

Syllabus: BIOL 321 Survey of Invertebrates

Term 1 Winter 2026

TEACHING TEAM

Course
Instructor

Dr. Sandra Emry
sandraemry@uvic.ca

Office
Hours

Fridays, 11-12pm; Cornett B132

Senior Lab
Instructor

Dr. Colin MacLeod
cdmacleod@uvic.ca

MEETINGS

LECTURES

Tue, Wed, Fri 9:30 - 10:20 AM
David Turpin, A102

LABS

Tue or Wed, 11:30 or 2:30
Petch 109

WELCOME TO THE WONDERFUL WORLD OF INVERTEBRATES!!

INTRODUCTION TO THE COURSE

The invertebrates represent over 90% of all multicellular animal species. Rather than being defined by a single shared characteristic, they are grouped by what they lack - an internal skeleton of cartilage or bone that protects a brain and dorsal nerve cord.

Biology 321 explores the remarkable diversity of these organisms through a phylum-based approach. Throughout the course, we will examine major body plans, functional morphology, behaviour, physiology, reproduction and development, life cycles, evolution, and phylogeny. While the diversity of invertebrates is immense, the course focuses on representative groups - primarily marine taxa - to provide a manageable and meaningful overview.

By the end of the course, you should have a deeper appreciation for the extraordinary diversity and adaptations of invertebrates, and a broader understanding of how organismal biology connects with molecular, cellular, evolutionary, and ecological principles.

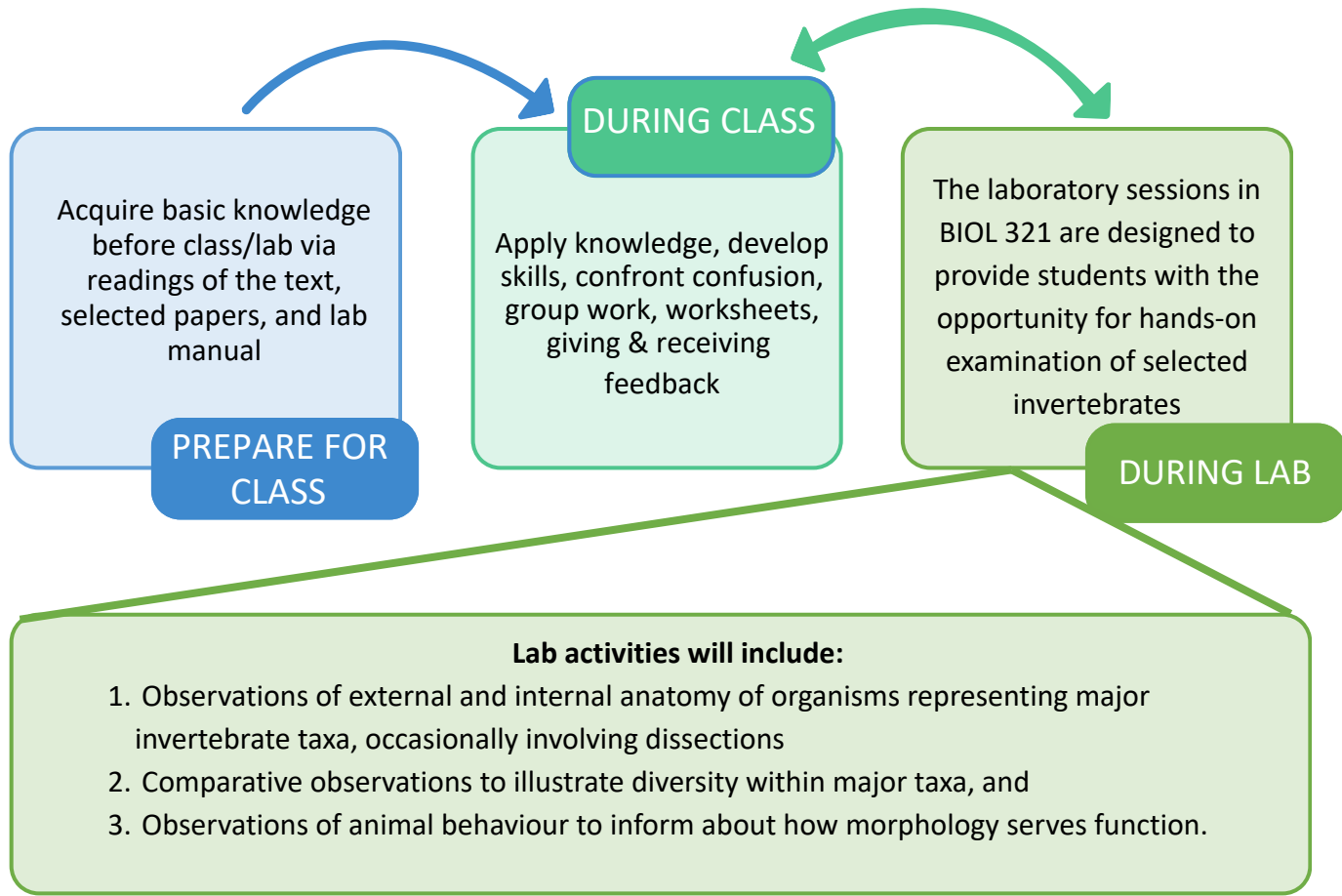
LEARNING GOALS FOR THE COURSE

Through lectures, laboratories, discussions, and independent study in Biology 321, you will:

- Recognize and compare the major invertebrate phyla, their body plans, and the evolutionary innovations that distinguish them.
- Explain how morphology, physiology, reproduction, development, and behaviour enable invertebrates to survive in diverse environments.
- Interpret evolutionary and phylogenetic relationships among invertebrate groups using comparative biological evidence.
- Develop an appreciation for the remarkable diversity, adaptations, and ecological importance of invertebrates, particularly marine species.
- Connect organismal biology with broader biological concepts spanning molecular, cellular, ecological, and evolutionary levels of organization.

HOW IS BIOLOGY 321 STRUCTURED?

Our course is designed so that our precious class time is spent well, with lectures and time for applying the content, practicing skills, working collaboratively with your peers and receiving feedback (see graphic). Your success depends on your preparation (readings, pre-lab quizzes) and solidifying your learning with practice after class and during labs.



COMPLETELY OPTIONAL, BUT FUN, BITS OF THE COURSE

iNaturalist challenge

Want to put your invertebrate ID skills to the test? Join our optional semester-long iNaturalist challenge and document the invertebrates you encounter throughout the term. Observations can be made anywhere and can include marine, freshwater, or terrestrial invertebrates.

Prizes will be awarded at the end of the semester for Most Invertebrate Species, Most Invertebrate Observations, and Best Observation.

Field trips

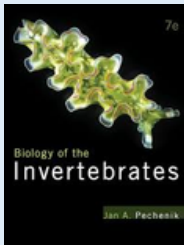
October 9th at 9:30am: Fouling communities at RVYC

October 27th at 10pm: Tidepooling at Cattle Point (bring a headlamp/flashlight and dress warmly!)

WHAT MATERIALS DO YOU NEED FOR BIOL 321?

TEXTBOOK

- *Required:* BIOL 321 Lab Manual – 2026. Available at the Bookstore.
- *Required:* Pechenik, J.A. Biology of the Invertebrates, 7th edition.
- *Optional:* Dissecting kit *Some dissection tools will be available in labs for student use.



ChatGPT AND OTHER GENERATIVE AI

Students are permitted to use artificial intelligence tools, including generative AI, to gather information, review concepts or to help produce assignments. However, students are ultimately accountable for the work they submit, and any content generated or supported by an artificial intelligence tool must be cited appropriately. Use of AI tools is not permitted during midterm exams and final exams in this course.

BRIGHTSPACE DISCUSSION BOARD

Brightspace is where you ask questions about course content. Questions can be seen and answered by your peers & teachers.

BRIGHTSPACE COURSE WEBSITE

The Biology 321 website can be accessed at <https://bright.uvic.ca/> by using your login name and password. Be sure to click on the 'B01-B05X' section.

CURIOSITY AND AN OPEN MIND

You are a living organism, a bundle of genetics, product of evolution and in constant contact with the environment. This course has something for everyone, regardless of your career path!

HOW WILL YOU BE EVALUATED? (overview, see next page for details)

LECTURE	20	• Lecture midterm #1, in person, October 9 th (in class)
	20	• Lecture midterm #2, in person, November 6 th (in class)
	15	• Final exam, in person, 90 min, during final exam period
	9	• Pre-lab quizzes
LAB	9	• In-lab checkmarks
	2	• Research project, part 1, October 26 th
	10	• Research project, part 2, November 23 rd
	15	• Final lab exam, in person, December 1 st or 2 nd (during lab)

For a more detailed schedule of topics, please see the course website on Brightspace.

HOW WILL YOU BE EVALUATED? (Details)

RESEARCH PROJECT

Students will choose an invertebrate species found on Vancouver Island and write a research paper exploring its biology, ecology, and broader environmental or conservation context. The paper will examine climate change impacts, ecological effects of an introduced species, or conservation strategies for an endangered native species.

Part I of the Animal Research Project is due at 9:00AM on October 26th. Part II is due at 9:00AM November 23rd. For more information, see the Laboratory Manual or the course Brightspace page.

TERMINOLOGY

You will need to learn a number of terms for structures, concepts, and taxa. I will try to keep this manageable by asking you to learn the terms that are really most essential for communicating about the biology of each group that we'll study. Exactly what terms and definitions will be expected to know?

- Terms for anatomical parts and concepts (with definitions) that are discussed during lecture (including labels on drawings and any text within the PowerPoint slides)
- Terms used in any labs or in the Lab Manual
- Names of organism taxa, and their relationships (note that taxonomic level varies)

In any science course which includes lab work, students are required to achieve satisfactory standing in both the lab and lecture components of the course as outlined in the Academic Calendar.

UVic grading scale: A+ 90–100 | A 85–89 | A– 80–84 | B+ 77–79 | B 73–76 | B– 70–72 | C+ 65–69 | C 60–64 | D 50–59 | F <50

ASSESSMENT OF LAB LEARNING

- Assessment of performance in the lab will be based on nine pre-lab quizzes, a final lab exam, successful completion of exercises during each lab period (checkmarks) and on an independent research project.

IN-CLASS PARTICIPATION & COMMUNITY

- Some days we will work in groups of ~5 students. The purpose of group work is to encourage you to take an active part in your own learning, and to overcome the challenges of learning in a large class. This work will not be marked, but occasionally you may be asked to turn in work for feedback.

MIDTERMS AND FINAL EXAMS

- Tests will be in person, closed book, and include multiple-choice, matching, short-answer or problem-based questions and will include higher cognitive-levels (apply, analyze, justify).

Missed lecture midterms

- There are no make-up midterms. If you miss a midterm, email Sandra as soon as possible, ideally before the exam. If an academic concession is appropriate, the weight of the missed midterm may be transferred to the final exam.

Missed labs, lab assessments, or assignments

- At the end of semester, your two lowest lab scores will be dropped and the weight of those assessments redistributed to remaining labs.

If illness, injury, family affliction, or another unexpected circumstance affects your ability to complete course work, please contact the appropriate instructor as soon as possible by email. Medical documentation is not required for short-term absences. If you cannot complete a required assignment or exam by the end of the term, you must submit a formal request for Academic Concession to the University. The department of Biology does not offer supplemental final exams.

HOW WE CAN WORK TOGETHER TO LEARN

You can...

- 1) Come to class prepared by doing the pre-class readings
- 2) Do your best to be present in class, both physically and mentally.
- 3) Be an active participant in the course. This means asking and answering questions in class, participating in group activities, posting on the Brightspace discussion board, etc.
- 4) Be respectful to both your classmates and me. Students who are disrespectful to classmates or to me will be asked to leave.
- 5) Do your own work. Period, end of story. It's far better to turn in something that isn't great than turn in someone else's work.
- 6) Recognize that your instructor wants to respond to your emails quickly, but isn't always able to. If you don't get a response within 72 hours (excluding weekends, holidays), send a polite reminder.
- 7) Take care of yourself, your wellbeing & family.



I can...

- 1) Come to class prepared each day to teach you.
- 2) Be enthusiastic about course material and my role in helping you learn.
- 3) Understand that I cannot know everything. When questions arise that I don't know the answer to, I will help find the answer and get back to you, often via Brightspace so all can see.
- 4) Create a course atmosphere conducive to learning for all by respecting my students and trusting their experiences.
- 5) Know that you are a whole individual who probably has a lot going on outside of my class.
- 6) Try to respond to student emails within 72 hours (excluding weekends & holidays).
- 7) Show patience, grace and compassion.

This syllabus was adapted from Bridgette Clarkston

HOW THE 321 TEAM CAN HELP YOU SUCCEED

2026 is a tough time to be a student. All of us are living in difficult times. We won't judge if you tell us you're struggling. Our office hours are for you: It is time set aside to be available for whatever you need. We can talk about the course, your other courses, some science topic, jobs, how it feels to be in a global climate crisis, etc. If my office hours don't work for you, please email me.

ACADEMIC SUPPORT, ACCOMMODATIONS & OTHER RESOURCES

Accessibility & Academic Accommodations

UVic is committed to creating an accessible learning environment. Students who require academic accommodations should register with the Centre for Accessible Learning (CAL). If you have approved accommodations that affect your participation in BIOL 321, please contact us early in the term so we can make appropriate arrangements.

Student Wellness

University can be demanding, and your wellbeing matters. The UVic Student Wellness Centre provides confidential services and supports for students whose personal circumstances are affecting their wellbeing or academic experience.

Rules and regulations

Required Course Components

Students must complete a minimum of 1 midterm, the final exam, lab research project, attend at least 7 labs, and write the lab exam to successfully complete BIOL 321. Failure to complete one or more of these required elements will result in a grade of N, regardless of the cumulative percentage earned in other course components. An N is a failing grade and has a GPA value of 0; the maximum percentage that can accompany an N on the transcript is 49%. Note that you must pass the laboratory portion to take the final exam (and thus pass the course).

Academic Integrity

Students are expected to follow all University of Victoria academic regulations, including the University's standards of academic integrity. Cheating, plagiarism, unauthorized collaboration, and other violations of academic integrity are serious academic offences and may result in significant penalties. This applies equally to work involving generative AI; use of AI in BIOL 321 must follow the course-specific AI policy described earlier in this syllabus. See more here: https://www.uvic.ca/calendar/undergrad/index.php#/policy/Sk_0xsM_V

Student Conduct & Respectful Learning Environment

UVic is committed to providing a respectful, supportive, and safe learning environment. Students are expected to treat classmates, instructors, teaching assistants, and staff respectfully in lectures, laboratories, Brightspace, and all other course-related spaces and communications. Racism, discrimination, bullying, harassment, and sexualized violence are not tolerated.

Copyright & Course Materials

Course materials provided through lectures, laboratories, Brightspace, recordings, slides, handouts, and the lab manual are provided for the educational use of students registered in BIOL 321. These materials are protected by copyright and may not be copied, posted, shared, sold, or otherwise distributed without permission, except where permitted under fair dealing or another exception under the Copyright Act.

University Regulations

Students are responsible for familiarizing themselves with the academic regulations and policies in the University of Victoria Academic Calendar. University policies and regulations apply to all aspects of BIOL 321, including in-person and online course activities.

We acknowledge and respect the lək̓ʷəŋən peoples on whose traditional territory the university stands, and the Songhees, Esquimalt and W̱SÁNEĆ peoples whose historical relationships with the land continue to this day.