Invertebrate Zoology (BI451/551, 8 credits)
Tuesdays and Thursdays (8:30 am - 5:30 pm)
Earlier than 8:30 am on many morning field trips

Spring Quarter 2022
Instructors:
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Nancy Treneman (nmendezt@uoregon.edu)
TA: Kendall Smith (ksmith35@uoregon.edu)

This class is an 8 hour/day, two day/week course. In general, each day we will have two lectures, lab activities and/or field work.

**Daily Class Schedule**

**Week 1 (low tides)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>3/29</td>
<td>08:30</td>
<td>Introduction to class (Boathouse auditorium)</td>
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<tr>
<td></td>
<td>09:00</td>
<td>Lecture: Phylum Cnidaria Intro. and Anthozoa (Ch. 6, pg. 99-103)</td>
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<td></td>
<td>11:00</td>
<td>Set up Scopes</td>
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<td></td>
<td>12:00</td>
<td>Lunch</td>
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<td></td>
<td>13:15</td>
<td>Lab: Anthozoan anatomy and diversity</td>
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<td></td>
<td>15:30</td>
<td>Field Trip to South Side of Sunset Bay to get hydroids</td>
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<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>3/31</td>
<td>08:30</td>
<td>Lecture: Class Hydrozoa</td>
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<td></td>
<td>10:00</td>
<td>Lab: Hydrozoan diversity</td>
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<tr>
<td></td>
<td>12:00</td>
<td>Lunch</td>
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<tr>
<td></td>
<td>13:15</td>
<td>Lecture: Classes Scyphozoa, Cubozoa &amp; Staurozoa</td>
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<td></td>
<td>14:15</td>
<td>Lab: Medusae – Hydrozoans and Scyphozoans</td>
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**Week 2**

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<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>4/5</td>
<td>08:00</td>
<td>Field Trip to Sunset Bay</td>
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<tr>
<td>10:30</td>
<td>Lecture: Phylum Porifera (Ch. 4, pg. 77-88)</td>
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<tr>
<td>11:30</td>
<td>Lab: Start Phylum Porifera</td>
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<tr>
<td>12:00</td>
<td>Lunch</td>
<td></td>
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<tr>
<td>13:15</td>
<td>Lab: Finish Phylum Porifera</td>
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<tr>
<td>15:00</td>
<td>Lecture Phylum Ctenophora (Ch. 7, pg. 135-146)</td>
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<tr>
<td>15:30</td>
<td>Lab: Ctenophores (if we have them)</td>
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4/7 11:19  +0.8ft low  
MW 08:30 Lecture: Phylum Platyhelminthes (Turbellarians) (Ch. 8, pg. 147-177)  
MW 10:00 Lecture: Platyhelminthes (Parasitic Classes)  
12:00 Lunch  
13:15 Lab: Platyhelminthes Lab (Turbellarians) and finish other labs  

end of day:  

Turn in Lab Notebooks  

Week 3  
4/12 16:16 +0.7ft  
CE 08:30 Lecture: Nemertea (Ch. 11, pg. 205-214)  
10:30 Lab: Nemertea  
12:00 Lunch  
13:15 Lab: Nemertea (cont’d)  
16:00 Midterm I - Review Session  

4/14 17:32 +0.6ft  
8:30 Midterm I (Cnidaria, Porifera, Ctenophora, Platyhelminthes, Nemertea)  
MW 13:15 Lecture: Phylum Annelida I – intro (Ch. 13, pg. 295-339)  
14:30 Lab: Annelida Dissection  

Week 4  
4/19 08:53 -1.3ft.  
07:30 Field Trip to Portside Mudflat  
MW 10:30 Lecture: Annelida II  
MW 13:15 Lecture: Annelida III  
14:30 Lab: Annelida Diversity and Identification  

4/21 10:40 -0.9ft.  
NT 8:30 Lecture: “Phylum” Sipunculida (Ch. 13, pg. 314-318)  
9:30 Field Trip to Middle Cove  
12:00 Lunch  
13:15 Laboratory – Sipunculids – peanut worms  
NT 15:30 Lecture: Phylum Mollusca Intro + Class Polyplacophora (Ch. 12, pg. 215-293)  

Week 5  
4/26 16:01 +0.37ft.  
NT 8:30 Lecture: Class Gastropoda  
10:15 Lab: Gastropod and Chiton Diversity  
12:00 Lunch  
NT 13:15 Lecture: Mollusca, Class Cephalopoda  
14:30 Lab: Squid Dissection
4/28  05:29  +0.6
NT  8:30  Lecture: Mollusca, Bivalvia
     9:30  Lab: Bivalve Diversity (shells) etc
     12:00  Lunch
KS  13:15  ODFW/Fisheries/Policy - Mollusca
     14:30  Student lab catchup

Week 6
5/4  08:38  -0.6ft.
   7:00  Field Trip Domehouse Mudflats
   10:30  Lab: Bivalve Dissection, Behavior
   12:00  Lunch
NT  13:15  Lecture: Phylum Echinodermata Intro. + Stelleroidea (Ch. 20, pg. 497-527)
     15:00  Laboratory: Asteroids

5/6  09:57  -0.1ft.
NN  8:30  Lecture: Echinodermata, Classes: Ophiuroidea
     10:00  Laboratory: Ophiuroid Diversity
     12:00  lunch
NT  13:15  Lecture: Echinodermata, Classes Echinoidea & Holothuroidea
     14:30  Lab: Echinoidea and Holothuroidea Diversity

Week 7
5/9  18:30  Midterm II Review Session

5/10  14:27  +0.9 ft
   8:30  Midterm II (annelids, molluscs, echinoderms)
   12:00  lunch
MW  13:15  Lecture: Phylum Arthropoda + Chelicerata (Ch. 14, pg.341-420)
     14:30  Notebook Catch-up
(Ask TA to catch some large crab for us)

5/12  16:02  +1.2ft
   8:30  Lab Notebooks II due (annelids, molluscs, echinoderms)
NT  8:30  Lecture: Arthropoda, Intro to Crustacea
     10:30  Lab: Arthropoda Diversity: (Classes Copepoda, Ostracoda, Cirripedia)
     12:00  lunch
     13:15  Lab: Arthropoda Diversity (cont’d)

Week 8
5/17  07:51  -2.2ft.
   06:00  Field Trip to Qochyax Island
MW  9:30  Lecture: Arthropoda - Malacostracans + Decapods
10:30 Lab: Malacostracan Diversity
12:00 lunch
13:15 Lab: Malacostracan Diversity cont’d

5/19 09:32 -2.0ft.
07:30 Field Trip to Lighthouse Island
10:30 Lab: Crab Dissection
12:00 Lunch
13:15 Lab: Crab Dissection (cont’d) & Lab Notebook catch-up

Week 9
5/24 14:26 +0.6ft. (Boat Trip option #1)
MW 08:30 Lecture: “Lophophorates” Intro. and Bryozoa (Ch. 19, pg. 474-491)
10:00 Lab: Bryozoa
12:00 lunch
MW 13:15 Lecture (Brief): Phoronida and Brachiopoda
14:15 Lab (Brief): Phoronida and Brachiopoda

5/26 16:07 +1.6ft. (Boat Trip Day Alternative)
NT 08:30 Lecture: Phylum Chordata, Subphylum Tunicata (Ch. 23, pg. 539-548)
10:00 Lab: Ascidian diversity
12:00 lunch
NT 13:15 Lecture: Hemichordata
14:00 Lab: Ascidians/Hemichordata if available

Week 10
5/31 07:41 -1.1ft
06:00 Field Trip Cape Blanco: Team Phylum Hunt
11:00 Prepare Team Report
12:00 Lunch
13:00 Prepare Team Report cont.
14:00 Team Reports on Phylum Hunt

6/2 08:54 -0.8ft.
7:00 Fieldtrip TBA
NT 10:00 Lecture: Phylum Nematoda and Obscure Phyla (Ch. 16, pg. 432-450)
12:00 Lunch
13:15 Notebook Catch-Up
18:00 Notebooks due

Finals Week (Week 11)
6/6  18:30  Midterm Review Session

6/7  8:30  Midterm III am (Arthropods, Lophophorates, Tunicata, Chordata, Nematoda, Obscure Phyla)
   12:00  Lunch
   13:15  Lab Cleanup pm
COURSE GOALS/LEARNING OUTCOMES
The student will:
1. Use marine invertebrates as models to understand biological processes
2. Develop an understanding of the unifying features across organisms
3. Compare and contrast the morphological, physiological and ecological diversity of invertebrates between and within phyla
4. Evaluate relationships between structure and function by examining how organisms accomplish activities such as locomotion, feeding, growth, respiration, excretion and reproduction.
5. Develop a working knowledge of northeastern Pacific marine invertebrates in field.


You will have access to the lab 24/7, except Mondays! We will be in the lab Tuesdays and Thursdays and likely on other occasions as well. You are welcome to contact us by email to set up a time for questions, concerns, and assistance (Nancy in the lab Wednesdays, and Kendall in Galloway lab and Maya in library, Monday/Wednesdays). There are frequent field trips to local habitats, often starting early in the morning depending on the tides. Please dress in layers, knee-high water proof boots, with pockets for your field notebook.

Course Requirements and Evaluations:
Your final grade will be determined by a combination of three midterm exams, your laboratory notebook, and a field exercise. Material covered on midterms will include lectures, lab materials, and assigned reading. Attendance is required on all field trips, in all laboratory sessions, for all lectures and for student presentations (if applicable).

Notebooks – 45% (3 evaluations, Only 1st one can be modified for a re-grade)
Midterms – 45% (3 midterms at 15, 15 and 15% respectively)
Team Phylum Presentation – 5%
Participation – 5%

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 (suggested: Hat)
8) Suggested: color pencils, water-proof camera or phone

Lab Notebook – (a separate loose-leaf notebook with white, unlined paper)

There is no formal lab manual. Typically there are lab handouts for guidance through a lab activity (e.g. helpful diagrams for dissections, recommendations for organisms to look at). You will draw a variety of organisms for most taxonomic groups and combine these with notes on any activities.

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 (size of the field of view or a scale bar of approximate length)
5. Notes on lab exercises
6. Field information for the organisms you describe (e.g. habitat, ecological associations etc.)

Kendall Smith’s lab notebooks are on display in the back of the lab as an “A” notebooks. But note, artistic ability is not graded, just thoroughness!

The notebook will be graded on:

1. Completeness of coverage of animals included in lab exercises (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)