

A Report on Exposure Visit to the "Sewage Treatment Plant (STP)"
Organized by Department of Civil Engineering
Under the aegis of ASCE MITS Student Chapter
on 22.09.2026 (Batch 1) & 07. 10.2026 (Batch 2)



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Venue: MITS Sewage Treatment Plant, MITS Campus, Angallu, Madanapalle

Time: Batch 1 – 9:00 am to 12:00 pm; Batch 2 – 2:00 pm to 5:00 pm

Mode of Conduct: Offline (on-site)

Course Linked: 23CE207 – Environmental Engineering Laboratory (B.Tech III Year I Semester)

Attendees Count: 59 students (Batch 1: 30, Batch 2: 29)

Report Received on 15.10.2026.

Objective of the Program

- To provide first-hand exposure to the layout, units and working of an operational sewage treatment plant.
- To help students relate the sequence of treatment processes to the wastewater analysis experiments performed in the Environmental Engineering Laboratory.
- To demonstrate sampling and preservation methods for raw sewage, partially treated wastewater and treated effluent.
- To enable students to understand how parameters such as solids, DO, BOD, COD, nitrogen and residual chlorine indicate pollution level and treatment efficiency.
- To create awareness about sludge handling, effluent reuse and the environmental importance of wastewater treatment.
- To bridge the gap between classroom theory and practical plant operation, building confidence for future environmental engineering practice.

Event Details

The Department of Civil Engineering, under the aegis of the ASCE MITS Student Chapter, organised an exposure visit, titled **"From Waste to Clean Water"**, to the Sewage Treatment Plant (STP) located on the MITS campus. The visit was conducted during the laboratory hours in two batches: Batch 1 on 22 September 2026 (9:00 AM to 12:00 PM) and Batch 2 on 7 October 2026 (2:00 PM to 5:00 PM). The visit supplemented the course **23CE207 Environmental Engineering Laboratory**, allowing students to observe in the field the processes they study and the necessity of conducting laboratory tests.

Before the walk-through, the faculty coordinators briefed the students on safety precautions, the plant's process flow, and the objectives of the visit. Faculty members **Dr T. Venkateswarlu**, **Dr Ashok Julaganti**, and **Mrs K. Anitha**, along with the plant operator **Mr K. Srinivasulu**, then guided the students, unit by unit, along the flow of sewage from screening to the final treated water. The principle, function and operating parameters of each unit were explained, and students were encouraged to ask questions throughout. The visit was supported by the teaching assistant, **Mr G. Mahesh** (PhD scholar).

Treatment units observed

- **Screening:** removal of floating and coarse material to protect downstream units.
- **Grit removal:** separation of heavy inorganic particles such as sand and grit.
- **Primary clarifier:** settling of suspended solids and formation of primary sludge.
- **Aeration (biological treatment):** aerobic degradation of organic matter by activated sludge, with the importance of dissolved oxygen explained.
- **Secondary clarifier:** settling of biological flocs and return of activated sludge.
- **Sludge treatment:** thickening, dewatering and handling of excess sludge.
- **Treated water:** quality of the final effluent and its scope for reuse on campus.

Link with laboratory syllabus (23CE207)

Faculty explained how each part of the plant connects to the experiments listed in the Environmental Engineering Laboratory syllabus:

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Laboratory experiment	Relevance observed at the STP
Sampling and preservation of water and wastewater	Sample points at the inlet, aeration and treated water stages; discussion on grab vs. composite sampling and preservation
Solids – suspended, volatile and fixed	Solids removal through screening, grit removal and primary clarifier; MLSS/MLVSS in the aeration stage
Sludge Volume Index	Settling behaviour of activated sludge and role of the secondary clarifier
Dissolved Oxygen	Aeration tank oxygen transfer and DO levels required for aerobic treatment
BOD and COD	Organic load in influent vs. effluent; treatment efficiency
TKN and Ammonia Nitrogen	Nitrogen forms in sewage and their removal
Residual chlorine / available chlorine	Quality and disinfection of treated water; residual chlorine where chlorination is practised
Total and faecal coliform	Microbiological quality of treated water and safe reuse (demonstration topic)

Students also observed the appearance, colour, and odour of raw sewage and treated effluent, and noted the visible improvement in quality after each treatment stage.

Outcomes of the Event

- Students gained practical understanding of the process flow and function of each unit in a sewage treatment plant.
- Students understood the correct methods for sampling and preserving wastewater (CO1).
- Students were able to relate laboratory parameters such as turbidity, solids, chlorine, BOD, COD and TKN to actual plant conditions (CO2, CO3).
- Students learned how treatment efficiency is assessed by comparing influent and effluent quality (CO4).
- Students became familiar with sludge characterisation, settling behaviour and treated water quality (CO5).
- Awareness of safe working practices, operation and maintenance requirements of a treatment plant was created.
- Students appreciated the role of wastewater treatment and reuse in protecting public health and the environment.

Program Outcomes (POs) Covered

PO1 – Engineering Knowledge: Students applied environmental engineering fundamentals to understand physical, chemical and biological treatment processes.

PO2 – Problem Analysis: Participants analysed how wastewater characteristics and process conditions, such as flow, aeration, and sludge settling, affect treatment performance.

PO4 – Conduct Investigations of Complex Problems: Students observed sampling and testing practices and understood how water quality data are interpreted to evaluate plant efficiency.

PO7 – Environment and Sustainability: Students understood how treatment and reuse of wastewater reduce pollution and conserve freshwater resources.

PO12 – Life-long Learning: Exposure to real treatment infrastructure motivated students to keep learning about advanced wastewater treatment and monitoring technologies.

SDG Goals Aligned with the Event

SDG 4 – Quality Education: The visit provided experiential learning that strengthened the link between classroom teaching and laboratory practice.

SDG 6 – Clean Water and Sanitation: Direct exposure to wastewater treatment and reuse promoted understanding of sanitation, water quality and sustainable water management.

SDG 9 – Industry, Innovation, and Infrastructure: Observation of treatment infrastructure and its operation supports education on resilient and efficient environmental infrastructure.

SDG 11 – Sustainable Cities and Communities: Wastewater management is essential for healthy, sustainable urban and rural communities, and the visit introduced students to this foundation.

SDG 12 – Responsible Consumption and Production: Discussion on treated water reuse and sludge management encouraged responsible use of water and resources.

SDG 17 – Partnerships for the Goals: Collaboration among the Department of Civil Engineering, the ASCE MITS Student Chapter and the institute's plant staff reflects effective partnership for educational advancement.

Conclusion

The exposure visits to the Sewage Treatment Plant on 22 September 2026 and 7 October 2026 (two batches) were informative and engaging learning experiences for the third-year Civil Engineering students. By observing each treatment unit in operation, students were able to connect the wastewater analysis experiments conducted in the Environmental Engineering Laboratory (23CE207) to real plant processes. The detailed explanations and guidance provided by Dr T. Venkateswarlu and Dr Ashok Julaganti enhanced their understanding of sampling, treatment stages, sludge handling and treated water quality. The visit strengthened students' technical knowledge, environmental awareness, teamwork, and communication skills, aligning with key Program Outcomes and Sustainable Development Goals, and prepared them for future academic and professional challenges in environmental engineering.