



## Teaching the Skills to Restore One of the World's Most Precious Resources

**W**ith streams becoming one of the most endangered ecosystems on the planet, we need restoration practitioners more than ever. Stream restoration often requires the collaboration of engineers, ecologists, and physical scientists. The science team makes decisions based on the weight of evidence of science and important social and environmental values guiding the restoration effort. Faculty members at the University of Michigan (U-M) have revised a stream restoration engineering course to bring together U-M students and faculty to study stream restoration in an interdisciplinary way. The new course immerses students in this multidisciplinary, problem-driven profession.

### A HANDS-ON, MULTIDISCIPLINARY FIELD COURSE

The course, *Stream Restoration: Concepts and Applications*, is a multidisciplinary, inquiry-driven, field-based, and hands-on learning opportunity for budding restoration practitioners. Students study with classmates from across disciplines, participate in weekly field modules, and work in multidisciplinary teams to complete stream restoration projects. The projects have real-world consequences. For example, students collected stream data for U-M Matthaei Botanical Gardens to determine whether a dam's removal would restore a section of the Huron River on their property. The Botanical Gardens used the findings to apply for a grant to remove the dam.

Students from Engineering, the School of Natural Resources and Environment, Program in the Environment, and Geology have participated in the new course since it began in 2015. Engineering students benefit from hands-on field experiences, learning about streams and their dynamics. Ecology and physical science students gain stronger quantitative skills in hydrological modeling. All benefit from the diverse perspectives of others in the classroom.

### STREAMSIDE LABORATORY

A streamside laboratory established on Millers Creek, a tributary of the Huron River, allows hands-on exercises studying one of the Huron River's most impacted streams. The Huron River Watershed Council, a local partner, has been implementing restoration projects in Millers Creek since 2006. The streamside laboratory will put students in a position to determine if different restoration efforts to restore aquatic habitat can lead to a healthier stream over time. Students quantify the dominant physical and biological parameters defining the stream's health, assess local biota needs and how to provide them, and monitor the stream's long-term sustainability and health.

### COURSE INSTRUCTORS



**Aline Cotel, PhD**  
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**Catherine Riseng, PhD**  
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### ABOUT THE WATER CENTER

The U-M Water Center addresses critical and emerging water resource challenges through collaborative research projects. We believe that diversity is key to individual empowerment, and the advancement of sustainability knowledge, learning and leadership. The Center is part of the Graham Sustainability Institute, which integrates faculty and student talent across U-M, and partners with external stakeholders to foster collaborative sustainability solutions at all scales.

See: [www.graham.umich.edu/water](http://www.graham.umich.edu/water)