

BIOL/WATR 361/561 Aquatic Invertebrate Zoology

Spring 2018

Lecture T Th 2:00-2:50 PM, TNR 460

Lab Th 3:00-4:50 PM TNR 460

Instructor: Dr. Daniel L. Graf

Office: TNR 431

Phone: 715.346.2285

Course web

sites:

Desire2Learn site at

<http://mypoint.uwsp.edu/>

<http://winvertebrates.uwsp.edu/>

email: dgraf@uwsp.edu

(include "BIO 361" in subject)

Office Hours:

M 2-4 PM, W 10-12 AM

General Course Description. "Classification, structure, and life history of lotic and lentic freshwater invertebrates (exclusive of insects and parasites) with emphasis on Wisconsin species."

Objectives. The objective of this course is to survey the diversity of the invertebrate animal taxa that occur in freshwater by comparing the body-plans, life histories, and ecologies of representative species.

Course Objectives:

- Your instructor will:
1. Review the diversity of the invertebrate animal taxa that occur in freshwater.
 2. Compare and contrast variation in morphology and ecology across taxa in the context of grades of morphological complexity, ecological interactions, and evolutionary relationships.
 3. Provide hands-on experience with living and preserved organisms, including taxa known to occur in Wisconsin.
 4. Provide instruction on effective writing skills using invertebrate animals as a vehicle for discussion.
 5. Emphasize the relevance of invertebrate zoology to human health and happiness.

Learning Outcomes:

- You will be able to:
1. Differentiate and classify animal diversity.
 2. Describe the variety of invertebrate animal body-plans, ecologies, life histories, and reproductive modes.
 3. Synthesize a large body of knowledge, including a vast terminology.
 4. Demonstrate critical and independent thought through writing.
 5. Acquire experience with the primary literature.

Prerequisites. Courses in Introductory Biology (BIOL 101 or 160).

Required Materials. *Pennak's Freshwater Invertebrates of the United States*, 4th edition (2001), by Douglas G. Smith. John Wiley & Sons, Inc., New York (ISBN 0-471-35837). This book is available for rent at the bookstore.

Because we will be working with specimens in preservative, you are required to purchase protective goggles. These are available from the bookstore.

You will also need some kind of lab notebook and drawing implements.

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Exams, Assignments, and Grading. Your final grade for the course will be based upon 380 possible points.

There will be three exams that constitute about 60% of your final grade: two during the term (60 points each) and a comprehensive final (120 points). The exams will be designed to test your mastery of the material as well as your ability to use critical-thinking skills to apply that knowledge. The exams may include matching, multiple choice, short-answer or essay type questions. All three exams will also include a “digital practical” component, wherein images of taxa, structures, etc. will be projected on the screen to be identified or explained.

<u>BIOL 361</u>	<u>points</u>
Exam 1	60
Exam 2	60
Final Exam	120
Lecture Quizzes	40
Lab Exercises	60
<u>Term Paper</u>	<u>60</u>
TOTAL	400

NOTICE that the two “regular” exams will be given during scheduled lab periods.

In addition to periodic exams, 2-point quizzes will take place at the beginning of each lecture period. All questions will be “short answer,” and topics from preceding lectures *as well as the lecture scheduled for that day* are fair game. Any daily quiz points acquired above 40 are “bonus” points. Daily quizzes will constitute roughly 10% of your final grade.

The remainder of the points will come from the laboratory exercises (15%) and your writing assignments associated with the term paper (15%), described below.

Grades will be based upon the following percentages of the course total:

	100-94%	A	93-89%	A-	
88-87%	B+	86-83%	B	82-79%	B-
78-77%	C+	76-73%	C	72-69%	C-
68-67%	D+	66-63%	D	62-59%	D-
<58%	F				

REQUESTS FOR EXTRA POINTS WILL NOT BE HONORED.

Exam and Quiz Rules. The following rules apply to exam periods as well as quizzes.

- If you arrive late for a quiz or exam, you will not be given extra time. When the rest of the class is finished, you will need to be done.
- If you arrive so late for an exam that anyone else has finished and left, you will not be allowed to take the exam at that time. You may be able to take a make-up exam (see attendance policy below). There are no make-up quizzes.
- All exams, quizzes, lab exercises, etc. must be completed in black or blue ink or pencil.
- Cell phones, etc. will not be allowed in the testing area.
- There may be multiple exam forms: same questions, different order.

Writing Assignments. Writing assignments will contribute a substantial portion of your final grade (15%). You will complete a term paper that will be evaluated in three phases.

- *Paper Topic & Questions.* — Due on Friday 23 February 2018 (5 points).
- *Annotated Bibliography.* — Due on Friday 23 March 2018 (25 points).
- *Final Paper.* — Due on Friday 11 May 2018 (30 points).

Instructions and grading rubrics will be provided in separate handouts. In addition to your instructor's office hours, the Writing Lab at the UWSP Tutoring-Learning Center is available to help.

<http://www.uwsp.edu/tlc/Pages/writingReadingTutorials.aspx>

Attendance. YOUR COMMITMENT TO YOUR CLASSES IS AMONG THE MOST IMPORTANT THINGS IN YOUR LIFE RIGHT NOW. You are expected to attend all lecture, lab, and exam sessions. Two unexcused absences from lab will result in a 1/3 reduction in your final grade.

If you will miss a class to participate in a college-sanctioned event, you must notify me in advance and complete the work, including exams, before the otherwise scheduled class or due-date. Absences relating to religious beliefs will be accommodated according to UWS 22.03 (see *Community Rights and Responsibilities: Rules and Regulations Governing Faculty, Staff and Students*, URL below). In either case, Dr. Graf should be notified within the first three weeks of class regarding the specific dates that you will be absent.

<https://www.uwsp.edu/dos/Documents/CommunityRights.pdf>

Make-Up Exams. You must make every effort to take exams at the scheduled times. MAKE-UP EXAMS WILL BE ALLOWED IN CASES OF EMERGENCY, FOR WHICH YOU MUST PROVIDE WRITTEN DOCUMENTATION. You must make arrangements with Dr. Graf within 24 hours of the exam to schedule a make-up exam within one week or you will forfeit the points.

- **E•mer•gen•cy** |i'mərjənsē| (noun): *a serious, unexpected, and often dangerous situation requiring immediate action.*
- A good rule of thumb: *If your situation wouldn't cause you to postpone your wedding, then it isn't a good reason to miss a scheduled exam.*

Laboratory. YOU MUST DRESS APPROPRIATELY FOR LAB. The same lab safety rules for other Biology courses apply for BIOL/WATR 361. We will be working with ethanol- and formalin-preserved materials as well as sharp objects like dissecting blades and (potentially broken) glass.

- You **MUST** wear shoes — not sandals, flip-flops, or other options that do not protect your feet.
- While working with specimens in preservative, you must wear protective eyewear.
- It is recommended that you wear clothes that you won't mind getting grubby.
- **FAILURE TO COMPLY WILL RESULT IN YOUR REMOVAL FROM LAB UNTIL YOU ARE PROPERLY ATTIRED.**

At each lab period, you will receive a handout detailing the material available for examination as well as instruction as to what you should be looking at. You should make drawings and take notes as necessary in order for you to be able to answer the “digital practical” questions on the exams. Your lab notes will be graded at the end of each lab period for completeness.

Academic Integrity. Any misrepresentation of your work, including plagiarism, or cheating of any kind will result in a zero (0) for that assignment. Students are encouraged to become familiar with the UWS/UWSP Student Academic Standards and Disciplinary Procedures governing student academic conduct (see *Community Rights and Responsibilities: Rules and Regulations Governing Faculty, Staff and Students*, URL below).

<https://www.uwsp.edu/dos/Documents/CommunityRights.pdf>

- Copying whole passages written by someone else is plagiarism. Even if you right-click in Word to use the thesaurus and replace some words.
- Cobbling together sentences from various sources and presenting them as your own is plagiarism.
- Quoting passages is not appropriate in this class. Use your own words.

Reminder: DR. GRAF IS NOT AS DUMB AS YOU THINK HE IS.

Classroom Conduct. Student and instructor behavior should promote an environment favorable to both teaching and learning. It is disruptive to come late to class, read extra-curricular media in class, or use cell phones (and other electronic devices) during class time. Students that choose to disrespect their classmates and their instructor by disrupting lectures or labs will be asked to leave.

Disabilities. Students with disabilities are welcome and encouraged in this class. Students with disabilities should contact the Disability and Assistive Technology Center during the first two weeks of the semester if they wish to request specific accommodations.

<http://www.uwsp.edu/disability/Pages/default.aspx>

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Wk	Date	Day	#	Lectures	Pennak	Labs
1	23-Jan	T	0	Welcome & Syllabus	—	Independent Research
	25-Jan	Th	1	Intro. to Invertebrate Animals	Ch. 1	
2	30-Jan	T	2	Intro. to Freshwater Invertebrates	Ch. 1	Animal Diversity & Microscopy
	1-Feb	Th	3	Classification & Taxonomy	D2L	
3	6-Feb	T	4	Porifera	Ch. 2	Scientific Reading & Writing
	8-Feb	Th	5	Cnidaria	Ch. 3	
4	13-Feb	T	6	Platyhelminthes	Ch. 4	Porifera & Cnidaria
	15-Feb	Th	7	Nemertea & Gastrotricha	Ch. 5-6	
5	20-Feb	T	8	Rotifera	Ch. 7	Platyhelminthes, Nemertea, Gastrotricha, & Rotifera
	22-Feb	Th	9	Nematoda & Nematomorpha	Ch. 8-9	
	23-Feb	F		Paper Topics Due!		
6	27-Feb	T	10	SYNTHESIS		EXAM 1
	1-Mar	Th	—	REVIEW		
7	6-Mar	T	11	Bryozoa & Entoprocta	Ch. 11-12	Nematoda & Bryozoa
	8-Mar	Th	12	Intro. to the Annelida	Ch. 13	
8	13-Mar	T	13	Oligochaeta & Hirudinea	Ch. 13	Annelida
	15-Mar	Th	14	Intro. to Mollusca	Ch. 14	
9	20-Mar	T	15	Gastropoda	Ch. 14	Mollusca
	22-Mar	Th	16	Bivalvia	Ch. 14	
	23-Mar	F		Bibliography Due!	—	
26-30-Mar SPRING BREAK — NO CLASS						NO LAB
10	3-Apr	T	17	Introduction to Arthropoda	Ch. 16	Arthropoda & Related Phyla
	5-Apr	Th	18	Tardigrada	Ch. 10	
11	10-Apr	T	19	Arachnida	Ch. 15	Arachnida
	12-Apr	Th	20	Branchiopoda	Ch. 17-18	
12	17-Apr	T	21	SYNTHESIS	—	EXAM 2
	19-Apr	Th	—	REVIEW	—	
13	24-Apr	T	22	Copepoda & Branchiura	Ch. 19-20	Microcrustacea
	26-Apr	Th	23	Ostracda	Ch. 21	
14	1-May	T	24	Malacostraca & Decapoda	Ch. 22, 25	Malacostraca
	3-May	Th	25	Isopoda & Amphipoda	Ch. 23-24	
15	8-May	T	26	Peer Review (complete draft of paper due!)		REVIEW ACTIVITIES
	10-May	Th	27	SYNTHESIS		
	11-May	F		Term Paper Due on D2L!		
16	17-May	Th	F	FINAL EXAM (8-10 AM)		