Remedial Classes Held							Class test on the basis of Remedial Classes	End Sem Marks	Improve ment (Y/N)
					Date									
					Venue									
					Time									
1.	NIL											N		

Signature of HOD/ Dean

Signature of Faculty

Date: 31/08/2021

Date: 31/08/2021

End Semester Question Papers – Set 1



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

	ADAMAS UNIVERSITY END SEMESTER EXAMINATION (Academic Session: 2020 – 21)		
Name of the Program:	M. Tech (Construction Engineering & Management)	Semester:	II
Paper Title:	Advanced Construction Techniques	Paper Code:	CEM21014
Maximum Marks:	50	Time Duration:	3 Hrs
Total No. of Questions:	17	Total No of Pages:	3
(Any other information for the student may be mentioned here)	1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. 2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. 3. Assumptions made if any, should be stated clearly at the beginning of your answer.		

Group A

Answer All the Questions (5 x 1 = 5)

1	A square pit, known as -----with side as about 1.50 m, is excavated upto a depth at which sufficiently hard soil is available. a) Test pits b) Probing c) Test piles d) Deep boring	R	CO1
2	----- is the practice of assembling components of a structure in a factory or other manufacturing site, and transporting complete assemblies or sub-assemblies to the construction site where the structure is to be located. (a) fabrication (b) Prefabrication (c) Damping (d) Scaffolding	R	CO2



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

3	----- is a technique used to reinforce and strengthen the existing ground. a) Soil Nailing b) Reinforcing c) Acoustic d) Wire mesh	R	CO3
4	The parabolic profile of the cables in the edge beam counteracts the _____. e) Tension f) Compression g) Deflection h) Torsion	R	CO4
5	A semi-sub offshore platform is permanently stationed in the deep ocean employing a/an _____. (a) seismic system (b) automatic pilot (c) dynamic positioning system (d) anchor system	R	CO5
Group B Answer All the Questions (5 x 2 = 10)			
6 a)	Recommend suitable tunnelling techniques which can be adopted in soft rock.	U	CO1
(OR)			
6 b)	Explain in brief factors affecting selection of type of pile.	Evaluating	CO1
7 a)	Enumerate any slip form usages.	Ap.	CO2
(OR)			
7 b)	What is meant by dewatering?	R	CO2
8 a)	Discuss about effects of cover thickness and cracking related to corrosion.	Evaluating	CO3
(OR)			
8 b)	Depict the uses of Water proofing material.	Ap.	CO3
9 a)	Define Dome structure.	R	CO4
(OR)			
9 b)	Define Articulated structure.	R	CO4
10 a)	Write shortnotes on rigging of transmission line.	R	CO5



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

(OR)			
10 b)	Define demolition.	R	CO5
Group C Answer All the Questions (7 x 5 = 35)			
11 a)	Explain in detail pneumatic caissons.	Evaluating	CO1
(OR)			
11 b)	Describe the design features of Cofferdam.	Evaluating	CO1
12 a)	Explain the technology involved in concrete paving technology.	Evaluating	CO2
(OR)			
12 b)	Evaluate the advantages of Vacuum dewatering concrete with explanation.	Evaluating	CO2
13 a)	Explain the corrosion mechanism assumed in structure.	Evaluating	CO3
(OR)			
13 b)	Describe strengthening (retrofitation) of Reinforced Concrete members.	Evaluating	CO3
14 a)	State the design factor to be considered for Shell.	Ap.	CO4
(OR)			
14 b)	Discuss the construction sequence & techniques adopted for Cooling tower.	Evaluating	CO4
15 a)	State the design factor to be considered for cable stayed bridge.	Ap.	CO4
(OR)			
15 b)	State the design factor to be considered for Articulated structure.	Ap.	CO4
16 a)	Depict the techniques used for erection of the tall building?	Ap.	CO5
(OR)			
16 b)	Discuss the construction sequence & techniques adopted for Offshore construction.	Evaluating	CO5
17 a)	Discuss the importance of support structure for heavy equipment.	Evaluating	CO5
(OR)			
17 b)	Explain the factors for aerial transferring of structural elements.	Evaluating	CO5



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

End Semester Question Papers – Set 2

	ADAMAS UNIVERSITY END SEMESTER EXAMINATION (Academic Session: 2020 – 21)		
Name of the Program:	M. Tech (Construction Engineering & Management)	Semester:	II
Paper Title:	Advanced Construction Techniques	Paper Code:	CEM21014
Maximum Marks:	50	Time Duration:	3 Hrs
Total No. of Questions:	17	Total No of Pages:	3
(Any other information for the student may be mentioned here)	4. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. 5. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. 6. Assumptions made if any, should be stated clearly at the beginning of your answer.		

Group A

Answer All the Questions (5 x 1 = 5)

1	-----consists of driving either a hollow tube or a steel rod or an iron rod into the ground. a) Trail pits b) Test piles c) Probing d) Digging	R	CO1
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Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

2	When a construction is done above the 1.5m height then a temporary structure is needed to support the labours to continue the construction process. These structures are called -----. (a) seismic weight (b) building configuration (c) scaffoldings (d) fibers	R	CO2
3	The process by which buildings are made more resistant to earthquake is the-----. a) retrofitting b) emanation c) soundproof d) centrally heating	R	CO3
4	The concrete shell roof has been widely used to cover -----. a) small floor space c) medium floor space d) large floor space e) end floor space	R	CO4
5	A drillship is a mobile vessel that is able to drill in _____. (a) shallow water less than 100 m (b) swamps and marshlands (c) a towing operation (d) deep waters exceeding 1000 m	R	CO5

Group B

Answer All the Questions (5 x 2 = 10)

6 a)	What is meant as Micro Piling?	R	CO1
(OR)			
6 b)	Under which situation Under Reamed piles are required?	R	CO1
7 a)	What is the Requirements of a good formworks.	R	CO2
(OR)			



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

7 b)	List out any technique employed for strengthening of floor.	Analyzing	CO2
8 a)	Explain in brief repair and restoration.	Evaluating	CO3
(OR)			
8 b)	Depict the concept of retrofitting.	Ap.	CO3
9 a)	Define shell structure.	R	CO4
(OR)			
9 b)	Define cooling structure.	R	CO4
10 a)	Define demolition.	R	CO5
(OR)			
10 b)	What is used to dismantle a building.	R	CO5
Group C Answer All the Questions (7 x 5 = 35)			
11 a)	Explain pre cast concrete piles with merits and demerits.	Evaluating	CO1
(OR)			
11 b)	Explain in detail under reamed piles with neat sketches.	Evaluating	CO1
12 a)	Discuss the launching techniques for heavy decks with the help of sketches.	Evaluating	CO2
(OR)			
12 b)	List out any technique employed for strengthening of floor.	Analyzing	CO2
13 a)	Discuss about utilization of polymers coating for rebar during repair foamed concrete.	Evaluating	CO3
(OR)			
13 b)	Depict the procedure for repairing major cracks.	Ap.	CO3
14 a)	Explain in detail about the construction sequence of RCC Domes.	Evaluating	CO4
(OR)			
14 b)	State the design factor to be considered for Bow string bridge.	Ap.	CO4
15 a)	State the design factor to be considered for Sky scrapers.	Ap.	CO4
(OR)			
15 b)	State the design factor to be considered for Cooling tower.	Ap.	CO4
16 a)	Discuss the construction sequence & techniques adopted for Prestressed dome.	Evaluating	CO5
(OR)			
16 b)	Explain the erection and operation of tower cranes.	Evaluating	CO5
17 a)	Explain the erection operation of light weight component on Tall structure.	Evaluating	CO5



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

(OR)

17 b)	Describe the Fixed Platforms & Compliant Towers platforms of an offshore structure.	Evaluating	CO5
-------	---	------------	-----

[Answer Key \(Sample\)](#)

[Answer Script \(Sample\)](#)

Evaluation Sheet (End Semester)

Roll Number	Registration Number	Name of the Student	Marks (50)
PG/02/MTCOEM/2020/001	AU/2020/0004499	Anindya Ghosh	38

Signature of HOD/Dean

Date: 31/08/2021

Signature of Faculty

Date: 31/08/2021

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course	: Advanced Construction Techniques	L:3
8. Program	: M. Tech (Construction Engineering & Management)	T: 0
9. Target	: 60%	P: 0
		C: 3

Planning for Remedial Classes – End Semester

Sl. No.	Name of Student	Roll No.	Reg . No.	End Sem Marks	Remedial Classes Held							Class test on the basis of Remedial Classes	Supple Exam Marks	Improveme nt (Y/N)
					Date									
					Venue									
					Time									
1.	NIL												N	



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

Signature of HOD/ Dean

Signature of Faculty

Date 31/08/2021

Date 31/08/2021

Consolidated Mark Statement

Roll Number	Registration Number	Name of the Student	Total Marks			
			Mid Semester (20)	Internal Assessment (30)	End Semester (50)	Total (100)
			18	28	38	84

Signature of Dean/HOD

Signature of Faculty

Date: 31/08/2021

Date: 31/08/2021



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course	: Advanced Construction Techniques	L:3
8. Program	: M. Tech (Construction Engineering & Management)	T: 0
9. Target	: 60%	P: 0
		C: 3



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course	: Advanced Construction Techniques	L:3
8. Program	: M. Tech (Construction Engineering & Management)	T: 0
9. Target	: 60%	P: 0
		C: 3

Industry Expert Lectures

ADAMAS UNIVERSITY
School of Engineering & Technology
Department of Civil Engineering
is organizing

**SEMINAR ON REVOLUTIONS
IN ADMIXTURE TECHNOLOGY
FOR HIGH PERFORMANCE
CONCRETE**

Date: 16.07.2021
Time: 11:00 AM onwards
Mode: Online (MS Teams)

Target Audience: Diploma, UG and PG
Students, Faculty of Civil Engineering &
Construction Industry Professionals

MS-Teams link:
<https://cutt.ly/Zmn3R1b>

RESOURCE PERSON


Dr. Amol Anand Patil
Sr. Specialist- General Manager
(Administration and Specialty Products)

PATRON **CO-PATRON**


Dr. Deependra Kumar Jha
Vice Chancellor
ADAMAS University


Dr. Ashwini Kumar Sharma
Dean, SOET
ADAMAS University

CONVENOR **COORDINATOR**


Dr. T. Senthil Vadivel
Professor and Head, CE, SOET
Adamas University


Mr. Bidhan Ghosh
Assistant Professor, CE, SOET
Adamas University
(+91) 7980759341

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING
is organizing
A Two-Day Workshop on

**COMPUTATIONAL
TECHNIQUES IN
CIVIL ENGINEERING**

Date: 1, July 2021 and 2, July 2021
@ 03.00 pm to 05.00 pm

For Registration scan QR code/ click on URL:
<https://bit.ly/3qde4tF>

Registration Fee:
Rs.1000 for Faculty & Rs. 500 for Students
(Registration FREE for Internal Participants)

Last Date of Registration: 29-06-2021, 6:00 PM.
e-Certificates will be provided to participants.

Target Audience: Diploma, UG and PG Students and
Faculty of Civil Engineering

MS-Teams link will be shared to all registered candidates.

RESOURCE PERSON


Mr. Sandip Banerjee
General Manager- Technical
ALZ Concrete PVT. Ltd., Kolkata

PATRON **CO-PATRON**


Dr. Deependra Kumar Jha
Vice Chancellor
ADAMAS University


Dr. Ashwini Kumar Sharma
Dean, SOET
ADAMAS University

CONVENOR **COORDINATOR**


Dr. T. Senthil Vadivel
Professor and Head, CE, SOET
Adamas University


Mr. Bidhan Ghosh
Assistant Professor, CE, SOET
Adamas University
(+91) 7980759341



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

COURSE END SURVEY

INDIRECT ASSESSMENT

Sample format for Indirect Assessment of Course outcomes:

NAME: Anindya Ghosh
ENROLLMENT NO: PG/02/MTCOEM/2020/001
REG. No.: AU/2020/0004499
COURSE CODE & COURSE: CEM21014 & Advanced Construction Techniques
PROGRAM: M.Tech (CEM)

Please rate the following aspects of course outcomes of **Advanced Construction Techniques**. Use the scale 1-5*

Course Outcomes	Statement	1	2	3	4	5
CO1	Can you able to Discuss the Elements, Tools & Methods of Construction Management?					5
CO2	Are you able to Recognize the Fundamentals of Network Analysis to Schedule a Project with Constraints?					5



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

CO3	Do you Understand Different Approaches of Time and Cost Control of Construction Projects?					5
CO4	Will you Demonstrate Different Types of Project Information, it's Accuracy and Uses in an Organization?					5
CO5	Are you able to Select a Data Base Model to Control Project Information Flow of a Construction Project?					5



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

INDIRECT ASSESSMENT CONSOLIDATION

ADAMAS UNIVERSITY, KOLKATA SCHOOL OF E & T DEPARTMENT OF CE CO Indirect Assessment		
Programme: M.Tech		Academic Year:2020-21
Batch: 2020-22		
Course Code & Name: CEM21014 & Advanced Construction Techniques		
Course Outcome	Students Feed Back (5)	Attainment (100)
C01	5	100
C02	5	100
C03	5	100
C04	5	100
C05	5	100
etc.		
Signature of HOD/Dean Date: 31-08-2021		Signature of Faculty Date: 31-08-2021



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

CO ATTAINMENT – GAP ANALYSIS & REMEDIAL MEASURES

ADAMAS UNIVERSITY, KOLKATA SCHOOL OF E & T DEPARTMENT OF CE CO ATTAINMENT - GAP ANALYSIS & REMEDIAL MEASURES							
Batch :	2020-22					Academic Year: 2020-21	
Course Code & Name			Name of the Coordinator			Year & Semester	
CEM21014 & ADVANCED CONSTRUCTION TECHNIQUES			BIDHAN GHOSH			I & II	
CO	Direct Assessment	Indirect Assessment	CO Attainment	Target	CO Attainment Gaps	Action for Bridge the Gap	Target Modification
CO1	100	100	100	70	-30	NA	85
CO2	100	100	100	70	-30	NA	85
CO3	100	100	100	70	-30	NA	85
CO4	100	100	100	70	-30	NA	85
CO5	100	100	100	70	-30	NA	85

Signature of HOD/Dean

Signature of Faculty



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3

Date: 31-08-2021

Date: 31-08-2021

CO-PO ATTAINMENT

ADAMAS UNIVERSITY, KOLKATA SCHOOL OF E & T DEPARTMENT OF CE CO-PO ATTAINMENT													
Programme: M. Tech			I & II Year & Sem:		Academic 2020-21 Year:		Batch:2020-22						
Course Code	Course Name	CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	
ADVANCED CONSTRUCTION TECHNIQUES	CEM21014	Relationship	CO1 CO2 CO3 CO4 CO5	CO1 CO2 CO3 CO4 CO5	CO1 CO2 CO3 CO4 CO5	CO1, CO2, CO3, CO4, CO5	NA	NA	CO1 CO2 CO3 CO4 CO5	CO1 CO2 CO3 CO4 CO5	NA	CO1, CO2, CO3, CO4, CO5	
		Mapping Value	3	3	3	3	NA	NA	3	3	NA	3	
		Attainment	3	3	3	3	NA	NA	3	3	NA	3	



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course	: Advanced Construction Techniques	L:3
8. Program	: M. Tech (Construction Engineering & Management)	T: 0
9. Target	: 60%	P: 0
		C: 3

Signature of HOD/Dean

Date: 31-08-2021

Signature of Faculty

Date: 31-08-2021

PO ATTAINMENT OF THE COURSE

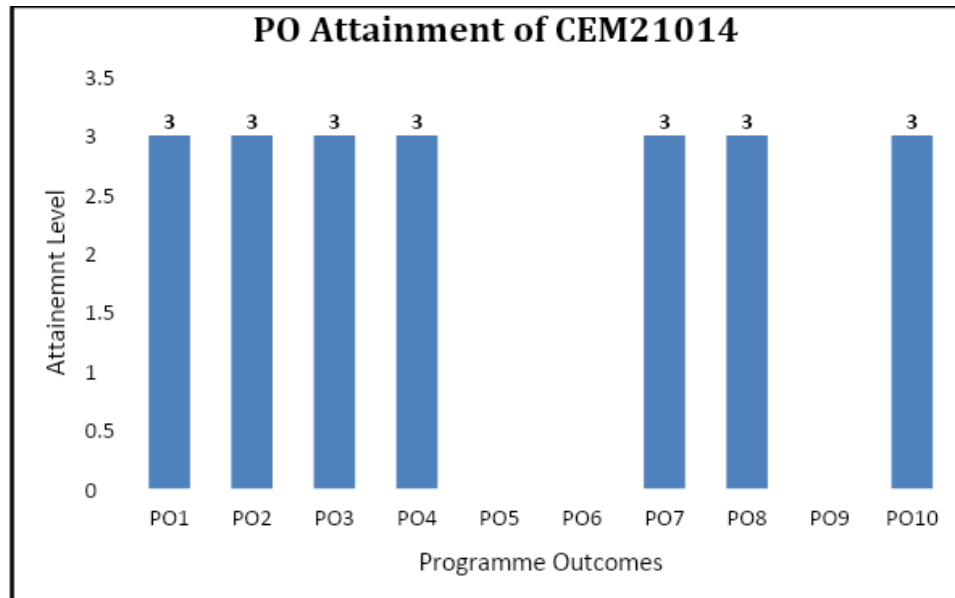


Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course : Advanced Construction Techniques L:3
8. Program : M. Tech (Construction Engineering & Management) T: 0
9. Target : 60% P: 0
C: 3





Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course	: Advanced Construction Techniques	L:3
8. Program	: M. Tech (Construction Engineering & Management)	T: 0
9. Target	: 60%	P: 0
		C: 3

Signature of HOD/Dean

Date: 31-08-2021

Signature of Faculty

Date: 31-08-2021



Year: I
Semester: II

6. Name of the Faculty: Bidhan Ghosh

Course Code: CEM21014

7. Course	: Advanced Construction Techniques	L:3
8. Program	: M. Tech (Construction Engineering & Management)	T: 0
9. Target	: 60%	P: 0
		C: 3

INSTRUCTIONS FOR FACULTY

Instructions for Faculty

- Faculty should keep track of the students with low attendance and counsel them regularly.
- Course coordinator will arrange to communicate the short attendance (as per University policy) cases to the students and their parents monthly.
- Topics covered in each class should be recorded in the table of RECORD OF CLASS TEACHING (Suggested Format).
- Internal assessment marks should be communicated to the students twice in a semester.
- The file will be audited by respective Academic Monitoring and Review Committee (AMRC) members for theory as well as for lab as per AMRC schedule.
- The faculty is required to maintain these files for a period of at least three years.
- This register should be handed over to the head of department, whenever the faculty member goes on long leave or leaves the Colleges/University.
- For labs, continuous evaluation format (break-up given in the guidelines for result preparation in the same file) should be followed.
- Department should monitor the actual execution of the components of continuous lab evaluation regularly.
- Instructor should maintain record of experiments conducted by the students in the lab weekly.
- Instructor should promote students for self-study and to make concept diary, due weightage in the internal should be given under faculty assessment for the same.
- Course outcome assessment: To assess the fulfilment of course outcomes two different approaches have been decided. Degree of fulfillment of course outcomes will be assessed in different ways through direct assessment and indirect assessment. In Direct Assessment, it is measured through quizzes, tests, assignment, Mid-term and/or End-term examinations. It is suggested that each examination is designed in such a way that it can address one or two outcomes (depending upon the course completion). Indirect assessment is done through the student survey which needs to be designed by the faculty (sample format is given below) and it shall be conducted towards the end of course completion. The evaluation of the achievement of the Course Outcomes shall be done by analyzing the inputs received through Direct and Indirect Assessments and then corrective actions suggested for further improvement.
- **Submission Targets of Course Contents:**
 - S. No. 1 to 8 : Before Starting the Course
 - S. No. 9 & 10 : After Mid Semester Examination
 - S. No. 11 to 18 : Immediately After End Semester Examination
 - S. No. 19 to 22 : After Declaration of Result of the Course