

Course Title:	Canadian Scientific Research Diver
Instructor(s):	Dr. Nigel Waltho Dept. Biology, Carleton University Phone: 613-297-6422 Email: nigel.waltho@carleton.ca
Dates:	Fri. July 22 – Sun. Aug 7 th , 2022
Location:	Queen’s University Biological Station (QUBS), Elgin, ON (½ hr north of Kingston)
Cost:	<ul style="list-style-type: none"> • Course Fees = \$2800, payable as \$350 non-refundable deposit to your home university, and \$2450 balance to Carleton University due by May 1st. Students with confirmed reservations will receive emailed instructions how to pay the course balance well in advance of the payment deadline. Course fees include: <ul style="list-style-type: none"> ○ two weeks and two days room & board at the Queen’s University Biological Station ○ 25 scuba tank fills, daily boat transport ○ course textbook (NOAA Diving Manual for Science & Tech. 6th Ed - digital) ○ DAN Oxygen certification (assuming you pass 😊) • Equipment: students must provide their own <i>full and complete set</i> of cold-water dive gear (e.g., two-week rental/purchase) including a dive knife, dive light, dive watch, and dive compass (dry suits are additionally permissible if you have been trained in one).
Prerequisites:	<ul style="list-style-type: none"> • CoVid-19: students must be double-vaccinated. Proof of vaccination will be required. Students are expected to bring their own daily mask protection(s) for the duration of the course. • Academics: students should be entering minimally their 3rd or 4th year of a Biology, Env. Sci., or similar program; and ideally have at least (a) one advanced ecology course beyond the Introductory level, and (b) one biometry or statistics course. If you do not meet these academic prereq.’s, please contact Dr. Waltho. • Scuba: <ul style="list-style-type: none"> ○ students must possess a nationally recognized Open Water Scuba certification (e.g., PADI, NAUI, ACUC, SDI); have at least five open water dives, and have at least 2.5 hours logged bottom time (further to your checkout dives). ○ students must hold current certifications in First Aid & CPR. ○ students must be declared medically fit by a licensed diving physician (e.g., see list of Diving Physicians) ○ students must have DAN Membership & Scuba Dive Accident Insurance
Enrolment:	6 (0) 4 students minimum
Course Description (brief):	<p>Scientific diving whether in Canada or around the world requires additional knowledge and training above and beyond that of the sport diver. In Canada scientific diving falls under the Canadian Association of Underwater Scientists (CAUS). This training requires:</p> <ul style="list-style-type: none"> • self-study and review of the NOAA diving manual with completion of eight weekly on-line tests <i>before</i> the two-week field/scuba portion begins • a two-week 25-dive/15hr-bottom time in-water training course including: <ul style="list-style-type: none"> ○ dive rescue & accident management techniques ○ navigation, deep, cold water, low visibility, tethered, and night diving ○ scientific diving techniques such as benthic core sampling, quadrat sampling, fish surveys, habitat mapping, video transects, and underwater photography • nightly evening lectures/workshops including <ul style="list-style-type: none"> ○ diving regulations, advanced diving physics and physiology ○ species identification and underwater photography ○ experimental design, power analyses, and statistical analyses
Evaluation:	<ul style="list-style-type: none"> • NOAA on-line quizzes and lecture-based tests (20%) • field effort – including safe dive-site management, initiative, and industriousness (10%) • seminar presentation (20%) • final paper/research proposal, due Sept 30th (50%)

Sleeping, washroom & laundry facilities	<ul style="list-style-type: none"> • In pre-CoVid times, students typically share a room (gender specific) with another student(s) depending on the cabin allocated. However, during this CoVid pandemic students will likely be allocated each to a single bunkie-style room (either the Junior or Medium cabins; see https://qubs.ca/facilities/accommodations). As we approach the course start date, we'll be provided more clarity • students need to bring their own linen/sleeping bags/pillows • washrooms and showers are available in the central building for all users • coin-operated washing/drying facilities are available
Meal plans & food allergies	<ul style="list-style-type: none"> • all meals are prepared by kitchen staff, served buffet-style in the main dining hall • meals are prepared with the provision of a balanced, healthy diet in mind. • normally, vegetarian meals are interspersed with the regular menu. Alternatives to meats are generally available for strict vegetarians. Dietary preferences and food allergies will be requested prior to your arrival on-site and will be accommodated as best as possible.
Non-academic responsibilities	<ul style="list-style-type: none"> • QUBS staff attempt to keep common areas clean and tidy. However, housekeeping in individual accommodations and laboratories is the responsibility of the user. • general-use bathrooms and common areas, students have primary responsibility to housekeep • simple things like removing outdoor footwear at entrances, carefully wiping your feet and mopping up spills as they happen will greatly assist with keeping QUBS buildings clean and tidy.
Degree of isolation	<ul style="list-style-type: none"> • See Google Maps link • fundamental services (water supply, septic systems, electrical supply, heat, telephones etc.) are readily available • E-mail and internet are accessible using your own computer linked to the wireless system • nonetheless, we'll be on campus/on the boat everyday through the course. There will be no time to independently leave the course for personal errands. There is, however, a small General Store in Chaffey's Locks that can address your cravings as need be.
Alcohol & drugs	<ul style="list-style-type: none"> • as we are scuba diving most days, the course will remain alcohol and drug free • transgressions will be evaluated for immediate ejection from the course
Vaccinations/ Insurances	<ul style="list-style-type: none"> • stubbed toes, scrapped skins are always possible – you should always have your tetanus shot up-to-date • students must be CoVid vaccinated as recognized by Canada • students must be declared medically fit by a licensed diving physician (see pg. 1) • students must have DAN Membership & Scuba Dive Accident Insurance (see pg. 1)
Social Situations	<ul style="list-style-type: none"> • QUBS is an academic institution, and not a holiday resort. Respectful (but casual) clothing is assumed at all times • as divers we'll be dressing on the boat prior to diving, and dressing down thereafter. Courteous behaviour and respectful bathing-suits are assumed • through the second week of the course we'll be travelling by boat through the Rideau system locks (Chaffey's locks). Professional behaviour in these public places is assumed
Final comments	<p>OUPFB Course Grade:</p> <ul style="list-style-type: none"> • Your university course grade is based on the marking scheme identified on Page 1., Course Evaluation. However, this course gives you access to the Canadian Association of Underwater Scientists - CAUS accreditation: <p>CAUS Accreditation:</p> <ul style="list-style-type: none"> • CAUS accreditation is automatic (Level I Scientific Diver, and Level II Scientific Diver time permitting) if you successfully meet the CAUS competency standards throughout the course. These competency standards include: <ul style="list-style-type: none"> ○ a minimum passing grade of 80% for each written quiz, and the take-home paper ○ meeting the required in-water skills objectives by course end • to maintain CAUS accreditation, an <i>annual</i> review by a qualified member institution is required (e.g., a dive under the watchful eye of the institution's DSO). <p>ACUC/SDI Advanced Diver/Rescue Diver Certification:</p> <ul style="list-style-type: none"> • at the completion of the course successful students may <i>independently</i> ask for their ACUC/SDI Advanced Sport Diver and Rescue Diver certifications. • no further dive training nor exams are required, however, a minimum passing grade of 80% is required for the written quizzes and take-home paper, and all in-water competencies must necessarily be demonstrated • these Sport diver certifications are available with an additional, independent cost to the student (approx. \$50-\$100 for each certification) <p>At the end of the day...</p> <ul style="list-style-type: none"> • at the end of the day, this course is designed along multiple academic and diving trajectories including: <ul style="list-style-type: none"> ○ dive rescue & accident management ○ underwater navigation, deep, cold-water diving, low visibility, tethered, and night diving ○ scientific diving techniques such as benthic core sampling, quadrat sampling, fish surveys, habitat mapping, video transects, and underwater photography ○ research design and statistical analysis of multi-species ecological data sets