



MARATHA VIDYA PRASARAK SAMAJ'S
KARMAVEER ADV. BABURAO GANPATRAO THAKARE
COLLEGE OF ENGINEERING



Permanently Affiliated to Savitribai Phule Pune University Vide Letter No: CA/1542
& Approved by AICTE New Delhi Vide Letter No: 740-89-32 (E) ET/98
AISHE Code - C-41622

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Department of Civil Engineering

Innovative Teaching Method – Case study

Name of Faculty – Mr. M. B. Patil

Academic Year– 2020-21

Class – TE

Semester II

Name of Subject:–Environmental Engineering-I

1. Objectives of Methodology:

2. To create the awareness of about environment and sustainability.
3. To analyze the various water treatment processes.
4. To acquire the various concepts of water treatment & different treatment processes used in the field and ability to share acquired knowledge.

2. Details of Activity/Method:

- Using case study as a teaching strategy enables students to reason critically about situations and proposes appropriate courses of action. Case studies uncover values, perspectives and ideas of classmates resulting in students examining their own understandings, leading to deeper analysis of concepts, ideas and solutions.
- The planning process also consider the cases to be used, and whether they are detailed and inclusive enough to nurture a valuable skill set which is transferrable across the curricula.
- Curriculum requirements support the use of case studies when analyzing sources of information, determining perspectives, interpretations and explanations relating to real events of the past and present.

- **The method:**

- Teachers start by having students read the case or watch a video that summarizes the case.
- Student forms a small group understand a case study on one topic.
- The students in a group explain what they have understood, following the guidelines given by the teacher.

Roles and Responsibilities

- **Teacher**

- Provide the Introduction to the entire topic.
- Aware the student about the length, breadth, depth of topic.
- Provide the appropriate guide lines at every stage.
- Remain available all the time during all stages of process.
- Prepare assessment methodology.

- **Student**

- Go through all the material provided on particular topic
- Once topic selected understand and gain expertise on topic through web/book search.
- Actively participate in group and contribute by means of discussion.
- Share the expertise topic by means of online virtual contacts and give the presentation.

- **Group**

- Develop the guidelines to establish group. (i.e. Decide the roll of all participants)
- Every group should gain the expertise on particular topic.
- Prepare a presentation which covers all the details corresponding to the topic.
- Appropriate references should be given.
- Proper communication is expected.
- Give the presentation with which every group member can share the topic they learned.

3. Assessment Tools & Rubrics:

Group No.	Roll No	Name of the students	Understanding (5 Marks)	Presentation (10 Marks)	Question- Answer (5 Marks)	Total (20)
			1) 3-5: Good topic knowledge 2) 2-3 : Adequate topic knowledge 3) 1-2: Inadequate topic knowledge	1) 7-10 : Good content, Proper formatting , Body Language, Content Deliver 2) 3-7 : Adequate content, Proper formatting , Body Language, Content Delivery 3) 1-3 : Inadequate content, Improper formatting , Content Delivery	1) 3-5: Appropriate Answers to Questions. 2) 2-3 : Answers questions, but often with little insight knowledge 3) 1-2: Inappropriate Answer	
			1-2 Low, 2-3 Moderate, 3-5 High	1-3 Low, 3-7 Moderate, 7-10 High	1-2 Low, 2-3 Moderate, 3-5 High	
1	9	Kanishka Bhamare	5	9	4	18
	11	Khushboo Chandwani	5	9	4	18
	22	Sarthak Gangurde	5	9	4	18
	33	Prathamesh Karanjikar	5	9	5	19
2	43	Mayank Nahar	4	8	4	16
	54	Anisha Raundal	5	9	4	18
	57	Bhavya shah	4	8	4	16
	58	Dhruvil shah	4	8	3	15
3	5	Rahul Baisane	3	8	3	14

	8	Dev Bhamare	3	8	3	14
	42	Ganesh Matsagar	4	8	3	15
	45	Rohan Navale				
4	39	Anjali Mahajan	4	8	4	16
	74	Vishal Shete	5	9	4	18
	65	Sejal Bava	5	9	4	18
	72	Hrishikesh Gangurde	4	8	4	16
5	36	Vaishnavi Kshatriya	4	8	4	16
	28	Pranjal Kadlag	4	8	3	15
	26	Shraddha Jadhav	5	9	4	18
	21	Digvijay Gaikwad	4	8	4	16
	16	Ashwin Dhatingan	3	8	3	14
6	7	Barke Pratik	4	8	4	16
	31	Kale Anvay	4	8	3	15
	35	Kokane Amol	4	8	4	16
	41	Mate Rushikesh	4	8	4	16
	63	Sonawane Samadhan	4	8	3	15

7	14	Sakshi Chopada	5	9	4	18
	23	Sejal Gholap	5	9	4	18
	44	Dipali Navale	5	9	3	17
	64	Akanksha Thakare	5	9	4	18
8	37	Sandip Kumawat	4	8	4	16
	20	Ajay Gaikwad	4	8	3	15
	25	Kiran Jadhav	4	8	4	16
	38	Swapnil Londhe	3	8	3	14
9	13	Avinash Chaudhari	3	8	3	14
	40	Pratik Mali	4	8	3	15
	47	Piyush Patait	4	8	4	16
	49	Rohan Patil	4	8	4	16
10	30	Priya kakad	5	9	3	17
	32	sanika kale	5	9	3	17
	55	Darshana saindane	4	8	4	16
	56	Bhagyashree Salunke	4	8	4	16
11	50	Patil Rutuja	5	9	3	17

	59	Shinde Shivani	4	8	4	16
	62	Sonawane Nilesh	4	8	3	15
	53	Rajbhoj Pratim	4	8	3	15
	6	Bare Krishna	4	8	4	16
12	1	Tushar Aher	4	8	3	15
	3	Riya Bagul	4	8	4	16
	4	Rutuja Bagul	4	8	4	16
	17	Pratik Dhatrak	4	8	3	15
	2	Kulbhushan Bagal	3	8	3	14
13	10	Bhamare Shubham	4	8	4	16
	15	Deore Hritik	3	8	3	14
	19	Gaikwad Aditya	4	8	4	16
	66	Prasad Matale	4	8	3	15
	46	Navtakke Akshay	3	8	3	14
14	67	Shubham Patil	4	8	4	16
	68	Nikhil Chaudhari	4	8	3	15
	69	Ashutosh Deore	4	8	4	16
	73	Dipesh Dalvi	4	8	4	16

15	52	Sanket R. Pawar	5	9	4	18
	12	Adarsh Chaudhary	4	8	3	15
	61	Mangesh Sonar	5	9	4	18
	60	Kirtesh Somvanshi	4	8	3	15
	48	Ashutosh Patil	4	8	3	15
16	24	Nikhil gite	4	8	4	16
	29	Prathamesh kakad	4	8	4	16
	51	Ajinkya pawar	4	8	4	16
	34	Pratik katad	4	8	3	15
	27	Sanket Jain	4	8	3	15

4. Course Outcomes

	After the completion of course students will be able to:	BTL
CO2	Compute the future water quantity and quality requirements.	4
CO3	Design of aeration fountain and sedimentation tank.	4
CO4	Design of flocculation chamber, clari-flocculator and rapid sand gravity filters.	4
CO5	Explain various modern water treatment methods.	4
CO6	Explain water distribution and rainwater harvesting system.	3

5. POs

PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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 engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	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.
PO12	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.

6. PSOs

PSO1	Graduates will be able to apply fundamental knowledge, problem solving skills, engineering experimental abilities and design capabilities necessary for entering civil engineering career.
PSO2	Graduates will be able to demonstrate knowledge and techniques in engineering fields for effective management and professional development..
PSO3	Graduates will be able to apply technical and professional skills to be nationally competitive for employment/self-employment thereby benefit the society

7. Evidences: Activity Photographs/Videos/Sample PPT's

11:21

REC

PURIFICATION OF WATER AT WATER TREATMENT PLANT

BIHARDUP

(44)

Others in the meeting (40)

- AMOL KOKANE
- ASHUTOSH PATIL
- ASHWIN DHATINGAN
- BHAGYASHRI SALUNKE
- DARSHANA SAINDANE

11:21

11:17

REC

The combination of following processes is used for municipal drinking water treatment worldwide:

- Pre-chlorination - for algae control and secondary biological growth
- Aeration - along with gas chlorination for removal of dissolved iron and manganese
- Coagulation - for flocculation Coagulant aids also known as polyelectrolytes - to improve coagulation and for thicker floc formation
- Sedimentation - for solids separation, that is, removal of suspended solids trapped in the floc
- Filtration - for removal of carried over floc
- Disinfection - for killing bacteria

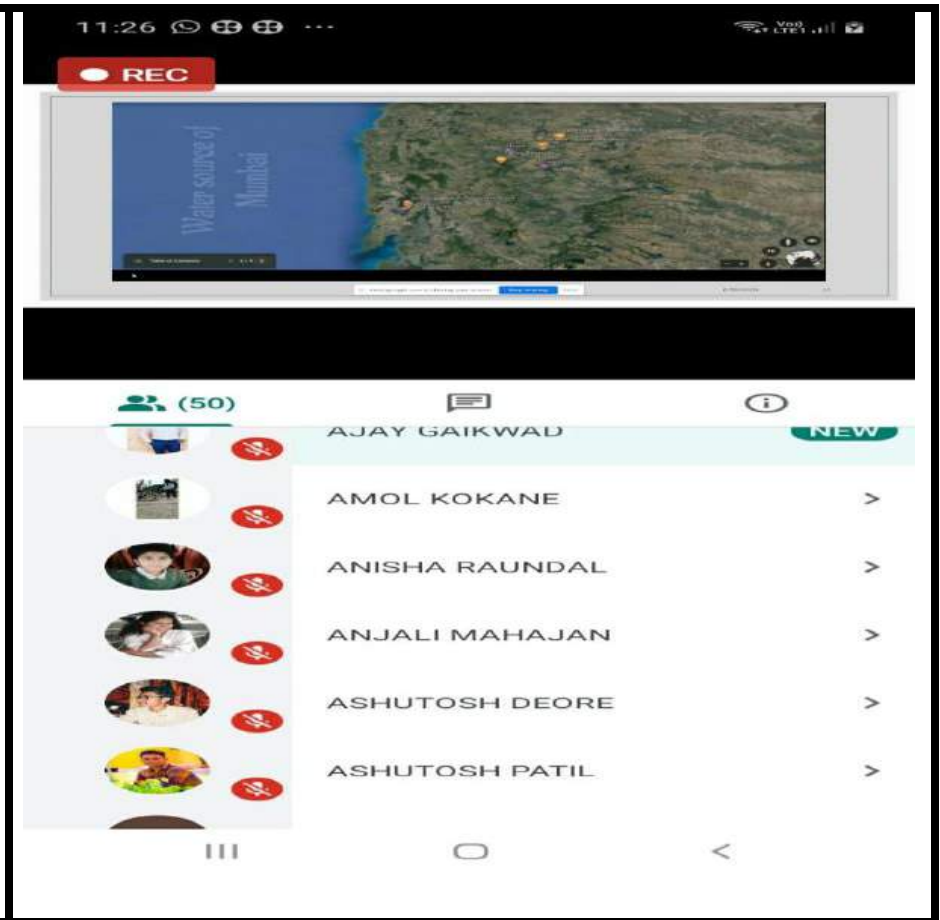
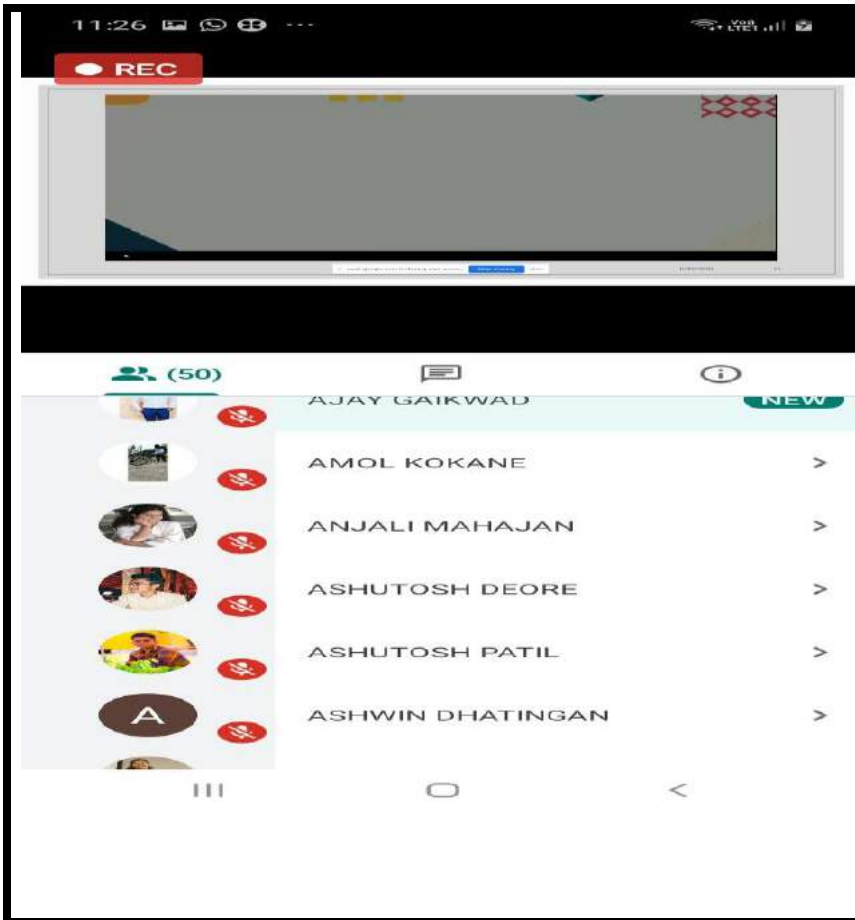
Fig 3

(46)

Others in the meeting (42)

- AMOL KOKANE
- ANJALI MAHAJAN
- ASHUTOSH PATIL
- ASHWIN DHATINGAN
- BHAGYASHRI SALUNKE

11:17



11:35

REC

Treatment of water at SWTP

Steps Involved in treatment of water at Songjeon drinking water treatment plant (SWTP)

- (1) Collection
- (2) Screening and Straining
- (3) Chemical Addition
- (4) Coagulation and Flocculation
- (5) Sedimentation and Clarification
- (6) Filtration
- (7) Disinfection
- (8) Storage
- (9) Distribution

(49)

ADARSH CHAUDHARI

AJAY GAIKWAD

AMOL KOKANE


ANISHA RAUNDAL

ANJALI MAHAJAN

ANVAY KALE

11:44

REC



DAF-based Drinking Water Treatment Plant in Korea

Prepared by:
Kenishka Bhamare (09)
Khushboo Chandwani (11)
Sarthak Gangurde (22)
Prathamesh Karanjikar (33)
Guide: Prof. M. B. Patil

(47)

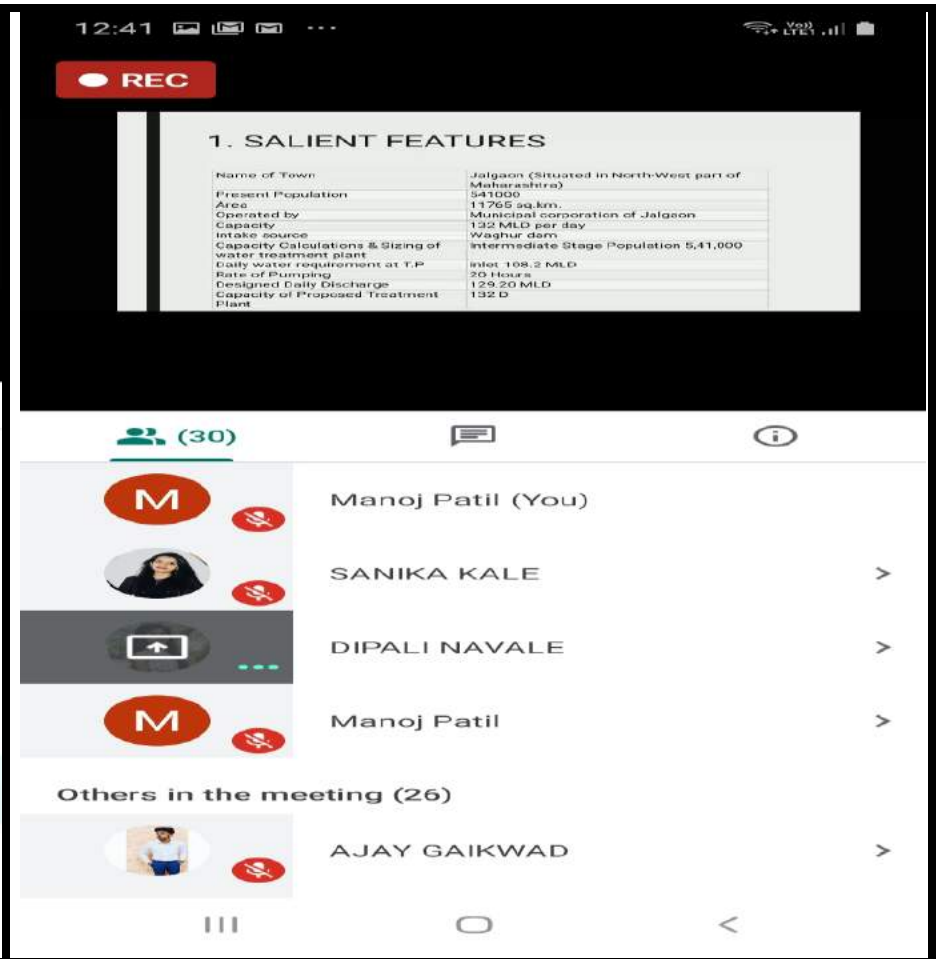
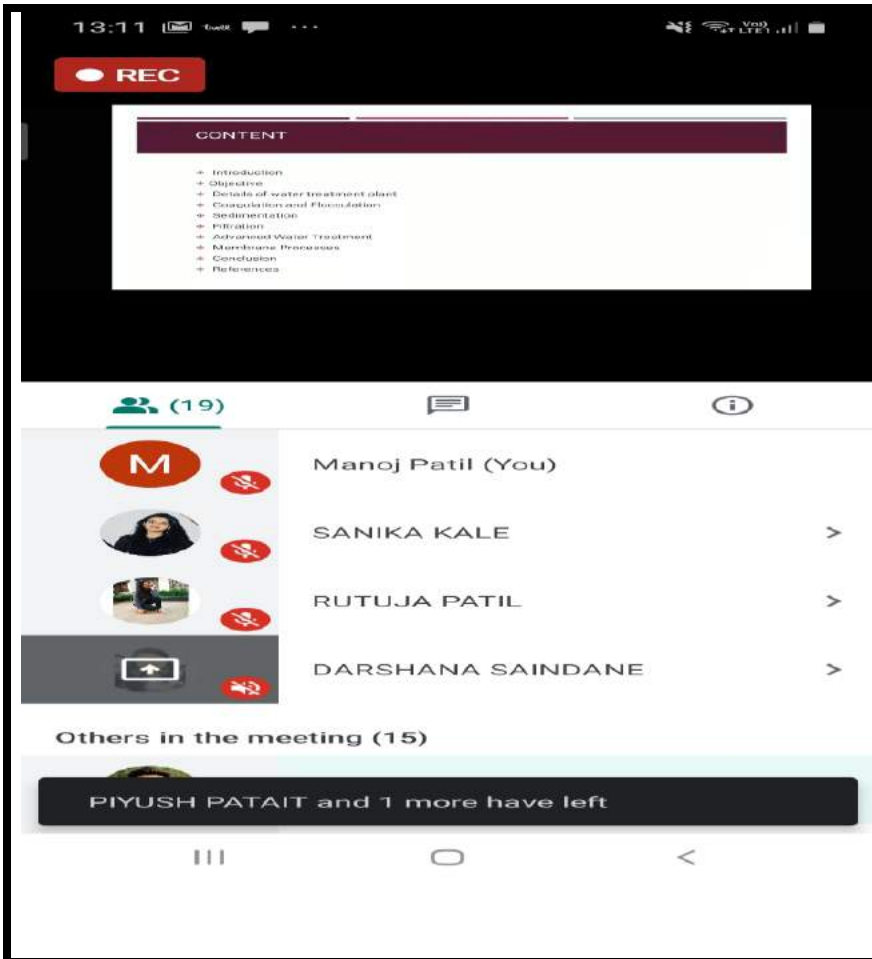
ADARSH CHAUDHARI

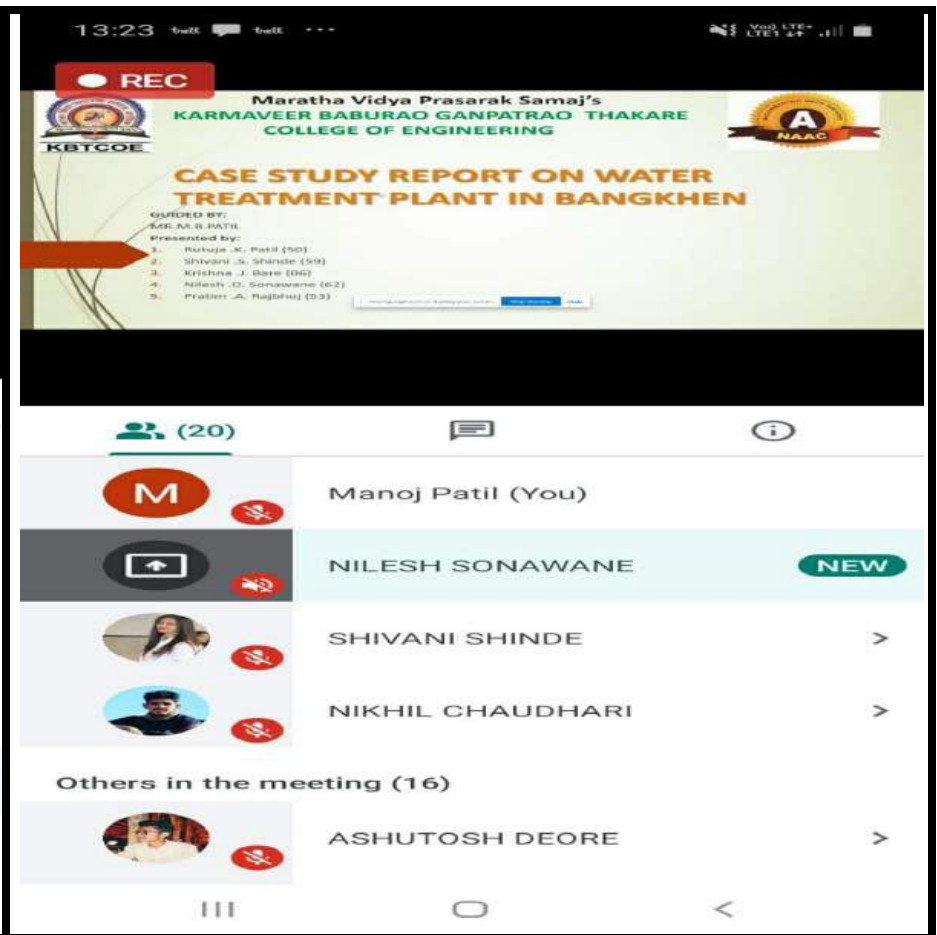
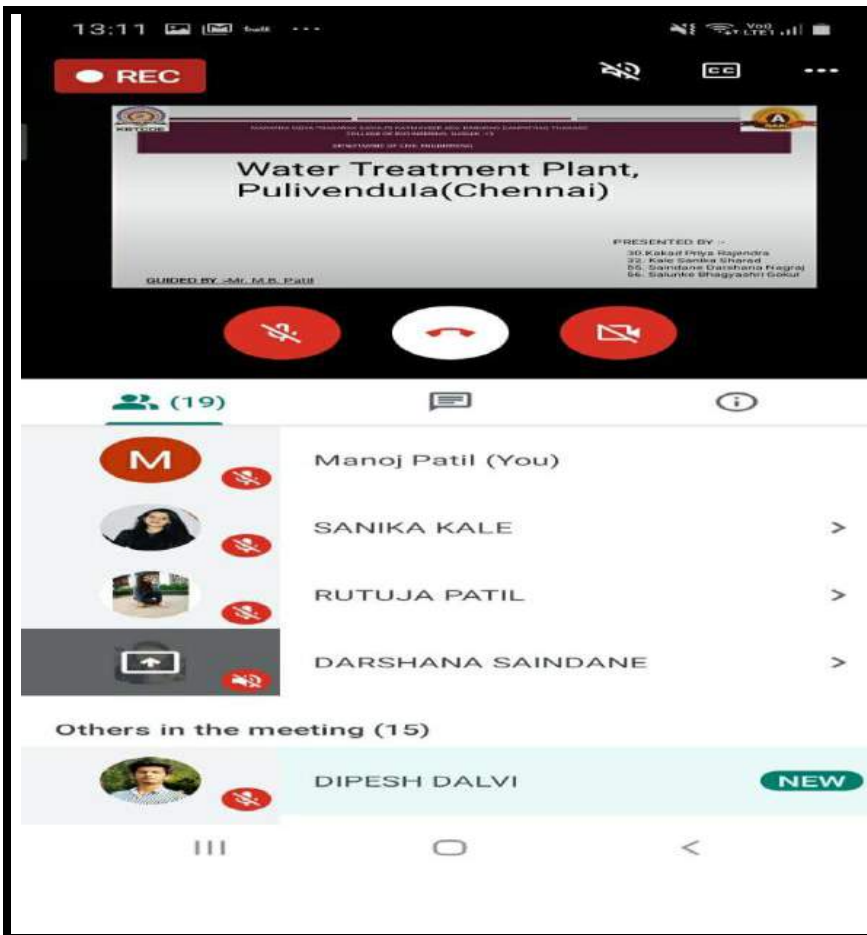
ANISHA RAUNDAL

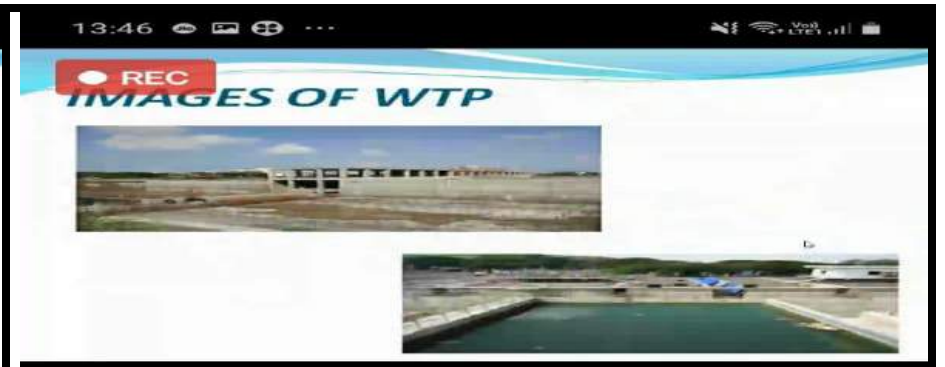
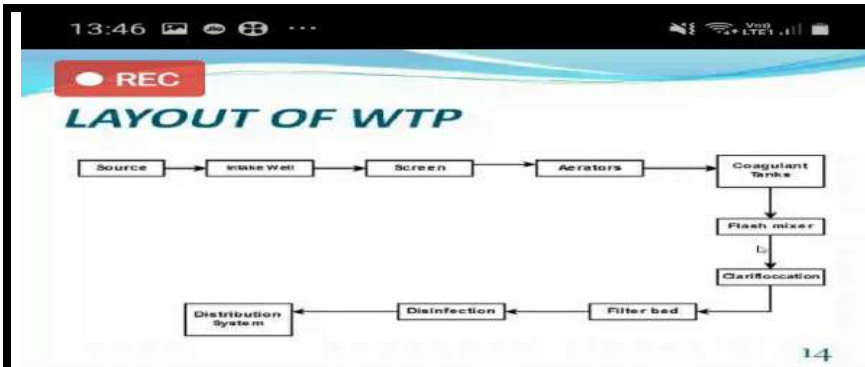
ANJALI MAHAJAN

ANVAY KALE

ASHWIN DHATINGAN







(23)

Manoj Patil (You)

RIYA BAGUL

PRATIM RAJBHOJ

PRATHAMESH KAKAD

Others in the meeting (19)

ADITYA GAIKWAD

(23)

Manoj Patil (You)

RIYA BAGUL

PRATIM RAJBHOJ

PRATHAMESH KAKAD

Others in the meeting (19)

ADITYA GAIKWAD

8. Recorded video link:

<https://drive.google.com/file/d/1HyneO6gh87o03ULuwN7cLu9mfiMwwdMB/view?usp=sharing>

9. Group member and name of WTP case study:

Group no.	Roll No.	Name of student	Name of water treatment plant case study
1	9	Kanishka Bhamare	A case study on the DAF based Drinking Water treatment Plant in Korea
	11	Khushboo Chandwani	
	22	Sarthak Gangurde	
	33	Prathamesh Karanjikar	
2	43	Mayank Nahar	A case study report on WATER TREATMENT PLANT, BHUBANESWAR
	54	Anisha Raundal	
	57	Bhavya shah	
	58	Dhruvil shah	
3	5	Rahul Baisane	A case study on Drinking Water Treatment Plant Iraq (Al-wahdaa)
	8	Dev Bhamare	
	42	Ganesh Matsagar	
	45	Rohan Navale	
4	39	Anjali Mahajan	Performance Evaluation and Water Quality Index Analysis for Qandil Water Treatment Plant
	74	Vishal Shete	
	65	Sejal Bava	
	72	Hrishikesh Gangurde	
5	36	Vaishnavi Kshatriya	Bhandup Complex Treatment Plant
	28	Pranjal Kadlag	
	26	Shraddha Jadhav	
	21	Digvijay Gaikwad	
	16	Ashwin Dhatingan	
6	7	Barke Pratik	Saidabad Water Treatment Plant, Dhaka, Bangladesh
	31	Kale Anvay	
	35	Kokane Amol	
	41	Mate Rushikesh	

	63	Sonawane Samadhan	
7	14	Sakshi Chopada	A Case Study on Water treatment plant, Jalgaon
	23	Sejal Gholap	
	44	Dipali Navale	
	64	Akanksha Thakare	
8	37	Sandip Kumawat	A case study water treatment plant midc Dhule
	20	Ajay Gaikwad	
	25	Kiran Jadhav	
	38	Swapnol Londhe	
9	13	Avinash Chaudhari	Case Study Report on Water Treatment Plant, Ahmedabad
	40	Pratik Mali	
	47	Piyush Patait	
	49	Rohan Patil	
10	30	Priya kakad	A Case Study Water Treatment Plant Pulivendula, Chennai
	32	sanika kale	
	55	Darshana saindane	
	56	Bhagyashree Salunke	
11	50	Patil Rutuja	A Case Study Of Water Treatment Plant In Bankhen
	59	Shinde Shivani	
	62	Sonawane Nilesh	
	53	Rajbhoj Pratim	
	6	Bare Krishna	
12	1	Tushar Aher	Case study on Water treatment plant Parvati- Pune
	3	Riya Bagul	
	4	Rutuja Bagul	
	17	Pratik Dhatrak	
	2	Kulbhushan Bagal	
13	10	Bhamare Shubham	Case Study Report On Wtp Kota Rajasthan

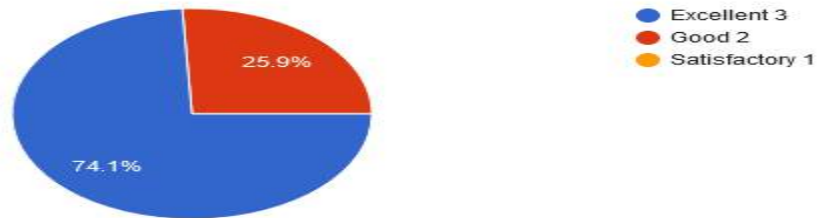
	15	Deore Hritik	
	19	Gaikwad Aditya	
	66	Prasad Matale	
	46	Navtakke Akshay	
14	67	Shubham Patil	A Case Study On Water Treatment Plant & Supply Scheme of Solapur Town , Maharashtra
	68	Nikhil Chaudhari	
	69	Ashutosh Deore	
	73	Dipesh Dalvi	
15	52	Sanket R. Pawar	Case Study On Worlds Biggest Water Treatment Plant "James W. Jardine Plant"
	12	Adarsh Chaudhary	
	61	Mangesh Sonar	
	60	Kirtesh Somvanshi	
	48	Ashutosh Patil	
16	24	Nikhil gite	Sonia Vihar Drinking Water Production Plant, New Delhi
	29	Prathamesh kakad	
	51	Ajinkya pawar	
	34	Pratik katad	
	27	Sanket Jain	

10. Feedback/Impact Analysis (Based on Students Feedback):

Sr. No.	3- High/Excellent	2 - Moderate /Average	1- Slight/Poor
Did you find the methodology helpful?	74.1%	25.9%	--
Is the content relevant?	70.7%	29.3%	--
Concept of the methodology.	74.1%	25.9%	--

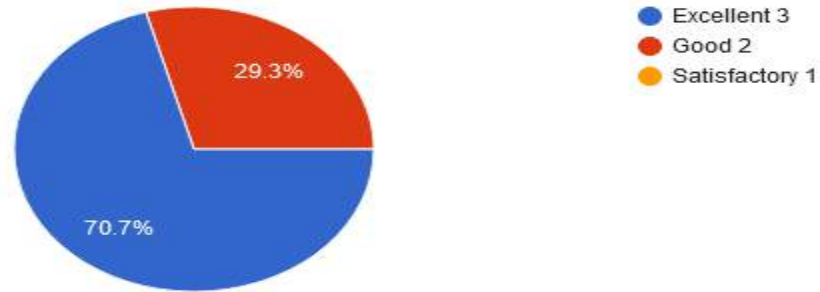
Q3. Did you find the methodology helpful?

58 responses



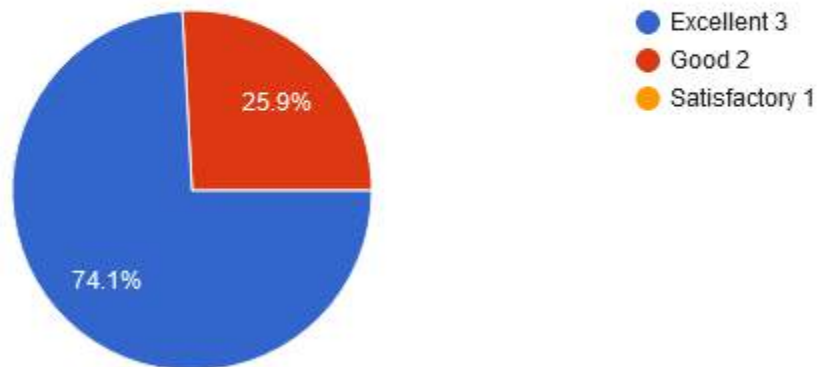
Q4. Is the content relevant?

58 responses



Q5. Concept of the methodology.

58 responses



Course Outcome

	Course Outcome	CO2	CO3	CO4	CO5	CO6
A	No. of Groups/Students Achieving CO	58	58	58	58	58
B	Total Rating	153	148	152	157	151
C	Average Rating (B/A)	2.64	2.60	2.67	2.75	2.65

Program Outcome

	Program Outcome	PO1	PO2	PO4	PO5	PO6	PO7	PO9	PO10	PO12
A	No. of Groups/Students Achieving PO	58	58	58	58	58	58	58	58	58
B	Total Rating	157	156	152	149	154	152	156	156	155
C	Average Rating (B/A)	2.71	2.69	2.62	2.57	2.70	2.67	2.69	2.69	2.67

Program Specific Outcome

	Program Specific Outcome	PSO1	PSO2	PSO3
A	No. of Groups/Students Achieving PSO	58	58	58
B	Total Rating	158	157	160
C	Average Rating (B/A)	2.72	2.71	2.76

Link for review and critics

<https://forms.gle/iBbt4KeRL3f7b1qs7>