

University of Victoria
Fall 2022

BIOLOGY 321
SURVEY OF INVERTEBRATES

Instructor:

Dr. Benjamin Neal
Email benjaminpneal@uvic.ca
Office: University House 205
Office hours: Thursday 10:30-12:00
Virtual office hours may be offered, depending on COVID status on campus.
Alternatively, please feel free to email if a virtual meeting is needed.

Senior Lab Instructor:

Alicia Rippington
Email aliciad@uvic.ca
Office: Petch 108b

Lecture meetings:

Tuesday, Wednesday, and Friday: 12:30 pm - 1:20 pm
Engineering Comp Science (ECS) Bldg. Room #125

Laboratory Teaching Assistants and lab information:

Names and contact information for your laboratory TA will be provided to you during the first lab period and will be posted on the Biology 321 Brightspace page.

Textbooks and supplies:

Pechenik, J.A. Biology of the Invertebrates, 7th edition (available @ UVic Bookstore)

BIOL 321 Lab Manual - 2022 (available @ UVic Bookstore)

Dissecting kit (optional) - available at the UVIC bookstore. Some dissection tools will be available in the BIOL 321 lab for student use.

Prerequisites for BIOL 321:

BIOL 184, 186, 225

I acknowledge and respect the ləkʷəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day.

Course Content: The ‘invertebrates’ represent 90% or more of all species of multicellular animals. The organisms belonging to this informal grouping are not defined by the possession of any unique characteristic, but only by what they lack – an internal skeleton (cartilage or bone) protecting a brain and dorsal nerve cord. Biology 321 will primarily focus at the level of the whole organism and will be organized by phyla. It will deal with major elements of body plans, functional morphology, behaviour, physiology, reproduction & development, life cycles, evolution, and phylogeny of invertebrates. This is potentially a huge quantity of material, but I will whittle it down to a manageable amount by being highly selective about what I choose to include for each phylum and omitting some of the smaller phyla altogether. The biology of invertebrates is rich in fascinating material. As your instructor, my goal is to introduce you to the wonderful world of invertebrates and to encourage enthusiasm for the study of these animals, with all their ingenious adaptations and splendid diversity. I hope you will find that information about the structure and biology of invertebrates enriches, extends, and enlightens your understanding of life at other levels of biological organization - molecular, cellular, ecological.

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

- Terms for anatomical parts and concepts (with definitions) that are highlighted during lecture (including labels on drawings and text within PowerPoint slides)
- Terms given in bold font in ‘Required Readings’ sections from your textbook
- Names of upper level taxa (taxonomic level varies)

For some of the smaller groups, it will be sufficient to merely know the name of the phylum and a general description. For large groups, such as the Panarthropoda, you will be asked to learn additional taxonomic categories below the level of phylum. These sub-phyletic taxon names will be clearly identified during both lecture and lab.

Lecture Recordings: The in-class lectures in BIOL 321 will be recorded. The accompanying PowerPoint slides will be presented as PDF files. The recordings will be uploaded to Brightspace as “Class Lecture Recordings” in “Lecture Material”. The video platform for the lecture recordings will be Echo360. You can click on the video link for each individual lecture (listed under Class Lecture Recordings) to view the recorded lectures.

Laboratory: The laboratory sessions in BIOL 321 are designed to provide students with the opportunity for hands-on examination of selected invertebrates. Lab activities will include:

1. observations of external and internal anatomy of organisms representing major invertebrate taxa, occasionally involving dissections
2. comparative observations to illustrate diversity within major taxa, and
3. observations of animal behaviour to inform about how morphology serves function.

Labs begin the week of September 12, 2022 and will be held in PETCH 109. There are a total of nine laboratory exercises; one per week except for Reading Week and the weeks for the midterm and final lab exams. If you are unable to attend the first lab for which you are registered, please contact Alicia Rippington (aliciad@uvic.ca) before the day of the lab.

Assessment of Laboratory Learning:

1) Midterm and Final Lab Exams: The midterm lab exam will be held during the week of Oct 10, 2022 and is worth 10% of your final grade. It will cover material in Labs #1 – 4. The final lab exam will be held during the week of Nov 28, 2022 and will be worth 15% of your final grade. It will cover material in Labs #5 – 9.

2) Animal Profile: This lab assignment will provide students with the opportunity for personal discovery about an invertebrate. Each student will study the anatomy and behaviour of a chosen invertebrate living in the ocean, freshwater, or terrestrial habitat. The profile will be based mostly on personal observations. Observations should be documented by images recorded by camera (e.g. smart phone camera or camera mounted on a dissecting or compound light microscope in the lab) or by drawings from observations of the chosen animal. The observational data will be incorporated into a report on the biology of the animal. You may also choose to include a short video (optional) as a component of your Animal Profile. Although personal observations should form the major part of the project report, it is expected that information from the literature will also be included in the report. You should try to identify the specimen to the level of genus and possibly even species. If this is not possible, don't get too stressed and don't let it get in the way of your enjoyment of the project. Talk to your TA about difficulties with genus/species identification; it may be sufficient to identify just the family placement. Submitted "Animal Profiles" will be made available to other students in each lab section to disseminate the acquired knowledge about diverse invertebrates! For more information about the Animal Profile see the "Lab Assignments" module on the BIOL 321 Brightspace page. Due date for submission of your Animal Profile is October 31, 2022 at 9:00 AM.

3) Research essay: The second major assignment within the lab of BIOL 321 will be an essay on a topic relating to invertebrate biology. You will select a topic from three that will be provided by the Senior Lab Instructor. This assignment will require you to read scientific literature relating to the topic, write an essay outlining important information and major issues relating to the topic, and provide a critical assessment of controversies or a prospectus of possible future directions for research. For more information about the Essay Assignment please see the "Lab Assignments" module on the BIOL 321 Brightspace page. Due date for submission of your Essay will be November 14, 2022 at 9:00 AM.

4) Late lab assignments: Late submission of the "Animal Profile" and the "Essay" will be penalized at 20% per day, except in cases of a prolonged debilitation during the term or a serious personal issue shortly before the submission deadline. Please refer to the policies in the lab manual and contact Alicia Ripington directly for concession requests.

Covid-19 and In-person Classes: Although course instruction at UVic during Fall 2022 will be in-person within classrooms, we are still potentially subject to Covid-19 pandemic outbreaks and we should all take precautions to keep everyone safe. Students attending in-person classes and labs are not required to wear masks, but are welcome to do so if they are concerned, and are requested to not attend in-person classes if they have any active symptoms at all or a recent positive test. For further information about University Public Health policies relating to return to campus follow this link: <https://www.uvic.ca/students/covid19/index.php>

Assessment of Learning for overall course: Distribution of final grades will be based on the following rubric:

Lecture Midterm Exam	20%
Laboratory Midterm Exam	10%
Final Laboratory Exam	15%
Animal Profile	10%
Research Essay	10%
Lecture Final Exam	35%

PLEASE NOTE THAT THE FACULTY OF SCIENCE REQUIRES THAT STUDENTS RECEIVE A PASSING GRADE (50%) IN THE LABORATORY SECTION OF A SCIENCE COURSE FOR PERMISSION TO WRITE THE FINAL LECTURE EXAM.

Policy on Missed Exams: The University of Victoria has waived the requirement for a note from a medical professional in the event that illness or mental health issues prevent writing an exam.

Grade assessment when one or more assignments or exams are missed:

If a student is waived for the lecture midterm exam, the lab midterm exam, or the lab final exam, the student's final grade will be calculated on the basis of all course work that was completed, without penalty. If a student misses two or more of the above listed items, an alternative one or two exams will need to be completed at a later date, as per the discretion of the instructor.

Incompletions: If a student is approved to miss the final lecture exam and cannot achieve the reschedule date to write it before final grades are submitted for the course, they must submit a formal request for concession using a Request for Academic Concession form (<https://www.uvic.ca/registrar/assets/docs/record-forms/rac.pdf>). If the concession is granted, arrangements will be made to write a final lecture exam at a later time. A grade of N (incomplete) will be assigned until the final lecture exam is completed and the final grade calculated, at which time the N grade will be changed to the calculated grade.

Final exam period: Completion of the final lecture exam is a required component of BIOL 321. Final Exam Period. The final exam for Biol 321, Fall term 2022, will be scheduled sometime between Dec 5 and Dec 21, 2022. Do not make plans to travel elsewhere for any time during the final exam period, until the final exam schedule has been posted and confirmed. There will be no concessions granted if you have made travel plans before the schedule is released.

Course Grade and Academic Transcript: Grades for all UVic courses are submitted as percentiles. Academic transcripts will include the percentile grade and a letter grade. Percentiles will be rounded to the nearest whole number (up or down). Percentile grades will be converted to letter grades on the student's academic transcript according to the table given below.

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 (Fail) is a grade less than 50%.

For more information see:

<https://www.uvic.ca/calendar/future/undergrad/index.php#/policy/S1AAgoGuV?bc=true&bcCurrent=14%20-%20Grading&bcGroup=Undergraduate%20Academic%20Regulations&bcItemType=policies>