
BIOL 418

Fisheries Biology

Summer Term (2026)

CALENDAR DESCRIPTION

This course introduces students to many hands-on techniques currently used in fisheries to improve their qualifications for employment or research positions in this area. Skills covered include fish identification, different capture techniques for fisheries assessment, bioacoustics, environmental monitoring, techniques for ageing fish, diet analysis, fish tracking (biotelemetry approaches), and data management.

PREREQUISITE: BIOL 316/3.0 and minimum GPA of 2.0 in the Biological Foundations list

SCHEDULE

Two week intensive field course, full days in Early May

Room: TBD

**Delivery: In Person – On Campus and Day Trips departing from Campus
(transportation from/returning to Campus for day trips provided)**

| | |
|-------------------------------|-----------|
| Instructor | Check onQ |
| Instructor Contact | |
| TA: | TBD |
| TA Contact Information | TBD |
| Office Hours | TBD |

Learning Objectives – By the end of this course...

1. You should be able to demonstrate practical skills and methodologies in the use of standard fisheries field and laboratory tools, techniques and calculations, data collection and management, and statistics.
2. You should be able to apply appropriate statistical methods in R to analyze and describe fisheries biological data, and make statistical inferences that are connected to biological hypotheses.
3. You should have a well-rounded understanding of the important current topics in freshwater fisheries research and management, as well as an understanding of how to collect, analyze interpret and present data related to fisheries management, in the specific context of conservation of freshwater fisheries.
4. You should demonstrate the ability to work professionally, both individually and as part of a team. This includes working with peers while conducting field and lab work, and also includes producing high-quality written and oral projects based on your work throughout the week, and to be able to effectively communicate this information.
5. You should have a solid understanding of our native freshwater fish species, and be able to identify

these species, as well as understand their basic biology and physiology.

Learning Hours

| <i>Teaching method</i> | | <i>Average hours per week</i> | <i>Number of weeks</i> | <i>Total hours</i> |
|----------------------------|------------------------|-------------------------------|------------------------|--------------------|
| In-class hours | Lecture | 6 | 2 | 12 |
| | Seminar | | | |
| | Laboratory | 6 | 2 | 12 |
| | Tutorial | 6 | 2 | 12 |
| | Practicum | | | |
| | Group learning | 4 | 2 | 8 |
| | Individual instruction | | | |
| Other | Online activity | | | |
| | Off-campus activity | 18 | 2 | 36 |
| | Private study | 20 | 2 | 40 |
| Total hours on task | | | | 120 |

Course Outline

The main topics that we will cover in this course include: Basic freshwater fish biology, native freshwater fish identification, hands-on experience learning various capture techniques for fisheries assessment (eg. seine net, trap net, gill net, etc.), environmental monitoring, in-lab techniques for ageing fish, diet analysis, fish tracking (biotelemetry approaches), data management and statistical analysis in R. The overall goal of the course is to provide opportunities for students to gain the practical skills and knowledge necessary to obtain a job as a fisheries scientists – by the end of the course students will have been introduced to a suite of tools to collect, analyze and interpret fisheries data, and to be able to use that data to inform fisheries management and present that data to shareholders.

Course Materials & Technology

There is no textbook for this course. A course handbook is presented to students, and digital notes from the various topics will be provided throughout the course.

Additionally, the university communicates with students via Queen’s email. Please check your email regularly to ensure you do not miss important information related to your course.

Course Feedback

At various points during the course, you may be asked to take part in a variety of feedback activities, such as surveys and questionnaires. This feedback enables the teaching team to improve the course. All surveys are anonymous and are directly related to activities, assessments, and other course material.

Grading Scheme

Due to the flexible nature of the course, relying on appropriate field (on the water conditions), course components, weight and timing provided below are approximate and may vary from year to year depending on how the course progresses.

| Component | Weight (%) | Approximate Date |
|---------------------------------|------------|------------------|
| Mid-term | 30 | Week 1 |
| Final Exam | 35 | Week 2 |
| Participation & Professionalism | 15 | Ongoing |
| Final Project-Presentation | 15 | Week 2 |

Grading Method

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale.

Your course average will then be converted to a final letter grade according to Queen's Official Grade Conversion Scale:

Queen's Official Grade Conversion Scale

| Grade | Numerical Course Average (Range) |
|-------|----------------------------------|
| A+ | 90-100 |
| A | 85-89 |
| A- | 80-84 |
| B+ | 77-79 |
| B | 73-76 |
| B- | 70-72 |
| C+ | 67-69 |
| C | 63-66 |
| C- | 60-62 |
| D+ | 57-59 |
| D | 53-56 |
| D- | 50-52 |
| F | 49 and below |

Academic Support

All undergraduate students face new learning and writing challenges as they progress through university: essays and reports become more complex; effectively incorporating research into writing becomes more important; the types of assignments become more diverse; managing your time and developing the skills you need to read and think critically gets more challenging. I encourage students to contact Student Academic Success Services (SASS). SASS offers many different ways to receive support:

- Free online or in-person [appointments](#) to get personalized support on writing and academic skills from expert staff and trained peers.
- [Workshops](#) and [drop-in programs](#). SASS' [Events Calendar lists events coming soon](#).
- [Online resources](#) that provide strategies for academic skills and writing development at university.
- If English is not your first language, SASS has specific resources for [English as Additional Language students](#), including weekly programs and EAL academic skills appointments. You can meet on an

ongoing basis with an EAL consultant to work on your academic writing, speaking, listening, and reading skills.

Accommodations for Disabilities

Queen's University is committed to working with students with disabilities to remove barriers to their academic goals. Queen's Student Accessibility Services (QSAS), students with disabilities, instructors, and faculty staff work together to provide and implement academic accommodations designed to allow students with disabilities equitable access to all course material (including in-class as well as exams). However, due to the specific OCASP safety requirements associated with this course, specifically involving working from a boat, around water and in various environmental conditions, there are practical safety limits to our ability to safely accommodate all students.

If you are a student currently experiencing barriers to your academics due to disability related reasons, and you would like to understand whether academic accommodations could support the removal of those barriers, please visit the [QSAS website](#) to learn more about academic accommodations or start the registration process with QSAS by clicking **Access Ventus** button at [Ventus | Accessibility Services | Queen's \(queensu.ca\)](#)

VENTUS is an online portal that connects students, instructors, Queen's Student Accessibility Services, the Exam's Office and other support services in the process to request, assess, and implement academic accommodations.

To learn more go to: <https://www.queensu.ca/ventus-support/students/visual-guide-ventus-students>

Academic Consideration for Students in Extenuating Circumstances

Academic Consideration is a process for the University community to provide a compassionate response to assist students experiencing unforeseen, short-term extenuating circumstances that may impact or impede a student's ability to complete their academics. This may include but is not limited to,

- **Short term Physical or Mental Illness or Injury (stomach flu, anxiety/depression, mononucleosis, concussion, broken bones, surgery, medical treatments, etc.)**
- **Traumatic Event/Confidential (Bereavement, serious injury, illness or required treatment for a significant other/family member or a traumatic event such as divorce, sexual assault, social injustice, etc.)**
- **Requirements by Law or Public Health Authorities (court dates, jury duty, requirements to isolate, etc.)**
- **Significant Event (varsity athletic event, distinguished event, serving in the Reserve Forces, etc.)**

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances. For more information, please see the [Senate Policy on Academic Consideration for Students in Extenuating Circumstances](#).

Each Faculty has developed a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances. For more information, undergraduate students in the Faculty of Arts and Sciences should consult the Faculty's webpage

on [Academic Consideration in Extenuating Circumstances](#) and submit a request via the [Academic Consideration Request Portal](#). Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

Students are encouraged to submit requests as soon as the need becomes apparent and to contact their instructor and/or course coordinator as soon as possible once academic consideration has been granted. Any delay in contact may limit the options available for academic consideration.

For more information on the Academic Consideration process, what is and is not an extenuating circumstance, and to submit an Academic Consideration request, please see the Faculty of Arts and Science's [Academic Consideration website](#). ASO courses include links to information on **Academic Consideration** on your **Course Homepage** in onQ.

Academic Integrity and Queen's Code of Conduct

Queen's University is dedicated to creating a scholarly community free to explore a range of ideas, to build and advance knowledge, and to share the ideas and knowledge that emerge from a range of intellectual pursuits. Queen's students, faculty, administrators and staff therefore all have responsibilities for supporting and upholding the fundamental values of academic integrity. Academic integrity is constituted by the five core fundamental values of honesty, trust, fairness, respect and responsibility and by the quality of courage. These values and qualities are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University.

The following statements from "The Fundamental Values of Academic Integrity" (2nd edition), developed by the International Center for Academic Integrity (ICAI), contextualize these values and qualities:

1. **Honesty** Academic communities of integrity advance the quest for truth and knowledge through intellectual and personal honesty in learning, teaching, research, and service.
2. **Trust** Academic communities of integrity both foster and rely upon climates of mutual trust. Climates of trust encourage and support the free exchange of ideas which in turn allows scholarly inquiry to reach its fullest potential.
3. **Fairness** Academic communities of integrity establish clear and transparent expectations, standards, and practices to support fairness in the interactions of students, faculty, and administrators.
4. **Respect** Academic communities of integrity value the interactive, cooperative, participatory nature of learning. They honor, value, and consider diverse opinions and ideas.
5. **Responsibility** Academic communities of integrity rest upon foundations of personal accountability coupled with the willingness of individuals and groups to lead by example, uphold mutually agreed-upon standards, and take action when they encounter wrongdoing.
6. **Courage** To develop and sustain communities of integrity, it takes more than simply believing in the fundamental values. Translating the values from talking points into action -- standing up for them in the face of pressure and adversity — requires determination, commitment, and courage.

Students are responsible for familiarizing themselves with and adhering to the Senate [regulations](#) concerning academic integrity, along with [Faculty or School](#) specific information. Departures from academic integrity include, but are not limited to, plagiarism, use of unauthorized materials, facilitation, forgery and falsification. Actions which contravene the regulation on academic integrity carry sanctions that can range from a warning, to loss of grades on an assignment, to failure of a course, to requirement to withdraw from the university.

Queen's [Student Academic Success Services](#) (SASS) offers a self-directed, online academic integrity module which we encourage all students to take which will help with:

- Understanding the nature of the academic integrity departure
- Understanding the expectations of and role of sources in scholarly writing
- Integrating sources into your writing (paraphrasing, quoting, summarizing)
- Understanding when and how to cite your sources
- Managing your time effectively to avoid the need for shortcuts
- Taking effective notes to ensure accuracy of source material and correct attribution

Copyright of Course Material

Course materials created by the course instructor, including all slides, presentations, handouts, tests, exams, and other similar course materials, are the intellectual property of the instructor. It is a departure from academic integrity to distribute, publicly post, sell or otherwise disseminate an instructor's course materials or to provide an instructor's course materials to anyone else for distribution, posting, sale or other means of dissemination, without the instructor's express consent. A student who engages in such conduct may be subject to penalty for a departure from academic integrity and may also face adverse legal consequences for infringement of intellectual property rights.

Third party copyrighted materials (such as book chapters and articles) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law.