

GENERAL ZOOLOGY (BIOLOGY 120): COURSE SYLLABUS SPRING 2016

Instructor: Dr. Tupper

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Office hrs: Tues 11a-2:30p, Thurs 11a-6:30p. It's best to make an appointment

COURSE DESCRIPTION AND GENERAL PURPOSE: Presents basic biological principles, emphasizes structure, physiology, and evolutionary relationships of invertebrates and vertebrates. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week. This is a one-semester course for science majors, or nonmajors. In it, students are introduced to the evolution of vertebrates and invertebrates from the Paleozoic to the present. Emphasis is placed on anatomical and physiological characteristics of major phyla and how they fit into their respective environments.

TEXT: Required—(1) Miller SA, Harley JP. (2007) *Zoology*, 10th Edition. 592 pgs. McGraw Hill. ISBN 978-0-07-783727-3. Required — (2) Alden P, Cassie B. 1999. *National Audubon Society Field Guide to the Mid-Atlantic*, 1st Edition. Knopf. 0-679-44682-6. (3) Highly Recommended—Miller SA. (2012) *General Zoology Lab Manual* 7th edition 354 pgs. McGraw Hill. ISBN 978-0-07-747929-9. All books are on reserve in the library. We will be using some exercises out of this manual. You can probably photocopy what you need.

COMPETENCIES: The student should be able to read and express him/herself both orally and in writing on a college freshman level as measured by a college English competency examination (ENG 111 or permission of instructor). It is helpful to have a working knowledge of blackboard, Microsoft PowerPoint, Excel and Word.

EVALUATION: Students can accumulate a total of 1500 points in this course. Students will be graded according to the results of four (of 5) hourly exams (totaling 1000 points), one lab exam (300 points), and lab assignments (totaling 200 points). Submission of all assignments is mandatory and must be turned in by the due dates. Lecture attendance is mandatory, but not graded. The final exam is comprehensive. Lecture exams will consist of multiple choice and short answer questions. The lab exam focuses on identification of animals by sight and sound, and the ability to identify internal and external features of vertebrates and invertebrates. The lab exam will include all species listed in the table at the end of this document, and everything covered in the laboratory. Lab attendance is mandatory and is graded. If you miss more than three labs you will receive a failing grade in the course. There are no make-up exams. Your lowest exam grade will be dropped. If you miss an exam, that will be the one dropped. There is no extra credit. I do not hand back and discuss exams during class time. If you wish to do so, please make an appointment to see me and I will go over your exam results with you.

STUDENTS WITH SPECIAL NEEDS: Students with physical disabilities who may require accommodations are encouraged to contact the college center for students with disabilities. Students with learning disabilities should contact disability services; here is the link: (<http://www.nvcc.edu/current-students/disability-services/>). I will not make accommodations for any student unless I'm presented with the appropriate accommodations form.

PLAGIARISM AND ACADEMIC HONESTY: At Northern Virginia Community College, we expect the highest standards of academic honesty. Academic dishonesty is prohibited in accordance with the Student Conduct, Rights and Responsibilities described in the student handbook (<http://www.nvcc.edu/students/handbook/conduct.html>). NVCC's policies prohibits cheating on examinations, unauthorized access to examinations or course materials, plagiarism and other proscribed activities. Students that violate plagiarism and academic honesty codes will receive a failing grade and will be expelled from this course.

CANCELLATION DAYS: In the event of class/lab cancellation, we will resume where we left off during the next meeting. For example, if we were to have an exam scheduled on September 1, and it snowed, the exam would take place on our next scheduled meeting on September 7th.

IMPORTANT DATES, AUDIT POLICY AND INCOMPLETES: For critical dates regarding refunds, withdraw, etc. see: <https://www.nvcc.edu/calendars/academic.html>. Last day to drop with a refund is January 28; last day to withdraw without a refund and grade penalty is March 22. Final exams are May 2-May 8. A student may not audit this course. Incompletes are only granted if the student's circumstances are dire (health issues, deaths in the family). Incompletes will only be granted if students have completed all lab assignments and 4 exams. Incompletes must be approved by the division dean and the provost. Health claims must be documented by medical professionals. The final exam times are different than your normal class meeting time. As soon as these times are established, I will post them on my website.

EXTENSION (INCOMPLETES): My policy on extensions is as follows: I will not grant any student an extension unless there are serious and uncontrollable circumstances that prevent the student from completing the work. Falling behind in the work because you get busy juggling work, life and various other "normal" activities is not justification for an extension. Also, in order for an extension to be granted, you must have completed all labs and all but one of your exams. My Dean has to approve these extensions. Unless your requests meet the aforementioned criteria, your request will invariably be denied.

HOW TO SUBMIT ASSIGNMENTS: To submit assignments in blackboard, scroll to the bottom of the page and click on the, "view/complete assignments" tab that corresponds with the assignment that you want to submit. Attach the appropriate file and click, "submit". If for some reason your blackboard interface is different than mine, please contact me and we will figure out the problem together.

COMMENTS ON SUBMITTING WORK: Your work must (1) be free of common spelling errors and typos, and (2) contain one font only, please be consistent. If you cut and paste, clean it up before submitting. Use Times New Roman or similar font. Use only one color, black. When submitting work please label it as the following (as an attachment, use caps lock): LAST NAME_ASSIGNMENT_DATE. You do not need to put your section since you are submitting via Blackboard. All papers and presentations are to be proofed before you submit to me. I will not accept papers that have not been first proofed by the writing center staff. They will provide you with verification that you were there. For assistance with writing contact staff at academic center for reading and writing:

1. Bisdorf room AA 234; 02703-575-4709
2. writinghelp@nvcc.edu
3. [Writing Center Website](http://www.nvcc.edu/alexandria/writing/) (<http://www.nvcc.edu/alexandria/writing/>)

EMAILS AND DISCUSSION BOARD: Please use proper English when composing emails and posting discussions. Please keep writing formal, free of slang and as grammatically correct as possible. Please address me in the emails as Dr. or Professor Tupper, not as "hey." Also (I mean following respectfully): Just because we all have email addresses does not mean you should email me and expect an immediate response, nor does it mean you should email me with every question that you have. I will reply to your emails within 48 business hours from its sent time. There are times when I miss an email, or it gets sent to my junkbox. If you do not hear from me within 48 business hours, do not get angry, please just email me again. That said, I will not reply to your emails unless you ask me a specific question. Do not email me if you missed a class and want me to tell you what you missed in class. Do not email me telling me that you are going to be late to class, or that you are going to miss a class, or that you have missed class. Do not email me asking for any logistics/instructions that I explained previously in class. For all of those types of questions, please use the discussion board, or ask your classmates. Do not email me asking for extensions or to make up a field trip on your own time. Please feel free to email me if you have questions about the course content or if you want to set up a time to meet and discuss some of the course content. Please email me if there are serious circumstances that are beyond your control that may need my attention (e. g. health/medical or job related issues). Again, the majority of questions can be answered by emailing a classmate, or by using the discussion board.

INTRODUCTORY LETTER, GENERAL COMMENTS ON SUCCESS IN THIS COURSE, AND MISCELLANEOUS RULES: Please write a brief statement and include something semi-personal about yourself, (e.g. a couple of hobbies/sports/major etc; it's optional). Also let us know where (if) you work and how many hours you work per week. I am sure your classmates (myself as well) are interested to know a little about you. Also include your name, and what you preferred to be called. Post this on the discussion board during the first week of the class.

Doing well in this course requires a substantial commitment. You have probably heard this in other classes that you feel are easy. However, I guarantee you that this is one of the most difficult biology courses at NOVA. This course covers evolutionary hypotheses, systematics, taxonomy, anatomy and physiology. By nature, all of these topics are challenging. You need to set aside quite a bit of time for reviewing lecture notes, reading, and studying after and before every lecture. The lab material is also difficult and time consuming. You will likely need another couple of hours a week to learn the lab material as well (see Table 1 below). I expect citations in your papers to follow CSE (Council of Scientific Editors; <https://writing.wisc.edu/Handbook/DocCSE.html>). Please visit the site. If citations do not follow these guidelines, then points will be deducted. There are no exceptions. A few last comments: please make use of the discussion board and become friendly with other students in the class. It helps calm anxieties about the course if you have some peer support. Be on time to class. I will lock the door 10 minutes after the start of lecture and will not open the door until we break (unless I see you). So give yourself plenty of time to get to class. We all live in the DC metro area and understand that there is always traffic. Please do not knock while I am lecturing. Use of any type of cell phone/tablet/computer is prohibited during lecture unless you have my permission; think of it as a break from the devices. Recording devices are not allowed for note taking purposes without my permission. I'd prefer that you take notes via pen and paper. For most people, seeing information, hearing information, and physically writing information is superior to computer use when it comes to getting the information into your short-term memory. So, get a notebook, and be prepared to write. Much of the lab includes dissection. Although the animals are not living, they lost their life so that we could learn. Handling the animals in a disrespectful and unprofessional manner will not be tolerated. If you are caught using the animals for anything other than dissection, you will be removed from the course and receive a failing grade.

Tentative Lecture Schedule (We may deviate from the schedule)

PART I. INTRODUCTORY MATERIAL, CONSERVATION, PARAZOA, THE DIPLOBLASTS, AND SMALLER LOPHOTROCHOZOA

- Ecological Succession, Habitat & Biodiversity (Chapters 1 and 6)—Week 1 *Read the history of zoology document—Week 1
- Notes on Protista and Multicellular and Tissue Levels of Organization (Chapters 8 and 9) –Week 2
- The Smaller Lophotrochozoan Phyla (Chapters 10) –Week 3
- **Exam I (175 points)—Week 4** (start mollusc lecture after exam)

PART II. LARGER AND LESSER KNOWN LOPHOTROCHOZOA

- Molluscs (Chapter 11)—Week 5
- Annelids (Chapter 12) – Week 6
- Lesser Known Lophotrochozoa (Chapter 12) Week 6
- **Exam II (175 points)—Week 7** (start smaller ecdysozoa lecture after exam)

PART III. ECDYSOZOA

- Smaller Ecdysozoa (Chapter 13)—Week 7
- Arthropods I (Chapter 14) –Week 8
- Pancrustacea (Chapter 15)—Week 9
- **Exam III (175 points)—Week 10** (Ambulacraria lecture after exam, Chapter 16)

PART IV. INVERTEBRATE AND VERTEBRATE CHORDATES

- Urochordata, Cephalochorda and Fishes (Chapters 17 and 18)—Week 11
- Fishes (Chapter 18)—Week 12
- Amphibians and Reptiles (Chapters 19 and 20)—Week 13
- Birds and Mammals (Chapters 21 and 22)— Week 14
- **Exam IV (175 points) –Week 15**
- **Cumulative Final Exam (300 points) May 4 (Time TBA; probably 5:30pm)**

Tentative Lab Schedule (We may deviate from this schedule)

If you are not able to attend a lab, including field trips, you are not eligible for the points. There are no make-ups and there is no extra credit. We may change the times/dates of the field trips, as they are weather dependent. You have fair warning that the trip dates are tentative. The SERC field trip will likely take most of the day. Expect to spend about five hours outside. This does not include travel time. During the field trips we encounter things like inclement weather, biting arthropods, mud, water, dirt and thorns. Please show up prepared with the appropriate attire. This includes long sleeves, long pants, boots, a change of clothes, and a snack and water (with hand sanitizer). You must have submitted a signed assumption of risk and code of conduct form before attending the field trip. Before attending the field trip you must read the links posted on blackboard about chiggers, Lyme disease, poison ivy, west Nile virus and other tick borne diseases, and you agree to the conditions of the course and release the NOVA and SERC of liability.

PART I. OFF-CAMPUS FIELD TRIPS

- [Smithsonian Environmental Research Center](#)—March 19th or March 26th. Clear both dates. If the weather is good on the 19th, we will go. If not we will plan on the 26th. Meet in education building parking lot, 10am (50 points). Weather dependent.

PART II. ON-CAMPUS LABS AND EXAMS (MONDAYS 4:30-7:10). LABS WILL MEET IN BIOLOGY LAB ROOM BILDORF 395

1. Initial lab meeting, intro and requirements, lecture possible (10 points)
2. Porifera, [Cnidaria](#), & Flatworms (10 Points)
3. Field Identification (10 points)
4. [Molluscs](#), & [Annelids](#) (10 points)
5. [Pseudocoelomates](#) and Arthropoda ([crayfish 1](#) and [crayfish 2](#), 10 points)
6. Echinoderm lab ([sea star 1](#) and [sea star 2](#), 10 points)
7. Fishes ([Yellow Perch](#) and [Shark](#) 10 points)
8. [Fetal Pig](#) and I (10 points)
9. Field Identification (10 points)
10. Comparative vertebrate anatomy and human evolution (10 points)
11. Presentations (50 points total, with paper)
12. Presentations/Paper Due (50 points total, with paper)
13. **Comprehensive lab exam, animal paper due—May 2 (300 points)**

Herps	P#	BIRDS	P#	FISH	P#	MAMMALS	P#	INVERTS	P#	INVERTS	P#
American toad*	261	American robin*	323	American eel	250	Bobcat*	363	American copper	224	Snowy tree cricket*	210
Bullfrog*	262	Belted kingfisher	310	Atlantic menhaden	241	House mouse	354	Black widow	199	Sow/pill bugs	197
Gray tree frog*	262	Bald eagle	290	Atlantic needlefish	242	Chipmunk*	351	Bombardier beetle	RC	Springtails	RC
Green frog*	263	Barn swallow	316	Atlantic silversides	242	Coyote*	357	Bottle fly	217	Cicadas* (both)	211
Green tree frog	262	Barred Owl*	308	Brown bullhead	252	meadow vole	354	Carpenter ant	219	Termites	208
Marbled salamander	VHS	Chickadees*	319	Bluegill	255	Downy woodpecker	311	Burrowing crayfish	197	Viceroy	228
N. cricket frog	VHS	Black vulture	288	Trout (All)	254	Eastern cottontail	350	Differential grasshopper	209	Water boatman	212
Pickereel frog*	263	Blue jay*	317	Chain pickerel	253	Flying squirrel	353	Dragonflies (various)	203+	Water strider	213
Red-backed sal	260	Canada goose*	282	Green sunfish	RC	Gray squirrel*	352	Dragonfly nymph	202	Whirligig beetles	214
Red spotted newt	258	Cardinal*	333	Hogchoaker	248	Groundhog	351	E. tiger swallowtail et al.	223	Wolf spider	199
Slimy salamander	260	Carolina wren	320	Bass (both 1m/sm)	256	Muskrat	355	Fall field cricket*	210	Wooly bear	233
South leopard frog*	263	Common grackle	341	Mummichog	242	Raccoon*	357	Fishing spider	199	Yellow jacket	220
Spotted salamander	258	Eastern bluebird	321	Naked goby	RC	Red fox*	358	Flat-backed millipede	197	Ticks/chiggers	200
Spring peeper*	262	Eastern-towhee*	335	Norther pipefish	243	Shrews & moles	347	Giant water bug	RC	Garden spider	199
Wood frog	263	European starling	324	Sea lamprey/hagfish	237	Striped skunk	360	Gladiator katydid	RC	Damselflies	203
American alligator*	AO	Fish/American crow	317+	Spiny dogfish shark	239	Bats	349	Caterpillar hunter et al.	214	Earthworm	196
Black racer	268	Gray catbird*	323	Striped bass	244	Virginia opossum	346	Harvestman	200	E. tent caterpillar	231
Black rat snake	268	Goldfinch*	343	Striped blenny	RC	Weasels	361	Honey bee	220	Gypsy moth	234
Snapping turtle	265	Great blue heron	277	White perch	244	White footed mouse	354	Horse fly	217	Mantis	208
E. box turtle	266	Green-winged teal	283	3spine stickleback	242	White tailed deer	364	House centipede	197	Micrathena	RC
E. cottonmouth	VHS	Hairy woodpecker	311			Beaver/mound *	353	House fly	217	Milkweed beetle	215
E. painted turtle	265	Herring gull	304			Mammal tracks	345	Leech	196	MARINE INVERTS	P#
E. worm snake	VHS	Laughing gull*	303			Black bear*	359	Leopard slug	197	Barnacle	191
Five-lined skink	267	Mallard duck	283					Luna moth	231	Blue crab	193
Garter snake	271	Mourning Dove	307					Meadow Katydid*	AO	Comb jelly	185
Hognose snake	269	Northern flicker*	312					Mole cricket*	AO	Common sea star	195
Milk snake	269	Northern mockingbird*	323					Monarch	229	Grass/sand shrimp	191
N. copperhead	271	Osprey*	290					Millipedes	197	Moon jelly	184
N. water snake	269	Red-bellied woodpecker*	311					Stink bugs (native)	213	Mud crab	RC
Red-bellied turtle	266	Red-tailed hawk*	292					Northern true katydid*	210		
Red-eared slider	VHS	Red-winged blackbird*	339					Painted lady	227		
Ribbon snake	271	Song sparrow	337					Polychates/castings	185		
Green snakes	VHS	Tree swallow	315					Diving beetle	RC		
Spotted turtle	265	Tufted titmouse*	319					Question mark	226		
Timber rattlesnake*	271	Turkey vulture	289					Right open snail	RC		
Wood turtle	265	Whip-poor-will*	309					Robber fly	217		
		White breasted nuthatch	318					Gastropod shell char's	186		
		White throated sparrow*	337								
		Wood duck	282								

VHS = Virginia Herpetological Society Website; RC = Smithsonian Environmental Research Center Filed Trip;

AO = Audio Only; E. = Eastern; N. = Northern; + = Following Pages; * = Audio Also

Table 1. List of required identification for lab. Page numbers are from [A Field Guide to the Mid-Atlantic States](#).