

## Invertebrate Biology – Biology 322 Syllabus - Fall 2009



**Lectures: Tues. & Thurs. 1:00-2:15pm**  
**GMC 1057**  
**Lab: Tues. 2:25-5:15pm**  
**Darwin 4**

**Instructor:** Dr. Karina Nielsen

**Office:** 235 Darwin

**Email:** karina.nielsen@sonoma.edu

**Web Page:** [http://www.sonoma.edu/users/n/nielseka/KJN\\_home](http://www.sonoma.edu/users/n/nielseka/KJN_home)

**Office Hours:** Thurs. 2:30-3:30p; See sign-up sheet on my office door to reserve a slot

### **Prerequisites:**

**Biology 121 & 122** or equivalent; **No exceptions.**

**Course Objectives:** We will learn about the diversity of invertebrate life with an emphasis on learning major body plans, evolutionary relationships and ecology. After having taken this class you should be able to:

- 1) Discuss the evolutionary relationships among the major taxa;
- 2) Describe the distinguishing characteristics of the major taxa;
- 3) Identify and find common, local marine invertebrates; and
- 4) Explain the basic ecology of many marine invertebrate species.

### **Required:**

1. Biology of the Invertebrates (6th Ed.), J. A. Pechenik, McGraw Hill
2. Dissecting kit (at SSU bookstore)
3. Unlined drawing paper (8.5" x 11") & pencil (HB) for your lab notebook
4. Loose-leaf binder with dividers for lab notebook
5. Small field notebook (3" x 5" spiral notebook)
6. Appropriate clothing for field trips

**State Mandated Furloughs:** This year across this campus and around the CSU system some class days will be cancelled because of furloughs. A furlough is mandatory un-paid time off; faculty and staff on every CSU campus are being "furloughed" two days per month (9 days per semester at SSU).

The cancelled class days due to the state mandated furloughs are marked on your syllabus below. It is important to recognize that these days off are not holidays. Instead, they are the direct consequence of massive state budget cuts that are reducing the quality of higher education in the State of California.

The CSU has suffered chronic underfunding for at least 10 years. This year the budget cuts are the worst in the history of our university system – \$584 million or 20% of our budget. The CSU administration is attempting to deal with these cuts imposed by the State of California through increases in student fees (32%), elimination of classes, furloughs for all university employees and lay-offs of some faculty and other university employees.

## **Invertebrate Biology – Biology 322**

### **Syllabus - Fall 2009**

Students will be affected by reduced services and classes. The library will have shorter hours. Many campus support services will be decreased or eliminated. It will be more difficult to get signatures to meet deadlines. Classes you need may have been cut from the class schedule or are full.

If you are frustrated by this situation and believe the State of California should adequately fund public higher education I strongly urge you to contact your state representatives and let them know your opinion. Contact information can be found here: <http://www.sonoma.edu/uaffairs/legislators.shtml>

**Assigned Readings:** The lecture syllabus lists the pages in your text or the on-line lab manual that should be read **before** each lecture or lab period. Additional readings may include scientific papers. The lab manual and any additional readings aside from the text will be posted to the class webCT page. **Students are expected to complete the assigned readings BEFORE coming to lecture and lab and to check the web page regularly for updates to the syllabus.**

**Office Hours:** I am available during my scheduled office hours to meet with students and answer questions about course materials. A sign up sheet is available outside my office. Drop-ins are fine too, but sign-ups take preference; if there are no sign-ups or students waiting at the start of the hour I may be working in my lab instead so check there too if you are looking for me. If my office hours happen to be on a state mandated furlough day, then I will not be available that day.

**Email:** If you need to contact me outside of class or office hours the best way is via email. Please be sure to put **Biol 322** in the subject line or your email may get lost in my overflowing inbox (I usually receive 50-100 emails a day that require my attention)! I do not read and respond to my emails on a 24/7 schedule. I have a life too, so please plan accordingly. In addition I will not be answering work-related emails on state mandated furlough days.

**Learning Strategies:** It is your responsibility to learn what is necessary to meet the course objectives. I serve as your guide to, and interpreter of, the material. I can assist you by suggesting learning strategies, but I cannot mind meld with you and deposit my knowledge into your head or intuit what it is you do not understand. You are responsible for asking for my help when you require it (in class or during office hours). I am enthusiastic about helping you to learn this fascinating, but at times complex subject. This is really interesting stuff! I also strongly encourage you to form study groups with your classmates as this is a very effective learning strategy.

**Participation:** In order to earn the highest grades, students must attend lectures, laboratories and field trips, as well as actively participate in all aspects of the course. As a courtesy to your classmates and to me, please make every effort to arrive on time and join us for the whole class.

## Invertebrate Biology – Biology 322 Syllabus - Fall 2009

### Expectations for out of class work:

From the SSU catalogue: “A minimum of two hours preparation for each hour of regular class work should be expected; in upper-division and graduate-level courses, additional time may be required.”

This is an upper division class consisting of 3 hours of lecture and 3 hours of lab per week. That means you should anticipate doing about *12 hours of preparation* (this includes reading, re-reading, going over notes, working on projects, studying for exams, conferring with classmates, etc.) per week for this class.

### Assessments, assignments & activities:

- 1) Exams (50 points): There will be one mid-term exam and one final exam (25 points each). Exams will include essay questions, and may include additional short answer, fill-ins, definitions, interpretation of data or labeling of diagrams, figures or photos. **Exams will cover topics from all class activities including lectures, readings, laboratories and field trips.**

### Missed Exam Policy:

There are **NO make-up exams or remedies for missed exams except** in the case of a **legitimate and documented emergency** (e.g. death in immediate family, major illness, etc.). If you cannot make it to an exam because of a *legitimate emergency*, notify me immediately. I will not provide make-up exams due to conflicting vacation or family travel plans, or other optional student activities. ***If you signed up for classes for fall semester, then it is your responsibility to schedule your social, family and work obligations around the scheduled activities for your classes.***

- 2) Spontaneous assessments (10 points): There will be approximately 5 -10 unannounced, in-class assignments during lecture and lab worth 1-2 points each based on the day’s work or the assigned readings for the day. These brief assessments (e.g., a quick-write on the assigned readings, a focused lab exercise, etc.) are designed to motivate you to come to class *prepared to participate actively in their own learning*. They shouldn’t seem hard if you are keeping up with assignments and coming to class regularly. **NO make-ups whatsoever** for these.
- 3) Lab notebooks (20 points): Students will keep a lab notebook that includes detailed drawings, photos and written descriptions of the organisms and dissections studied in lab. I will provide a separate handout and we’ll practice and critique each other’s work during our first lab meeting of the semester. I’ll check your notebooks early in the semester to make sure you’re on track. *The laboratory notebook will be due at our final lab meeting of the semester.*
- 4) Field trips, field notebook & specimen collection (20 points): ***There are 4 field trips scheduled on Tuesday afternoons overlapping with our lab period but typically requiring us to return to campus later than the end of the scheduled class time. Field trips must occur during low tides in order to see the organisms we are studying. As a result of the constraints of the tidal cycle, the four field trips will require you to be prepared to stay beyond our scheduled lab periods on the 4 dates indicated in the lab schedule. We will return to campus by ~ 7pm.*** We will visit a variety of local marine intertidal zone habitats including: Bodega Harbor (docks, mudflats), Doran Beach (sandy beach), Bodega Marine Reserve (rocky shore) & Tomales Bay (rocky, cobble & soft sediment). Attendance is required in order to complete the field trip assignments.

**Strongly Recommended:** Rubber boots, rain jacket, warm sweater, hat, snack & water bottle

## **Invertebrate Biology – Biology 322**

### **Syllabus - Fall 2009**

**Invertebrate specimen collection and field notebook assignments:** Separate detailed handouts for these assignments will be provided. *Specimen collections and field notebooks will be due at our final lab meeting of the semester.*

**Grading:** Final grades will be based on the percentage of total points earned on the assignments listed below. Letter-grade ranges will be as follows: A = 90-100%; B = 80-89%; C = 70-79%; D = 60-69%; and F = 59% or below.

Assessments (100 points total):

Formal in-class exams (2): 50 points

Spontaneous, in-class assessments: 10 points

Laboratory notebook (drawings and notes): 20 points

Field work (specimen collection, field log): 20 points

**Important University policies you should be aware of:** These include the add/drop policy; cheating and plagiarism policy, grade appeal procedures; accommodations for students with disabilities, and the diversity vision statement (<http://www.sonoma.edu/uaffairs/policies/studentinfo.shtml>). Students caught violating the policy on plagiarism and cheating may receive a zero for the course and the violation will be recorded at the Student Affairs Office.

**Additional exam policies that I enforce:** You may not use cell phones or other unauthorized electronic device during an exam. You may not reference any unauthorized materials of any kind during an exam. If you use unauthorized electronic devices or other materials during an exam your exam will be terminated and you will receive a zero. In addition, you may not use the restroom or leave the room for any reason without my permission during an exam (please be sure to visit the restroom before the exam).

**Invertebrate Biology – Biology 322**  
**Syllabus - Fall 2009**

<b>Lecture Schedule</b>				
<b>Week</b>	<b>Date</b>	<b>Day</b>	<b>Lecture</b>	<b>Readings</b> (in Pechenik unless otherwise indicated)
1	27 - Aug	Thurs	Intro & Course Mechanics	
2	1 - Sep	Tues	Invertebrate Diversity, Body Plans & Evolutionary Relationships	1 – 32
	3 - Sep	Thurs	Invertebrate Diversity, Body Plans & Evolutionary Relationships (con't)	"Introduction to Metazoa," Ruppert, et al. Eds. (2004) pp. 59 – 74 (pdf)
3	8 - Sep	Tues	Sponges: The Poriferans	79 – 89
	10 - Sep	Thurs	<b>State Mandated Furlough Day</b> More Poriferans & Placozoa <b>(Independent Study)</b>	89 – 91
4	15 - Sep	Tues	Jellies, Corals & Anemones: The Cnidarians	97 – 99; 101 – 114
	17 - Sep	Thurs	More Cnidarians	115 – 127
5	22 - Sep	Tues	<b>Field Trip (late return, no lecture)</b>	
	24 - Sep	Thurs	More Cnidarians	
6	29 - Sep	Tues	Comb Jellies: The Ctenophores	137 – 146
	1 - Oct	Thurs	Flatworms: The Platyhelminthes	150 – 170
7	6 - Oct	Tues	More Platyhelminthes	
	8 - Oct	Thurs	Ribbon worms: The Nemertines	204 – 211
8	13 - Oct	Tues	Chitons and the other 'placophorans': The Mollusca I	215 – 224
	15 - Oct	Thurs	Snails, Slugs, Clams & Mussels: The Mollusca II	224 – 255
9	20 - Oct	Tues	Squid, Octopus & more: The Mollusca III	255 – 271
	22 - Oct	Thurs	<b>Midterm Exam</b>	

**Invertebrate Biology – Biology 322  
Syllabus - Fall 2009**

10	27 - Oct	Tues	Worms Galore: The Annelids	296 – 312
	29 - Oct	Thurs	And More Worms: The Annelids	312 – 328
11	3 - Nov	Tues	<b>Field Trip (late return, no lecture)</b>	
	5 - Nov	Thurs	Trilobites, Horseshoe Crabs and Sea Spiders: Marine Arthropods I	341 – 352; 357 - 358
12	10 - Nov	Tues	Crabs, Barnacles & other 'Fish Food': Marine Arthropods II	373 – 392
	12 - Nov	Thurs	<b>State Mandated Furlough Day</b> More Arthropods <b>(Independent Study)</b>	392 – 396
13	17 - Nov	Tues	<b>Field Trip (late return, no lecture)</b>	
	19 - Nov	Thurs	Lampshells & more: The Lophophorates & Entoprocts	473 – 491
14	24 - Nov	Tues	<b>State Mandated Furlough Day</b> (lab will be open for unsupervised work on specimen collection)	
	26 - Nov	Thurs	<b>Thanksgiving Holiday</b>	
15	1 - Dec	Tues	<b>Field Trip (late return, no lecture)</b>	
	3 - Dec	Thurs	Sea Lillies & Stars: The Echinoderms I	497 – 509
16	8 - Dec	Tues	Urchins, Sand Dollars & Cucumbers: The Echinoderms II	509 – 520
	10 - Dec	Thurs	<b>State Mandated Furlough Day</b> Sea Squirts: The Non-Vertebrate Chordates <b>(Independent Study)</b>	523 – 535
	14 & 15 Dec	Mon & Tues	<b>State Mandated Furlough Days</b>	
17	17 - Dec	Thurs	<b>Final Exam ; GMC 1057; 2 – 3:50p</b>	

**Invertebrate Biology – Biology 322**  
**Syllabus - Fall 2009**

<b>Laboratory Schedule</b>		
Darwin 4		
<u>Week</u>	<u>Date</u>	<u>Activity</u>
1		<b>No Lab</b>
2	1-Sep	Intro to Laboratory
3	8-Sep	Poriferans
4	15-Sep	Cnidarians
5	22-Sep	<b>Field Trip</b> – Bodega Harbor Docks & Doran Beach (no lecture, late return)
6	29-Sep	Identifying & Preserving Specimens - Dichotomous Keys
7	6-Oct	Molluscs 1
8	13-Oct	Molluscs 2
9	20-Oct	Polychaete Worms
10	27-Oct	Crustaceans
11	3-Nov	<b>Field Trip</b> – Bodega Marine Reserve (no lecture, late return)
12	10-Nov	Echinoderms
13	17-Nov	<b>Field Trip</b> – Bodega Harbor Mudflats (no lecture, late return)
14	24-Nov	<b>Furlough Day</b> - Lab open for students to key out & preserve specimens
15	1-Dec	<b>Field Trip</b> – Tomales Bay (no lecture, late return)
16	8-Dec	Identifying Specimens - Dichotomous Keys