

Invertebrate Zoology (BI451/551, 8 credits)

Tuesdays and Thursdays

(8:30 am - 5:30 pm, lunch at 12:00 unless noted otherwise)

Earlier than 8:30 am on many morning field trips

Spring Quarter 2023

Instructors: Richard Emler (remlet@uoregon.edu)

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TA: Christina Ellison (cellison@uoregon.edu)

Class Schedule

Week 1

4/2 17:48 PDT 0.71 feet LL

- RE 8:30 Introduction to class
- MW 9:00 Lecture: Phylum Cnidaria Intro. and Anthozoa
- 10:30 Set up scopes
- 11:00 Lab: Anthozoa anatomy and diversity
- 13:15 Dock walk (Anemones and hydroids)
- 14:30 Lab: Anthozoan anatomy and diversity (cont'd)

4/4 07:14 PDT +1.3 feet HL (sunrise: 6:53)

- RE 08:30 Lecture: Class Hydrozoa
- 10:00 Lab: Hydrozoan diversity
- RE 13:15 Lecture: Classes Scyphozoa, Cubozoa & Staurozoa
- 14:30 Docks walk (medusa hunt)
- 15:30 Lab: Medusae – Hydrozoans and Scyphozoans

Week 2

4/9 09:49 PDT -0.04 feet LL

- 08:00 Field Trip – S. side of Sunset Bay
- RE 11:00 Lecture: Phylum Porifera
- 13:15 Lab: Phylum Porifera
- MW 15:30 Lecture Phylum Ctenophora
- Out of class: Jellies video

4/11 11.38 PDT +0.01 feet LL

- 8:30 Lab: Ctenophores
- 9:45 Field Trip Portside (flatworms, nemerteans)
- MW 11:00 Lecture: Phylum Platyhelminthes (Turbellarians)

13:15 Lab: Platyhelminthes Lab (Turbellarians)
MW 16:00 Lecture: Platyhelminthes (Parasitic Classes)
Turn in Lab Notebooks

Week 3

4/16 16:52 PDT -0.22 feet LL

RE 8:30 Lecture: Nemertea
10:00 Lab: Nemertea
13:15 Lab: Nemertea (continued)
15:30 Field trip to Portside mudflat – II (annelids...)

4/18 06:14 PDT -0.06 feet LL (sunrise 6:30)

MW 8:30 Lecture: Phylum Annelida I – intro
MW 10:00 Lecture: Annelida II
13:15 Lab: Annelida Dissection

Week 4

4/23 10:02 PDT -0.63 feet LL

08:30 Field Trip – South Cove, Cape Arago
MW 11:00 Lecture: Annelida III
13:15 Lab: Annelida Diversity
16:00 Review session

(need to get gastropods and bivalves this week because poor tides when we do them)

4/25 11:46 PDT 0.28 feet LL

08:30 Midterm Exam I
RE 11:00 Lecture: “Phylum” Sipunculida
13:15 Laboratory – Sipunculids – peanut worms

Week 5

4/30 16:20 PDT +1.26 feet LL

RE 8:30 Lecture: Phylum Mollusca Intro + Class Polyplacophora
10:00 Lab: Chiton Diversity
MW 13:15 Lecture: Class Gastropoda
14:45 Lab: Gastropod Diversity

5/2 17:35 PDT +1.5 feet HL

RE 8:30 Lecture: Mollusca, Class Bivalvia
10:00 Lab: Bivalve Diversity, Behavior and Dissection
MW 13:15 Lecture: Mollusca, Class Cephalopoda
14:45 Lab: Squid Dissection

Week 6

5/7 08:49 PDT -0.97 feet LL

06:30 Field trip to Middle Cove, Cape Arago

RE 10:30 Lecture: Phylum Echinodermata Intro. + Stelleroidea
13:15 Laboratory: Asteroid

RE 16:00 Lecture: Echinodermata, Classes: Ophiuroidea

5/9 10:24 PDT -0.86 feet LL

08:30 Field trip to North Cove (get Ophiuroidea and Hemichordates)

11:00 Lab: Ophiuroids

RE 13:15 Lecture: Echinodermata, Classes Echinoidea & Holothuroidea

14:30 Lab: Echinoidea and Holothuroidea Diversity, Holothurian Dissection

Week 7

5/14 15:26 PDT +0.37 feet LL

08:30 Midterm II or RV Pluteus boat trip if weather is good

RE 11:00 Lecture: Phylum Hemichordata (if collected last week)

13:15 Lab: Hemichordate (draw one ☺)

MW 15:00 Lecture: Phylum Arthropoda + Chelicerata

5/16 17:08 PDT +1.01 feet HL

08:30 RV Pluteus boat or Midterm II if weather not good

RE 13:15 Lecture: Arthropoda, Introduction to Crustacea I (Class: Branchiopoda)

14:30 Lab: Crustacea I, Branchiopoda (Artemia, Cladocera) (order in advance)

Lab Notebooks due (II)

Week 8

5/21 08:54 PDT -1.23 feet LL (sunrise 5:47)

06:30 Field trip to Qochyax ("Quay-Kee-awk") Island or Lighthouse

MW 11:00 Lecture: Arthropoda, Crustacea II - Intro. Malacostracans + Decapods

13:15 Lab: Crab Dissection

5/23 10:20 PDT -0.39 feet LL

8:30 Lab III: Decapod diversity

RE 13:15 Lecture: Arthropoda IV: (Classes Copepoda, Ostracoda, Cirripedia)

14:45 Lab IV: Cirripedia + crustaceans in plankton

Week 9

5/28 14:31 PDT +1.54 feet LL

RE 08:30 Lecture: Phylum Chordata, Subphylum Tunicata (=Urochordata)

10:00 Lab: Ascidian diversity

MW 13:15 Lecture: "Lophophorates" Intro. and Bryozoa

14:45 Lab: Bryozoa Diversity

16:00 Review session

5/30 16:03 PDT +1.99 feet HL

8:30 Midterm III

MW 13:15 Lecture: Phyla Phoronida and Brachiopoda

14:30 Lab: Phoronida (1 or 2 species)

Week 10- BioBlitz Projects

6/4 07:50 PDT -1.57 feet LL

6/6 09:21 PDT -1.63 feet LL

Lab cleanup

Notebooks due

Finals Week (Week 11)

6/11 no class, no final

Syllabus for INVERTEBRATE ZOOLOGY (BI 451/551, 8 credits), Spring 2019

COURSE GOALS/LEARNING OUTCOMES Student will:

- 1) Learn to use marine invertebrates as models to understand general biological processes
- 2) Develop an understanding of the unifying features across organisms while appreciating the unique morphological, physiological and ecological diversity of organisms.
- 3) Learn to evaluate relationships between structure and function by examining how organisms accomplish activities such as locomotion, feeding, growth, respiration, excretion and reproduction.
- 4) Develop working knowledge of Oregonian and northeastern Pacific marine invertebrates accessible in their local habitats and environments.

Required Textbook = J.A. Pechenik. 2015. Biology of the Invertebrates, 7th edition. McGraw-Hill Publisher.

You will have access to the lab 24/7. We will be in the lab Tuesdays and Thursdays and likely on other occasions as well. You are welcome to drop by our offices/labs (Richard in Tyler lab and Maya in library beside Clara) if you have questions. If we are unavailable at that time, we can make an appointment to meet you. We will have field trips to local habitats, often starting early in the morning depending on the tides.

Course Requirements and Evaluations:

Your final grade will be determined by a combination of three midterm exams, your laboratory notebook, and participation and report for the barcoding project. Material covered on midterms will include lectures, lab materials, and assigned readings (see above schedule). Attendance is required on all field trips, in all laboratory sessions, for all lectures and for student presentations.

Notebooks – 40% (3 evaluations, Only 1st one can be modified for a re-grade)

Midterms – 50% (3 midterms, 15%, 15% and 20% respectively)

BioBlitz project – 10%

You need to have:

- 1) textbook (specifics above)
- 2) A lecture notebook
- 3) A separate lab notebook – loose leaf notebook with unlined paper in 3-ring binder.
- 4) Rite-n-Rain notebook for field notes (in office)
- 5) Dissecting tools – forceps, scissors, scalpel, disposable blades, probe, plastic ruler
- 6) Memory stick
- 7) Full raingear and rubber boots

Lab Notebook

We will not have a formal lab manual that guides you through each lab but will typically have a lab handout to give some guidance (e.g. helpful diagrams for dissections, recommendations for organisms to look at). You will be drawing a variety of organisms for most taxonomic groups, combined with notes on any exercises we do in lab. You don't have to draw everything you see in lab but drawing thorough examples of different groups for each phylum is important.

Your lab notebook should include:

1. Drawings, descriptions, and notes on observations of animals you examine in lab
2. Accurate labeling of anatomy of live and dissected animals
3. Classification for each animal (starting with Phylum and working down to Genus and species- all accurately spelled)
4. Some indication of size scale for each drawing (field of view and magnification)
5. Notes on lab exercises
6. Field information for the organisms you describe (e.g. habitat, ecological associations etc.)

Mackenna Hainey's lab notebook is on display in the back of the lab as an A+ sort of notebook. But note, artistic ability is not graded, just thoroughness!

The notebook will be graded on:

1. Number of animals drawn (a representative number for each taxonomic group available in lab)
2. Description of organism/correct anatomical labeling
3. Classification and scale for each specimen drawn
4. Observations (e.g. ecology, habitat collected from, lifecycle, if pertinent)
5. Detailed notes on all fellow student talks

BioBlitz Project:

During week 10 we will be participating in and contributing to a BioBlitz project sponsored by the Western Association of Marine Laboratories (WAML) being held at OIMB. During this week we will be working with visiting invertebrate taxonomists and geneticists to thoroughly survey the invertebrates at particular intertidal site(s). This will involve collecting, identifying, and preserving voucher and genetic samples as part of a larger collaborative effort. This will enable you to use the knowledge you have gained over the term to identify species of invertebrates and learn how to preserve voucher and genetic samples. Additionally it will allow us to contribute to a larger project assessing biodiversity in our local habitats.