STREAM RESTORATION FOR GRADUATES: ENHANCING MULTIDISCIPLINARY LEARNING THROUGH COURSAUGMENTATION AND IN-STREAM EXPERIENTIAL ACTIVITIES

The Water Center is working to enhance freshwater research activities at the University of Michigan by fostering cross-disciplinary collaborations, encouraging new linkages to freshwater issues in research and courses, and providing more opportunities to study and learn about the Great Lakes and other large freshwater systems.

Through this funding effort, the Water Center is increasing U-M’s capacity to contribute solutions to the protection and restoration of freshwater systems.

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PROJECT SUMMARY
Stream ecosystems are dynamic, characterized by changing physical, geomorphological, chemical, and biological conditions, and they generate critical services for people, by providing fresh drinking water, a source of food, flood control, and recreational and cultural value. Stream systems have undergone dramatic changes in the past century and are now are considered to be one of the most threatened and endangered ecosystems on Earth. In order to manage these ecosystems and develop effective restoration strategies to improve their degraded condition, it is essential to provide tomorrow’s engineers, managers and planners with the right tools to solve these problems.

The project team will improve the content of an existing University of Michigan course, CEE 624: Restoration Fundamentals and Practices in Aquatic Systems, to provide additional hands-on learning opportunities targeted at first-and second-year master’s students. It will provide a strong field component (new for engineers), more quantitative analysis (often lacking for ecologists/biologists) and an opportunity for students from different disciplines/training to work together and learn from each other’s skill sets. In revising this course, the investigators will emphasize the acquisition of specific skills and knowledge through inquiry-based approaches. Specifically, the team will:

1) Enhance the multi-disciplinary content of the course by having a team of engineering and ecology co-investigators develop content that uses inquiry-based methods to demonstrate key concepts;
2) Engage students in active learning by developing a streamside experimental learning station where students will apply course material to see the outcomes of restoration activities;
3) Increase student enrollment across departments (such as SNRE, EEB, and EES) by partnering with departments and faculty to increase student awareness of the course and by developing a website to advertise the course through online media; and
4) Solve real-world, complex problems with multidisciplinary team projects, by increasing recruitment of non-CEE students and promoting team-based field activities to evaluate stream restoration techniques.

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Photo courtesy of the Huron River Watershed Council