

Fourth-year course builds partnerships between students and communities

Yvonne Robertson | January 19, 2018



(<http://yourontarioresearch.ca/wp-content/uploads/2018/01/Youth-tree-planting.jpg>) When the village of Eden Mills wanted to go carbon neutral (<http://www.goingcarbonneutral.ca/index.cfm?page=Home>), the community members approached environmental scientists at the nearby University of Guelph for help.

Initiated by resident and architect Charles Simon, the residents believed that due to their population size (about 350 people) and location (surrounded by wooded areas), this seemingly ambitious goal could be achieved.

But they wanted the expertise and research available at the university to provide an independent academic perspective that would advise and monitor the project.

Every year, researchers and more than 70 fourth-year University of Guelph students (<https://www.uoguelph.ca/ses/course-outlines/project-environmental-sciences-envs4001>) connected to the Project in Environmental Sciences course descend upon the university's surrounding communities.

They work with community members to help solve an environment-related problem they're experiencing, or to help them achieve a particular goal, as is the case with Eden Mills. A new group helps solve a different piece of the Eden Mills carbon neutral puzzle each school year.

"We're lucky," Simon told the University of Guelph back in 2013 (<https://news.uoguelph.ca/2013/03/students-help-eden-mills-reduce-its-carbon-footprint/>). "Some of the best research is right here in Guelph....With the help of researchers and students, we have gotten some very valuable information on trees, soils, and microclimate. It added precision to what we are doing."

Almost five years later, the village is nearly 80% carbon neutral, and has picked up some media coverage (<https://www.nytimes.com/2016/08/22/science/english-village-becomes-climate-leader-by-quietly-cleaning-up-its-own-patch.html>) along the way. Eden Mills continues to work with the students and researchers at the University of Guelph to further improve their efforts and achieve 100% carbon neutrality.

"What we found was that there was a huge readiness and awareness in our village when we started out," says Simon when discussing its origins today. "What really resonated was that we were saying, 'We're part of the problem when it comes to this business of climate change, and we have to be part of the solution.'"

Real-world experience and interdisciplinary learning

Divided into groups of five or six per project, the fourth-year Environmental Sciences class provides students with real-world, experiential learning opportunities to get out in the community and put their knowledge to use.

“They get real research experience and learn several skills,” says Naresh Thevathasan (<https://www.uoguelph.ca/ses/people/naresh-thevathasan>), one of the professors who run the course. “They’re communicating with clients, interacting with a variety of different people. We also guide them to other faculties that can help, depending on the project they’re working on. It’s very important to make sure they understand the interdisciplinary nature of these projects. It involves the natural sciences, physical, social sciences.”

Students from four different majors enroll in the course—Environmental Sciences, Economic and Environmental Policy, Natural Resource Management, and Ecology—meaning every year the class has a wide suite of skills to offer.

(http://yourontarioresearch.ca/wp-content/uploads/2018/01/IMG_2732-3-from-Ruth.jpg) “It’s interesting to see an Economics student working with someone interested in Natural Resource Management and someone purely interested in Ecology,” says Neil Rooney (<https://www.uoguelph.ca/ses/people/neil-rooney>), another professor leading the program. “These groups of five or six students have so many different skills to offer the client.”



One project had students working with the Saugeen Ojibway Nations on the Bruce Peninsula to incorporate culture into environmental assessments and create culturally sensitive processes.

Other clients include the City of Guelph, conservation authorities, and other non-governmental organizations.

A project particularly important to the province helped Ontario Greenhouse Producers better dispose of greenhouse rainwater—a typically difficult undertaking due to its high level of nutrients. The group worked with engineering faculty and a greenhouse engineer to design a mechanism that captured more phosphorous from this rainwater before being released.

“Ontario has 67% of the national greenhouse industry in Canada,” says Thevathasan. “So treating greenhouse rainwater is a big issue for us. The students had the opportunity to lay their hands on a real life issue.”

Besides honing communication and problem-solving skills, students are exposed to guest lecturers from the university and the community. They also write a report and present their findings to colleagues, clients, family, and friends at an end-of-the-year dinner.

“Anecdotally, I’ve had students come back saying this course was something they could talk about in job interviews,” says Rooney. “It provided them with concrete, tangible examples. Every student who has taken this course has a story they can bring to the table. It’s real-world problem-solving.”

Building confidence, creating positive outcomes

An unexpected outcome of the Environmental Sciences class has been the confidence it has instilled within the students. Each professor bears first-hand witness to the students’ growth throughout the year.

“At the end of your degree, you’ve surrounded yourself with like-minded people,” says Rooney. “You might not realize you’ve gained expertise because everyone you know knows what you know. It’s nice to watch the students gain some confidence and realize they have something to offer, have gained a skillset that clients in the real world need. They get assurance that they have insights that are valuable to society.”

Every summer before class, the instructors reach out to their network of clients, faculty members, and colleagues to find interested community partners. They’re also approached by repeat clients such as Eden Mills and the City of Guelph.

By the time school is in session, they have about 12 or 13 projects to pitch to the class. Projects are selected based on a number of factors, including their feasibility to be completed within the eight months of the course and their budget. Once divided into groups and assigned to projects, the students are ready to work with their various partners.

“The fact that the same clients keep coming back year after year after year to engage with students—that, to me, says the clients are very happy with this type of project-based course,” says Rooney. “It’s a very positive experience for students. They leave with problems solved, relationships built, and a very tangible final product they can point to when interviewing for jobs and grad schools.”

Benefiting from university research

The experience also provides clients with the benefits of the instructors’ expertise, Environmental Sciences researchers themselves. For Eden Mills, a particularly valuable study conducted by Thevathasan and former course professor Andrew Gordon provided original research that measured exactly how much carbon the community was absorbing through its trees.

The researchers found that although the community’s biggest disadvantage was its reliance on cars (due to size and location, there’s very little public transportation infrastructure), Eden Mills’ biggest assets were the fields, trees, and crops, absorbing more than 50% of its carbon emissions.

“That was enormously helpful and a huge lesson specific to a rural community that wouldn’t apply in a city,” says Simon. “We wanted this project to have a very strong scientific component, but also wanted to draw upon behavioural research and social sciences research as well. “We have an amazing number of experts in our village, which makes us extremely unusual, but we also wanted and hoped for the support of the university. And we received it.”

The residents also drew upon experts and researchers from the University of Guelph and elsewhere to give talks and run workshops for the village.

"We've become a very small, but very educated population," says Simon. "It's been a wonderful process of education."

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