Wastewater and Aquatic Biology- Course Overview

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Location: Metro Water Recovery-Northern Treatment Plant (NTP)
51 Baseline Road Brighton, CO 80603.

Course Description:

Wastewater and Aquatic Biology gives teachers an overview of the treatment process at Metro Water Recovery and highlights the environmental benefits to the South Platte River. Water quality scientists will demonstrate aquatic life/habitat assessment techniques. The experience will also include a hands-on macroinvertebrate survey and tours of the Northern Treatment Plant.

The course is designed primarily for teachers of biology, environmental science, earth science, chemistry, and related sciences but is open to teachers at all levels.

Goals and Learning Objectives:

Provide teachers with background knowledge to help students become global stewards of the environment. Demonstrate the science behind decisions that affect the wastewater treatment process and aquatic life/habitat improvement projects. Provide hands-on field experiences with practical classroom applications.

Grading Policy:

To earn a passing grade in the course, teachers must complete online modules. Each module will have specific assignments. The modules will be completed prior to the scheduled onsite visit. The purpose of the modules is to expose participants to available public resources and

background information relating to wastewater treatment and water quality. The modules will enhance the experience and may provide content for classroom lesson plans. Teachers are expected to participate in all program activities and incorporate aspects of the day's events into a lesson plan appropriate for individual grade levels. Various formats will be accepted. All lesson plans should be submitted to Maritza Franco (mfranco@metrowaterrecovery.com) within one week of class completion.

Continuing education credit is available through Colorado State University. Metro will pay for the 1.0 semester hour credit.

Grading Rubric:

Points Received	**Activity**
20 points	Pre-requisite Modules.
10 points	Attendance.
50 points	Collaborative Activities.
	10 points: Overview and discussion of the wastewater treatment process.
	15 points: Hands-on macroinvertebrate study along the South Platte River.
	15 points: Facility Tour.
	10 points: Focused educational stations with an emphasis on wastewater microbiology, Metro's public education campaigns, and available classroom resources for teachers.
20 points	Submit lesson plan within one week of class completion.
Total points=100	**Passing points=75**

Pre-requisite Learning Modules:

Module 1	Explore Metro's resources and offerings for teacher classroom implementation and use.
Module 2	Review CDPHE Integrated water quality monitoring and assessment report(s).
Module 3	Explore EPA online tool to identify local watersheds.
Module 4	Explore Denver urban water quality assessment dashboard.

Schedule:

Time	**Activity**
8:00 a.m. – 8:45 a.m.	Check-in, breakfast, and history of Metro.
8:45 a.m. – 9:15 a.m.	Introduction to the science and practice of wastewater treatment.
9:15 a.m. – 9:30 a.m.	Walk to South Platte River project site.
9:30 a.m. – 11:30 a.m.	Attendees will participate in multiple hands-on activities along the river, including a macroinvertebrate survey led by Metro's water

	quality team. In addition, participants will make Secchi disks to assess the turbidity of the water.
11:30 a.m. – 11:45 a.m.	Walk back to the NTP Visitor Center.
11:45 a.m. – 12:15 p.m.	Lunch provided by Metro.
12:15 p.m. – 2:15 p.m.	Tour the Northern Treatment Plant with a focus on wastewater liquid and solids treatment processes.
2:15 p.m. – 2:45 p.m.	Demonstration of wastewater microbiology as treatment indicators.
2:45 p.m. – 3:15 p.m.	Focused educational stations with an emphasis on wastewater microbiology, Metro's public education campaigns, and available classroom resources for teachers.
3:15 p.m. – 4:45 p.m.	Review of Metro's educational offerings: Tours, virtual classrooms, bilingual resources, FIN children's video.
4:45 p.m. – 5:00 p.m.	Course feedback and paperwork for continuing education credit.

Supporting Materials:

- Dorsch, J., Lundt, S., Parman, J., Neilson, M., Culbertson, A. (2023). Metro Water Quality Water Annual Report 2023. https://www.metrowaterrecovery.com/wp-content/uploads/2024/05/MWR-Water-Quality-Annual-Report-2023_Jordan-Parman.pdf#:~:text=In%201992%2C%20Upper%20South%20Platte%20Segment%2015%2C,water%20for%20the%20discharge%20from%20the%20RWHTF%2C

Dress Code and Safety Procedures:

- Metro is a highly industrialized work environment and **closed-toed shoes are required.**
- Many of the activities will be conducted outside in the sun. Hats, sunscreen, and insect repellent are recommended.
- Metro provides reasonable accommodations for tours (and any other public programs) in accordance with the Americans with Disabilities Act. Please let us know if anyone in your group has a disability-related need for accommodation. To ensure consideration of specific accommodation requests, visitors must contact Metro at least **14 days in advance of the site visit or tour.**

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