

Course Title:	Urban Water Ecology
Instructor(s):	Andrew Laursen, Dept Chemistry and Biology, Ryerson University Phone: 416-979-5000 ext. 553389 Email: alauren@ryerson.ca
Dates:	July 3-16, 2021 (tentative dates). We will be in the field from July 4-July 16, so students wishing to depart the evening of July 16 my do so. Dorms will remain open on the night of July 16 for July 17 departure
Location:	Fieldwork will mainly occur in the City of Toronto at a selection of locations such as: Tommy Thompson Park, the Don River watershed, Toronto Island, the Rouge River National Urban Park, and Highland Creek Park. Other possible excursions to wetlands, waste water treatment plants, sewage lagoons, and water treatment plants may occur (e.g., Highland Creek Treatment Plant, Stevenson Swamp, Ashbridges Bay Water Treatment) depending on the instructor’s discretion. The course description provides an overview of course content: specific material may vary from year to year depending on the instructor.
Cost:	\$1525 total cost* (\$350 nonrefundable deposit to home university; \$1079 balance). Cost includes: travel via TTC and Go Transit to field locations (\$162), dormitory accommodations for 13 nights (\$845), lunch and dinners (\$423). Additional \$96 (estimated) for breakfasts not included in course cost. Balance to be paid by April 4, 2022 to Department of Chemistry and Biology, Ryerson University, 350 Victoria Street, Toronto, ON M5B2K3 *estimated cost, variance in total cost, based on adjustments to housing costs, will be less than 10%
Prerequisites:	University level course in Biology and Ecology, or equivalent. This class is targeted at undergraduates that have completed at least 20 course credits. A non-academic prerequisite – students must be able to pass a swim test if they are to use boats
Enrolment:	20(8)
Course Description (brief):	The primary goals of this course are to provide students with a foundation in urban water ecosystems; to provide participants opportunities to improve their field biology skills (sampling methods and identification); to improve their ability to accurately and reflectively characterize field observations; and to help students design and collect data for their own scientific experiment. Course goals will be achieved through engagement in field-based observations, sampling, and through the application of practical skills during excursions to urban water sites in and around the City of Toronto. Students will also complete an independent or small group research project that they will present during in-class workshops or seminars.
Evaluation:	Field Journal Exercise(s) (individual) 25% Data collection, entry and interpretation via D2L homework (individual) 15% Group research project proposal and presentation (team) 20% Participation (evaluation completed by professor, TA, and and team peers using a specific evaluation form) 10% Quiz 5% Final report (7-10 pages, to be submitted four weeks after the field course) 25%

An Average Day – What to Expect

Daily timeline	Students will make individual arrangements for breakfast. We will leave together for the field at 8:00 am daily, breaking for lunch sometime between 12:00 and 1:00. We will return from the field in the afternoon, time will be dependent on the day. In the first week, we may return after 2:00 and reconvene for lectures until 5:00, when we will break for the day and for dinner.
Work habitat & Physical exertion	We will be working primarily in urban park settings. Ravines within the park include some steep trails. Hikes will be moderate in length and difficulty. A student might expect 5-8 km of walking/hiking per day.
Common activities	<ul style="list-style-type: none"> • We will spend some time early in the first week getting oriented to the field locations and acquainted with geographic information science tools to explore our sites before we visit. • Students will learn how to generate maps, identify features, and quantify habitat types using GIS tools • We will learn common techniques in aquatic ecology, from sampling of planktonic and benthic organisms, to measurement of water quality parameters, to gas flux measurements. • Students will learn to identify common macrophyte species • We will spend a fair amount of time wading in streams • It is expected that students will use small watercraft such as canoes or zodiac-type boats
Weather, dehydration, & biting insects	<ul style="list-style-type: none"> • Toronto experiences hot and muggy summer temperatures, commonly in the low 30s during the day. Working in aquatic systems, we will have mosquitos, so bug spray is encouraged. Students will be encouraged to carry water with them, the parks do have refilling stations
Toxic/poisonous, wildlife/ plants	Ticks are not uncommon, and some can carry Lyme disease, mosquitoes are a common pest, and students may encounter stinging bees and wasps in the field, as well as poison ivy. Rouge Park does have coyotes and black bears, although sightings are rare. Students will be working in and near water, and drowning is always a real hazard. Student will always wear life jackets if in a boat or wading in flowing water. Student may be required to pass a swimming test to participate. Students with allergies to bee stings will need to carry epi-pens. Students will never work alone at any time during the field course.
Sleeping, washroom & laundry facilities	<ul style="list-style-type: none"> • Students will return to dorms each evening. We will use student residences on campus. The dorms have laundry facilities. • There are washroom facilities in the parks
Meal plans & food allergies	Students will be on a meal plan in the student residence. Bag lunches will be provided for the field, and we will eat in the dining hall in the evening. The dining plan can accommodate specific needs, but please communicate any particular needs in advance so that we may prepare the staff.
Non-academic responsibilities	No specific non-academic responsibilities
Degree of isolation	<ul style="list-style-type: none"> • Very low. Ryerson is in downtown Toronto, and we will return to campus every night
Alcohol & drugs	Alcohol and marijuana are not permitted in the dormitories or in the field.
Vaccinations/ Insurances	Students must be fully vaccinated for Covid-19. Vaccination for Hepatitis A & B is strongly encouraged.
Social Situations	Toronto is a diverse city, and offers the full gamut of social experience. Students are encouraged to talk with the instructor in advance if there are any concerns regarding the social experience, living in a student residence, or navigating the city
Final comments	We look forward to meeting you!