

TORONTO METROPOLITAN UNIVERSITY
Ontario Universities Program in Field Biology

Course Title:	Urban Water Ecology												
Instructor(s):	Dr. Stephanie Melles (stephanie.melles@torontomu.ca) Admin. Caltha Rimmer (crimmer@torontomu.ca)												
Dates:	June 22-July 5, 2025 (12 days plus 2 travel days, Sun and Sat). We will be in the field from June 23-July 4, so students wishing to depart the evening of July 4 may do so. Rooms will remain open on the night of Friday July 4 th for July 5 th departure.												
Location:	Toronto Metropolitan University. Students will be housed at the new Daphne Coxwell Centre on Church Street. Fieldwork will occur in the City of Toronto at a selection of locations: within the Don River watershed, the Rouge River National Urban Park, Tommy Thompson Park, and possibly Highland Creek Park. Other excursions to wetlands, wastewater treatment plants, sewage lagoons, storm water ponds, and water treatment plants may occur (e.g., Ashbridges Bay Treatment Plant, Stevenson Swamp, RC Harris Water Treatment Plant) depending on the instructor's discretion. The course description (below) provides an overview of course content: specific material may vary from year to year depending on the instructor. See: https://www.torontomu.ca/spatial-eco/oupdfb												
Cost:	\$1900 total cost (\$350 non-refundable deposit to home university; \$1550 balance). Cost includes travel to field locations, dormitory accommodations for 13 nights, lunch and dinners. <i>Breakfasts are not included in course cost, and students must arrange for their own travel to Toronto.</i> Balance to be paid by April 4 th 2025 to Department of Chemistry and Biology, Attention: Caltha Rimmer, Administration Manager, Toronto Metropolitan University, KHN 210, 350 Victoria Street, Toronto, ON M5B2K3 or see: https://tmu-emarketplace.paymytuition.com/urban-water-ecology-at-toronto-metropolitan-university-2 . This total does not include home university tuition.												
Prerequisites:	Completion of second year in a Biology, Env. Sci., or similar program (by April 2025); and at least one ecology (or equivalent) course beyond the Introductory level.												
Enrolment:	14 (8) with a minimum of 8 students for the course to run.												
Course Description (brief):	The primary goal of this course is to provide students with a foundation in urban water ecology. Participants will have opportunities to improve their field biology skills including: sampling methods and identification; accurate and reflective characterization of field observations; as well as learning about the design and collection of 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 a small group research project (in pairs), which they will propose as a presentation in-class, collect data during the second week of the course, and write up independently.												
Evaluation:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Field Journal Exercise(s) (individual)</td> <td style="text-align: right; padding: 2px;">10%</td> </tr> <tr> <td style="padding: 2px;">Group research project proposal and presentation (teams of 2)</td> <td style="text-align: right; padding: 2px;">20%</td> </tr> <tr> <td style="padding: 2px;">Contribution to iNaturalist Collection Project (details to be provided)</td> <td style="text-align: right; padding: 2px;">10%</td> </tr> <tr> <td style="padding: 2px;">Participation (evaluation completed by professor and TA)</td> <td style="text-align: right; padding: 2px;">10%</td> </tr> <tr> <td style="padding: 2px;">Species ID Quiz (list to be provided)</td> <td style="text-align: right; padding: 2px;">10%</td> </tr> <tr> <td style="padding: 2px;">Final report (individual) to be submitted Aug 4, 2025 after the field course, including data collection, entry/processing, and interpretation (individual)</td> <td style="text-align: right; padding: 2px;">40%</td> </tr> </table>	Field Journal Exercise(s) (individual)	10%	Group research project proposal and presentation (teams of 2)	20%	Contribution to iNaturalist Collection Project (details to be provided)	10%	Participation (evaluation completed by professor and TA)	10%	Species ID Quiz (list to be provided)	10%	Final report (individual) to be submitted Aug 4, 2025 after the field course, including data collection, entry/processing, and interpretation (individual)	40%
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An Average Day – What to Expect

(a) Daily timeline	Students will make individual arrangements for breakfast. We will leave together for the field by 9:00 am daily after a group meeting to review plans (8:00-9:00). We will break for lunch (prepared bagged lunches) 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 4:00 and reconvene for instruction after dinner (after 7-9 pm). We will dine at a selection of local restaurants in downtown Toronto.
(b) Work habitat & Physical exertion	We will be working primarily in urban park settings. Ravines within parks include some steep trails. Hikes will be moderate in difficulty. Students should be prepared for physical exertion (e.g., daily walking/hiking up to 8-10 km on some days) with backpack necessities. Conditions may sometimes be muddy/wet, in wadable streams, along shorelines and in wetlands. We may be wearing hip waders and we may be out for long days (daylight hours) with minimal toilet facilities. Water breaks, rest periods, and bathroom breaks will be scheduled where possible.
(c) Common activities	<ul style="list-style-type: none"> ● We will spend some time early in the first week getting oriented with field locations and acquainted with geographic information science tools to explore our sites before we visit. ● We will learn common techniques in aquatic ecology, from sampling of planktonic and benthic organisms (e.g., using zooplankton nets; rock packs, Hester Dendies, and standardized sampling procedures such as 'kick and sweep' as per Ontario Benthos Biomonitoring Network - OBBN), to measurement of water quality parameters using a YSI EXO II water quality sonde, to stream metabolism (day/night O₂ demand) measurements. ● Students will learn to identify common aquatic zooplankton and macroinvertebrate species. ● Students will learn how to generate maps, identify features, and quantify habitat types using GIS tools ● We will spend a fair amount of time wading in streams. ● Students may use small watercraft such as canoes or zodiac-type boats. ● Students will never work alone at any time during the field course.
(d) 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, or high 20's (requiring a sunhat/sunblock). Students will be encouraged to carry water with them, but parks generally have refilling stations. Be prepared for potential cool days as well (hat/ light jacket) and rainy days (rain jacket). ● Working in aquatic systems, we will have mosquitos, so bug spray is an option, but not if you're working with your hands in streams. ● Ticks may be encountered, and some can carry Lyme disease, but they are more often encountered in the spring rather than during peak summer when we will be out. That said: any temperatures above 5C can have tick activity. Mosquitoes will be the most common pest. Students may encounter stinging bees and wasps in the field. Students with allergies to bee stings will need to carry epi-pens. ● There may be other insects as well though abundances will likely be relatively low in late June/July (e.g., blackflies, no-see-ums, sand flies, deerflies, and horseflies). If you are worried about insects, long sleeve shirts and pants with socks are recommended even on hot days. Sturdy footwear is required. ● Rain boots, hip waders, and life jackets will be provided ● Appropriate field safety measures will be taken, and students will be advised about appropriate procedures, e.g., they are required to review a field safety plan, safety equipment, and supplies. We will review precautions about Lyme disease and poisonous plants.
(e) Wildlife/ water/ toxic / poisonous plants	<ul style="list-style-type: none"> ● 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 above calf length. Students may be required to pass a swimming test to participate in off shore activities. ● Rouge Park does have coyotes and black bears though sightings are rare. ● Poison ivy, Giant hogweed, Poison Oak, Wild Parsnip, Stinging Nettle. The most common poisonous plant encountered will be poison ivy. You will be taught how to identify it and avoid it. It is very unlikely that we will encounter Giant hogweed.

Module #10

(f) Sleeping, washroom & laundry facilities	<ul style="list-style-type: none"> ● Sleeping accommodations in downtown Toronto 4-bedroom, gender specific, student apartments with private rooms and two bathrooms, fridge, and kitchenette (no stove or hotplate). Daily housekeeping service included. ● Bring cutlery, toiletries (e.g., shampoo and soap are a pretty limited selection). ● Bed sheets and towels provided (hotel style), but if you like a fitted sheet, you might want to bring it (twin size). ● Complimentary wireless high-speed internet (Wi-Fi) is available throughout the residence. ● Laundry machines available on the main residence floor (The estimated cost per wash is \$2.00 & \$1.50 per dry)
(g) Meals & food allergies	<ul style="list-style-type: none"> ● Meals include a box/bag lunch and entrée dinner for \$45/day, which is included in course fees. <i>Students will need to arrange for their own breakfast items.</i> ● For lunch and dinner arrangements, let us know early of any allergens or food requirements.
(h) Non-academic responsibilities	<ul style="list-style-type: none"> ● Students must abide by the Toronto Metropolitan University Code of Non-academic Conduct https://www.torontomu.ca/student-care/students/student-code-of-conduct/policy-61-review/
(i) Degree of isolation	<ul style="list-style-type: none"> ● We will have all the benefits of being housed in downtown Toronto. During daily field excursions, we may be relatively isolated (e.g., in the Rouge National Urban Park) and washrooms will not always be readily available.
(j) Alcohol & drugs	<ul style="list-style-type: none"> ● Alcohol and legal marijuana will be permitted during off hours <i>so long as appropriate code of conduct is adhered to. Violations of the policy will result in removal from the course and no refund.</i> TMU Policy 61, C12
(k) Vaccinations/ Insurance	<ul style="list-style-type: none"> ● Vaccinated for Covid-19 are <i>strongly</i> recommended. Vaccination for Hepatitis A & B is <i>strongly</i> encouraged. ● Students are strongly encouraged to purchase travel (cancellation) insurance.
(l) Social Situations	<ul style="list-style-type: none"> ● 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. It is the shared responsibility of all community members to foster a welcoming, supportive, and respectful learning, teaching, research, and work environment. See: https://www.torontomu.ca/equity/
(m) Final comments	<ul style="list-style-type: none"> ● We look forward to meeting you!