

Invertebrate diversity

Lecture: Tuesday & Thursday, 10:15-11:30 (Room CC-312)

Lab: Alternate Wednesdays or Thursdays, 13:30 – 17:30 (Room SP-380-5)

Website accessible on **moodle** via your portal.

Instructor

Holly Caravan

Office: L-SP 375.35; Office hours: Tuesdays 12:30-14:30 or by appointment

Email: holly.caravan@concordia.ca

TA

Solène Sagne

Email: solene.sagne@gmail.com

Technician

Don Beattie

Office: SP 337.1

The animal kingdom spans an extraordinary diversity of forms, including specializations that are often bizarre, and its innumerable species occupy all conceivable ecological niches. Comparative anatomy, embryology and molecular biology show a striking unity among animals, suggesting that this diversity is made up of variations on a series of basic themes, some of them common to all living organisms.

This course is intended as an introduction to the unicity (common origins and diversification) of invertebrates and to their functional systems. We will examine the evolutionary processes at work through time that underlie animal life as we know it. The course will involve lectures including active learning exercises, online quizzes, labs with group work, field trips within Montreal and independent reading and viewing of materials in the library. Students must keep up with reading and assignments during term.

Grading scheme

<i>Oral presentation:</i>	10%
Portrait of a minor taxon. To be done in groups.	
<i>Quizzes:</i>	10%
Do at-home preparation and online assignments before class and participate in in-class active learning exercises. Must keep up during term.	
<i>Lab notes:</i>	10%
Detailed record of lab work, due at the end of the lab. Mark includes lab participation.	
<i>Lab exam:</i>	20% (or 0%)
Identification of organisms & structures seen in the lab. March 31st.	
<i>Midterm exam:</i>	15% (or 0%)
Essay and short-answer questions on the material covered in lectures and labs. March 3 rd .	
<i>Final exam:</i>	35% (or remaining points)
Essay questions demanding reflection and synthesis on all material covered.	

For the final grade, you can omit either the midterm or the lab exam (e.g. if you miss one, for whatever reason) but not both.

Resources

Textbook:

- Pechenik, J. 2014. Biology of the Invertebrates, Seventh Edition.

Other assigned viewing:

- PBS. 2002. The Shape of Life, documentary miniseries (DVDs). *Explosion of Life; Origins; Life on the Move; Bones, Brawn & Brains; The First Hunter; Ultimate Animal; The Conquerors; Survival Game*.
- Russel, BJ. 1976. Invertebrates video series: Coelenterates, Flatworms, Molluscs, Annelids, Nematodes, Arthropods, Echinoderms. Biomedia Associates. (DVD)
- David Attenborough. 2005. Life in the Undergrowth, BBC documentary miniseries (DVD). *Invasion of Land, Taking to the Air, Supersocieties*.
- Marty Stouffer. 2008. A Multitude of Mollusks. Wild America, Season 4, episode 4 (DVD).

Preparation for each lecture:

Below is an outline of the course schedule*. Here you will find the topics covered in each lecture along with associated readings and videos. These readings and videos will help you in the completion of quizzes and assignments found on moodle which are to be done *before* the lecture. In addition, the lab schedule and associated readings are in the table below. Labs take place every two weeks with the exception of lab four which occurs three weeks after lab five due to the midterm break.

**Subject to change if necessary.*

Date	Lecture Topic	Lecture Readings	Lab Topic & Readings	Videos
Tues - Jan 10	Diversity			
Thurs - Jan 12	Origins	pp. 7-17		Explosion of Life
Tues - Jan 17	Sponges	pp. 77-89		Origins
Wed - Jan 18			Review of Invertebrate diversity	
Thurs - Jan 19	Cnidarians	pp. 99-126	Lab handout	
Tues - Jan 24	Platyhelminthes	pp. 147-169		
Thurs - Jan 26	Annelids	pp. 295-325		
Tues - Jan 31	Nematodes	pp. 431-445		
Wed - Feb 1			Anatomy and lifestyle: worms	
Thurs - Feb 2	Molluscs I	pp. 215-255	Lab handout; pp. 325-328	
Tues - Feb 7	Molluscs II	pp. 255-264		Multitude of Mollusks
Thurs - Feb 9	Arthropods I: Crustaceans	pp. 373-392		
Tues - Feb 14	Arthropods II: Anatomy	pp. 341-350; pp. 392-397		
Wed - Feb 15			Body plan variations: molluscs	
Thurs - Feb 16	Arthropods III: On land	pp. 350-373	Lab handout; pp. 265-271	Invasion of Land
Tues - Feb 21	<i>Midterm break</i>			
Thurs - Feb 23				
Tues - Feb 28	Echinoderms	pp. 497-518		
Thurs - Mar 2	Chordates	pp. 539-551		Bones, brawn, brain
Tues - Mar 7	MIDTERM EXAM			
Wed - Mar 8			Form and function: echinoderms	
Thurs - Mar 9	Osmoregulation and excretion		Lab handout; pp. 518-520	
Tues - Mar 14	Insectarium visit	pp. 2-6		Taking to the Air & Supersocieties
Thurs - Mar 16	Reproduction and embryology	pp. 555-580		
Tues - Mar 21	Minor Taxa I			Life on the move

Date	Lecture Topic	Lecture Readings	Lab Topic & Readings	Videos
Wed - Mar 22			Lifecycles	
Thurs - Mar 23	Respiration		Lab handout	Survival game
Tues - Mar 28	Minor Taxa II			The conquerors
Thurs - Mar 30	Feeding			The first hunter
Tues - Apr 4	LAB EXAM			
Thurs - Apr 6	Minor Taxa III			Ultimate animal
Tues - Apr 11	Phylogeny	pp. 18-30		
Wed - Apr 12			Forensic entomology	
Thurs - Apr 13	Review		Lab handout	Biomedica videos