

BIO 320 – Section 01- 2021
Animal Kingdom
Tentative Syllabus, Fall, 2021
College of Arts & Sciences Syllabus

COURSE INFORMATION

Lecture time and location: 1215-1444 T and R Room: ZOOM ROOM

Join Zoom Meeting

<https://neiu-edu.zoom.us/j/82396243088?pwd=RStHYVRhZjJKekN1NFhoZ0wvbVZ1QT09>

Meeting ID: 823 9624 3088 Passcode: 810212

For more connection information, see the announcements board. If you have trouble connecting, email me immediately. On the first day of class, try to connect 10-15 min early to make sure you can connect without problems

Special Fees: \$25.00

First Day of Classes: We begin on Tuesday,

Credit Hours: 4

Course Description: Anatomy, physiology, classification and phylogeny of animals. Lecture and laboratory.

Course Prerequisites: Prerequisites: BIO-150 minimum grade of C and BIO-201 minimum grade of C and BIO-202 minimum grade of C.

First day of our class: Tuesday, Aug 24 2021

All Materials Due by Dec 12!

FACULTY INFORMATION

Instructor: Dr. M. Readey.

Office Location:: ON LINE ZOOM **Join Zoom Office Hours**

<https://neiu-edu.zoom.us/j/3038240479> Meeting ID: 303 824 0479

Office Hours: 0800-0900 T, TR, 1130-1200 T, TR, and 0900-1045 W and 11:30-1:30 W

Upon Request, review sessions can be scheduled before exams.

Other office times are also available by appointment.

Phone Extension: NA Contact me through N MAIL.

NEIU N-mail address: mareadey@neiu.edu

Other Important Dates for Our Class:

NEIU Classes Begin on Monday Aug 23

Monday, September 6, 2020

Labor Day Holiday - No Classes

Thursday, November 25-28

Thanksgiving Break; no classes

Monday December 6

Last day of regular classes

Tuesday, Dec 7-9

Final Exams week.

Monday, Dec 13

Grades Due

NB: Cited from the Schedule of classes, inside front cover: "*POLICY ON FIRST CLASS SESSION*

ATTENDANCE: Department instructors may reassign a student's seat in a class if the student does not attend the first class session and neglects to inform the instructor in advance of the intended absence. The student will be responsible for any financial consequence if the course is not dropped officially by the student before the appropriate refund deadline. Failure to officially withdraw from class will result in a grade of F."

Syllabus Statement for Recordings:

In this class software may be used to record live class discussions. As a student in this class, your participation in live class discussions may be recorded. These recordings typically will be made available only to students enrolled in the class, to assist those who cannot attend the live session or to serve as a resource for those who would like to review content that was presented. Students who prefer to participate via audio only will be allowed to disable their video camera so only audio will be captured. Students who prefer to listen only, must disable their audio capability and visual camera. Please discuss these options with your instructor.

Final Exam Schedule at:

<https://www.neiu.edu/sites/neiu.edu/files/documents/2020/02/24/Fall%202020%20Examination%20Periods.pdf>

COURSE MATERIALS

This class is an introductory survey of the choanozoa and the multicellular members of the animal kingdom, with emphasis on the systematics, ecology, anatomy, physiology and evolution. You will learn these principles by developing and understanding of the systematics, anatomy and physiology of different phyla. Phyla will be grouped and presented in what is currently considered valid phylogenetic groupings, but you will also be given historic background to help you better understand older literature that you may need to access. *It helps to spend some time learning the roots and meanings of the names of the clades!*

List of Required and Suggested Texts / On-Line Materials:

● **Text:** *Animal Evolution Interrelationships of the Living Phyla*

Third Edition Claus Nielsen 9780199606030 Paperback 20 February 2012. We will follow the phylogenies given in this text. It is a strongly recommended text. If you choose to use an older edition, be aware that the classifications have changed, and you cannot simply follow the ones in the older text.

*Currently, we are experiencing **rapidly evolving knowledge of the animal kingdom and its systematic**. Because of the frequent changes, there is currently no single text that meets the demands of this class. We will be using a variety of sources in addition to the Nielson text. This book comes closest to the most recent cladistic analysis of the animal kingdom (vertebrates excluded).*

Website links for Invertebrate Zoology:

There are several online resources in Zoology that you will need to access during this semester. To get you started, bookmark the following pages on your personal browsers. When studying an assigned link, you should also look at the links immediately downstream from the recommended entry site. For example, if you are studying the cnidaria at the Berkley site, then also look at the clades within the cnidaria.

OUR LAB e-“BOOKS”:

We will be using one major on-line (a.k.a. free) lab books: These are:

Primary

<http://lanwebs.lander.edu/faculty/rsfox/invertebrates/>

[Link works as of 23 August, 2020](http://lanwebs.lander.edu/faculty/rsfox/invertebrates/))

Caution on Supplemental Sources:

Our text book takes a very detailed and radical approach to the reclassification of living things. Neilson is among the most respected systematists currently working. His book looks at data from many sources, including embryology, anatomy, histology, genetics, and paleontology. This wide base gives his work a solid, multi-pronged foundation that many other books lack.

There are other views of animal evolution in circulation. I caution the use of on-line web sites, even good ones, because of the rapidity of change, and because of the many different views of how animals are related.

The *Tree of Life* Website now lags behind the curve. and it may conflict with our text book. When in doubt, follow Nielson UNLESS I STATE OTHERWISE. Systematics is a dynamic and changing science that currently experiences many changes due to new information from embryology, genetics, and palaeontology. That said, it can lead you information and primary sources about specific branches. <http://www.tolweb.org/tree/> Due to its scope, this site tends to be a bit behind the curve. I have used it in the past, but I no longer recommend it as a primary supplemental source.

The other excellent online source for nut-shelled information on specific taxa is <http://www.ucmp.berkeley.edu/help/taxaform.html>

The Berkeley site also tends to be a bit out of date, so be careful when you use it.

Other sources will be added and posted news updates should I find good ones..

NB: Because of the rapid evolution in our knowledge of animal systematics, there will be inconsistencies in classifications among sources. For exams, we will use the classification system that is presented in lecture.

WARNINGS SPECIFIC TO THIS CLASS

Warning I: This class requires dissection of animal specimens. These organisms are already dead, so whatever we do, we cannot hurt them or inflict pain of any sort. If you have ethical, religious, or other objections to the dissection of dead animals, (or in the case of an online class, observing the dissection) then this class is not for you. You have been warned about this feature of the class, and you will not be excused from dissection.

COURSE OBJECTIVES / STUDENT LEARNING OUTCOMES

OBJECTIVES: Biology 320 is an introductory course focusing on systematics (= evolutionary relationships), anatomy, and physiology of animals. During this course, I will expect you to complete the following base-line learning tasks.

I. SYSTEMATICS AND TAXONOMY

- Understand the basic concepts of cladistic analysis and be able to classify organisms in accord with the principles of phenetics and of cladistics.
- Production of a parsimonious tree using these concepts
- To be able to identify animals to specific clades based upon their anatomy
- Effectively use a dichotomous key to identify unknown organisms
- Generalize the skills necessary both for cladistic classification and for identification of unknown specimens based upon a knowledge base developed in class.
- Determine appropriate traits for use in cladistic analysis, and explain why certain traits would result in misleading or invalid trees
- Be able to compare and to contrast systematics and taxonomy.
- Develop the vocabulary needed for communication with your fellow biologists and health-care professionals

II. EVOLUTIONARY THEORY

- Be able to explain how systematics and evolutionary theory are related
- Explain how the one can use various features of animals
- Be able to explain how simplification, rather than complexification, has been a dominant trend in much of animal evolution
- Interpret a cladistic or phenetic tree in terms of evolutionary theory, describing the relationships among the branches.
- Develop an understanding of the inter-relationships among extant and extinct animals, and the ability to use this understanding to make choices for research subjects.

III. ANATOMY AND PHYSIOLOGY

- Be able to compare and contrast different physiological adaptations to similar environments across the animal kingdom.
- Be able to explain how organisms use different means to complete the same tasks of life
 - Compare, contrast, and explain the function, the presence, and structure of specific organ systems in different clades.
 - Be able to identify and explain the evolutionary relationships among clades, based upon similarities and differences of anatomy
 - Be able to place these organ systems and their functions within a context of evolution and adaptation.

IV. PRACTICAL SKILLS

- Explain how the knowledge of the evolutionary relationships among organisms applies to other branches of biology, chemistry, pharmacology, and medical science.
- Understand how the anatomy and physiology of organisms influence their use of niches, and how these features can be used to alter population growth patterns
- Produce hypotheses about animal ecology and behaviour based upon their anatomy, physiology, and systematics.
 - Be able to use a dichotomous key
 - Be able to collect and to identify common orders and families of insects found in the Chicago-land area.

V. LABORATORY SKILLS

- Be able to identify the major groups of animal tissues across the animal kingdom to the levels of organization indicated during class, with the additional goal of understanding the phylogenetic (evolutionary) relationships among the animals. among tissues, among genes, and among life stages
 - Be able to identify major organs and organ systems in diverse clades, and explain their function within that clade and how they are adaptive.
 - Be able to compare and to contrast organ systems across clades.

GRADING: STUDENT TASKS / ASSIGNMENTS / REQUIREMENTS

🟡 **Grading:** Your grade will be determined in the following manner

Quizzes:

| | | |
|-------------------------------|-------------------|---------------------------------------|
| Concept Quizzes 1 | 150 points | |
| <u>Practical Quizzes.....</u> | <u>200 points</u> | (Scheduled for our final exam period) |
| Quiz Total | 350 points | |

Exams Grade (combo Practical and Concept:

| | |
|-------------------|-------------------|
| Exam 1 | 50 points |
| Exam 2 | 50 points |
| Exam 3 | 50 points |
| Exam 4 | <u>50 points</u> |
| Exam Total | 200 points |

NB; the materials spanned by the lecture exams and the laboratory exams are not 1:1. Although the exams will cover all the same materials, they are distributed differently across the two sets of tests.

2 Projects:

Project Grade: 50 pts each.

Final Percentage Grade:

90% + = A 80% + = B 70% + = C 60% + = D < 60% = F

I keep all tests and assignments. You are, however, welcome to come and review exams with me. This offer is particularly important if you are not doing well in the class.

● Exam and Quiz Formats:

Lecture exams: Lecture exams will consist of multiple-choice questions.

Lab exams: Laboratory exams will **not** be multiple choice. Each lab exam will be presented in the practical format, from both specimens and power-point slides. Everything is potential fodder for these exams.

Quizzes will D2L through the semester. Laboratory quizzes will be identification based, not multiple choice. Lecture quizzes will be multiple choice. The Quizzes should give you information about where you need to focus your efforts before the upcoming exams.

● **MAKE UP POLICY** There will be NO make-ups for missed exams other than for extreme emergencies. I understand that this is a time of extreme stress, and I will try to give everyone ample time to get their work done. Let me know if you are having troubles.

● RECORDED LECTURES AND ONLINE CLASS TIME USE

1. If you are in the honours section, additional criteria will apply.

2. There is no OFFICIAL policy of required attendance. However, it is unlikely that you will earn an acceptable grade if you do not attend class regularly, I will be recording the bulk of my lectures to be done outside of the classroom Because we have no opportunity to use the lab for study, this extra dedication of class time to lab work is essential.

My lectures are key components of examinations. Therefore, pay attention to them and to the review sheets/ (I didn't get carpal-tunnel syndrome for nothing!). Attendance alone does not guarantee a passing grade. Because of our current situation, I will be lax on attendance. That means that if you cannot attend in person, you should try to go over the recorded materials from class.

3. **It is important that you take complete and comprehensive notes of the lecture material.**

4. It is also *essential that you study regularly*. The material in this class does not lend itself to cramming. Learning systematics is like learning the violin. It takes repeated sessions of practice.

5. One cannot learn to recognize organisms and their systems by site during crammed class periods. I would normally expect someone to spend 3-5 hours per week in the lab studying the materials on their own. That is why our meetings will be heavily dedicated to lab work.

6. Reading the websites beforehand will help you better understand the lecture material, the taxonomy that I will expect you to know is the one in the PowerPoint's. That taxonomy is based upon the most up to date systematics that you are likely to find.

7. After each lecture, you should reread and/or rewrite your notes and read the material in the websites again to make sure that you correctly took the notes and fully understand the material that was covered. Rewriting the material long-hand is a far more effective memory tool than typing into a computer. Try using two columns, the first listing broad concepts, and the second containing a list of facts and supportive evidence linked to that concept.

9. Look over the study guides prior to class whenever possible. Then use the study guide to organize your notes after class. The sooner you reinforce material, the more likely it is to stick. Prior to the exam, use the study guide to re-assess whether you have learned the material, but do not depend on this guide as quick way to cram.

10. Study Suggestions for Introductory Biology from other universities. Try the following link (available on line):

1. [University of Miami](#)

11. Talking or other disruptive behaviour during lecture will not be tolerated, and you may be asked to leave.

12. Academic dishonesty includes giving, receiving, or using unauthorized aid on any academic work. This includes a person who has taken a test discussing what was on a test with a person who has not taken the test. Any student guilty of cheating—including--plagiarism will receive a grade of F and their conduct may be reported to the dean of students for potential further action up to and including expulsion from NEIU.

● Logic of the schedule.

The animal kingdom separates into several large patterns of evolution (clades). We will attempt to follow the major lines of animal evolution in a pattern that reflects these relationships.

Because we lack the time, we will only be able to do a quick overview of the organisms in each clade, focusing instead on a few representatives of each clade and a few model systems within the clades. For a more in-depth treatment of the invertebrates, you will need to take Invertebrate Zoology.

Our Meetings: Will focus heavily on lab work. You are responsible for most of the lectures on your own in lieu of a text. Part of each class will be dedicated to questions.

Practice!: JUST ATTENDING CLASS IS INSUFFICIENT TO PASS. You must dedicate home time to study. This material is not cram-able! To get a good grade you should expect to dedicate at least one to two hours a week to studying the slides outside of laboratory time. *(One of the best ways to learn the material is to draw the specimens and label them. The process seems to help wire the images into the brain!)*

Tentative Schedule

The following schedule is subject to revision to allow for more or less time on various topics as needed or because of potential school closures such as snow days. Some lab time will also be devoted to additional lecture material.

We may be ahead or behind during any given week. You need to work with me, letting me know when you are having trouble comprehending a section. *(One of the best ways to learn the material is to draw the specimens and label them. The process seems to help wire the images into the brain!)*

| <i>Week</i> | <i>Topic</i> | <i>Topics</i> | <i>Quiz Pts</i> | <i>Practical Quizzes</i> | <i>Exams (50 pts each) Notes</i> |
|--------------------------------------|---|--|-----------------|---|--|
| <i>Week 1 Aug 24, 26</i> | <i>Cladistics and Phenetics</i> | <i>Tissues</i> | | | <i>No required text readings chapters 1,2 suggested</i> |
| <i>Week 2 Aug 31, Sept 2</i> | <i>Choanozoa</i> | <i>Early Animal Radiation; Porifera 1</i> | <i>10</i> | | <i>Chapter 3, 4</i> |
| <i>Week 3 Sept 7, 9</i> | <i>Siliacea, Calcarea, Homoscleromorpha</i> | <i>Eumetazoa/ Placozoa</i> | <i>10</i> | | <i>Chapters 5-9 Silacia, through Homoscleromorpha</i> |
| <i>Week 4 Sept 14, 16</i> | <i>Placozoa/ Neuralia Hypothesis</i> | <i>Ctenophora</i> | | | <i>Chapter 10-12, 15 EUMETAZOA through CTENOPHORA</i> |
| <i>Week 5 Sept 21, 23</i> | <i>Cnidaria & Diploblastea</i> | <i>Xenoturbellids and Clade Eubilateria</i> | <i>20</i> | <i>Practical Through Cnidaria 40</i> | <i>Exam 1 Through Cnidaria Chapters 13,14; Chapters 18, 20, 21</i> |
| <i>Week 6 Sept 28, 30</i> | <i>Platyhelminthes</i> | <i>Lophophorates: Ectoprocta, Entoprocts, Brachiopoda, and Phoronids</i> | <i>10</i> | | <i>Chapters 11,29 Chapters 36,38, 39, 40,41.</i> |
| <i>Week 7 Oct 5, 7</i> | <i>Annelida</i> | <i>Sipuncula</i> | <i>10</i> | | <i>Chapter 25, 26</i> |
| <i>Week 8 Oct 12, 14</i> | <i>Nemertea</i> | <i>Mollusca</i> | <i>20</i> | <i>Practical Through Mollusca 40</i> | <i>Chapter 28, 27</i> |
| <i>Week 9 Oct 19, 21</i> | <i>Rotifers & Chaetognaths</i> | <i>The "Lower" Cycloneuralians</i> | <i>10</i> | | <i>Exam 2 Through Mollusca Chapter 31, 34; Chapter 30, 52-55</i> |
| <i>Week 10 Oct 26, 28</i> | <i>Pararthropoda (Onychophora and Tardigrada)</i> | <i>Arthropoda 1</i> | <i>10</i> | | <i>Chapters 43-46</i> |
| <i>Week 11 Nov 2,4</i> | <i>Arthropod 2</i> | <i>Arthropods 3 Student Presentations</i> | <i>10</i> | <i>If you think this is over kill on the arthropods, consider this: The bulk of all animals are arthropods!</i> | <i>Chapter 46</i> |

| | | | | | |
|--|---|--|-------------------|---|--|
| <i>Week 12</i> <i>Nov 9,</i> <i>11</i> | <i>Arthropods 4</i> <i>Hemichordates</i> | <i>Student</i> <i>Presentations</i> | <i>20</i> | <i>Practical</i> <i>Through</i> <i>Para</i> <i>Arthropods</i> <i>40</i> | <i>Chapter 46</i> <i>Chapter 57, 59-61</i> |
| <i>Week 13</i> <i>Nov 16,</i> <i>18</i> | <i>Echinodermata</i> | <i>Urochordates and</i> <i>Cephalochordates</i> | <i>10</i> | <i>Practical</i> <i>Through</i> <i>Arthropods</i> <i>40</i> | <i>Exam 3 Through</i> <i>Arthropoda</i> <i>Chapter 58; 63-64</i> |
| <i>Week 14</i> <i>Nov 23,</i> | <i>Craniata</i> <i>Vertebrates through</i> <i>Sarcopterygii</i> | <i>Thanksgiving Day</i> <i>No Class Nov 25</i> | <i>20</i> | | <i>Chapter 65</i> |
| <i>Week 15</i> <i>Nov 30,</i> <i>Dec 2</i> | <i>Vertebrates;</i> <i>Diapsida</i> <i>Student Presentations</i> | <i>Vertebrates:</i> <i>Synapsids</i> | <i>10</i> | <i>Practical</i> <i>Through</i> <i>Vertebrates</i> <i>Synapsids</i> <i>40</i> | <i>Exam 4 Deuterostomia</i> |
| <i>Week 16</i> <i>Nov 7, 9</i> | <i>Final Exam Week</i> <i>Review only</i> <i>Scheduled for</i> <i>Tuesday, Dec 7</i> | <i>End of the Semester</i> <i>Have a Wonderful</i> <i>Break!</i> | | | |
| | | <i>Total Points</i> | <i>150</i> | <i>200</i> | <i>200</i> |

COURSE POLICIES AND STATEMENTS

Attendance and Absence Policies:

■ **ATTENDANCE:** *Per university policy, department instructors may reassign a student's seat in a class if the student does not attend the first class session and neglects to inform the instructor in advance of the intended absence. The student will be responsible for any financial consequence if the course is not dropped officially by the student before the appropriate refund deadline. Failure to officially withdraw from class will result in a grade of F.* (Cited from the Schedule of classes, inside front cover: "POLICY ON FIRST CLASS SESSION")

Beyond the dates of initial attendance, the university has not set attendance criterion. However, if you are not present, you cannot earn potential bonus points or take examinations or quizzes. Active attendance remains a strong indicator of success!

Because the tests are based upon lecture materials, it is unlikely that you will earn an acceptable grade if you do not attend class regularly. Because my lectures are key components of the exams, an absence means that you will miss any important changes or verbal additions to the presented material. Attendance will be considered in the final grade, especially in borderline cases. In addition to the quizzes, I will take a pop-attendance several times during the semester. If present, you will receive a few points. Attendance alone does not guarantee a passing grade.

Academic Integrity Policy:

By enrolling in this course, you are bound by the NEIU Student Code of Conduct: <http://www.neiu.edu/university-life/student-rights-and-responsibilities/student-code-conduct>. You will be informed by your instructor of any additional policy specific to your course regarding plagiarism, class disruptions, etc.

ADA Statement:

Northeastern Illinois University (NEIU) complies with the Americans with Disabilities Act (ADA) in making reasonable accommodations for qualified students with disabilities. To request accommodations, students with special needs should make arrangements with the Student Disability Services (SDS) office, located on the main campus in room D104. Contact SDS via (773) 442-4595 or <http://www.neiu.edu/university-life/student-disability-services>.

If you have need of special accommodations because of a disability, you must let me know and present HELP-centre documentation ASAP. In most cases, accommodations can be made, but I need to know about them to arrange for the accommodation.

Campus Safety:

It is recognized that a safe university environment is a shared responsibility of faculty, staff, and students, all of whom are expected to familiarize themselves with and cooperate with emergency procedures. Web links to Campus Safety: Emergency

Web links to Campus Safety: Emergency Procedures and Safety Information can be found on NEIUport on the MyNEIU tab or as follows: http://homepages.neiu.edu/~neutemp/Emergency_Procedures/MainCampus/.

ADDITIONAL COURSE INFORMATION

Missed Examinations:

Typically, there will be no make-ups on examinations without a serious, acceptable, and verifiable reason.

The 2-day Lock-Out Period

To discourage cramming, I will not answer any questions about examination material starting the day before a scheduled examination. This policy does NOT apply to quizzes.

Course Communication (University statement)

All pertinent electronic communications between the instructor and students is conducted exclusively through NEIU e-mail and our D2L site. Thus, it is the responsibility of students to check their NEIU e-mail account and the D2L site for all significant information, including updates on class cancellations in the event of threatening weather conditions. Communication between the instructor and students via personal e-mail accounts (e.g., @gmail.com or @yahoo.com) will not occur.

Incompletes

An “I” (incomplete) may be given if a student is absent from the final examination or fails to complete a special research or individual study project **because of some unavoidable circumstance such as illness. Not showing for the exam without a verifiable and acceptable reason will result in a grade of zero, not an I.** Students will have one semester after the incomplete grade has been assigned to remove the incomplete. Incompletes that have not been finished in that time, will be changed to an “F” grade.

Late Work

Late assignments:

Assignments late by one day will receive a 10% grade reduction. Any assignment that is more than one day late will not be graded and will be recorded as a zero. *UNLESS arrangements are made or you have a very good reason for the delay.*

Late work is strongly discouraged. Turning in work late can impair your chances of success in the course. This late work policy applies to all graded assessments (including the final examination) in the course, with the exception of the discussion threads. Because class discussions require us all to participate during the week when they are active, no make-up or late credit will be allowed for discussion participation. I understand that unexpected things can come up, so the late-work policy for our course is outlined below.

Serious Emergencies: For serious emergencies, your instructor will decide whether your late work may be accepted for full or reduced credit. Serious emergencies include things like serious illness, accidents, natural disasters, and university server outages. E-mail your instructor the information about your emergency and request approval to make up the assignment, lab, quiz, or exam. If you receive approval, make up the work according to the plan set by you and your instructor.

All Other Unexcused Late Work: Unexcused late work includes course work that is turned in late because of things like job-related, technical, or other personal issues. Your instructor will decide whether your late work may be accepted. A per-day late penalty of 10% of the assignment for an assignment that is one day late (including weekend days). Assignments more than one day late will receive an automatic zero. Due to the requirements involved in grading a project, assignments must be in on time.

The Covid-19 One-Free-Pass Option.

Because of the many challenges presented by the ongoing Covid-19 pandemic, I also offer the one “free” pass for a late quiz or test. Only once during the semester you can request a waiver and take *one* of these scored assignments up to two weeks late without presenting a verifiable excuse.

Submission of Assignments: Students are expected to complete all assignments. Failure to submit any assignment will result in ***a zero on that assignment and an additional deduction of 10 points per missing assignment.*** *If homework solutions are shared with the class, your instructor reserves the right to decline to accept late work after the sharing of the solutions, or to require that an alternative*

assignment be completed, if one is available. Only one unexcused, non-emergency late submission will be allowed per student per course.

Submission of Materials

Written assignments will be submitted electronically *only and in the appropriate folder on D2L*. Any student file submitted electronically that does not meet the requirements listed will not be graded. Please ensure that files are

- appropriately named (last name(s)-Document title-date), (Do not simply label your paper “Animal Kingdom Paper”. I may get up to 24 papers with that same title!)
- submitted in Microsoft-Office format (e.g., .doc, .xls., .ppt),* and
- submitted to the corresponding Dropbox folder.

While you are not required to use Microsoft Office products, please ensure your productivity applications are able to import/export into the compatible file formats.

The Two Projects Submissions:

Project #1 Biomimicry

You will be required to work on a team biomimicry project during the semester. It counts for a significant portion of your grade (50 pts). More about the concept of biomimicry can be found at the following TED talk:

<https://www.youtube.com/watch?v=r1CpzEGhs3c&t=49s>

<https://www.youtube.com/watch?v=sf4oW8OtaPY>

<https://www.youtube.com/watch?v=iMtXqTmfta0>

<https://www.youtube.com/watch?v=2UxGrde1NDA>

We will discuss the requirements for this project on the first day of class.

Project 2: Topic/ Book Report (50 pts)

There is so much in the animal kingdom that we will not have time to cover all its facets. So, I will be assigning students to teams of 2-3 people to present a report on one of the topics and books. Each team will prepare a PowerPoint presentation to share with the class, and summarize their finding on the topic in a short paper. *The paper should be no more than four pages (maximum), double space, 12pt font with one-inch margins. Anything over this limit, or any attempt to cheat by single or 1.5 spacing will not be graded and receive a zero.* Concise, clear writing is one of the most sought-after skills in the sciences. I am willing to meet with you to help, but first, run your paper through a spelling and grammar check set on a “formal or technical” academic style. Proof each others work—and please, don’t repeat the same materials in each person’s section. I know that people subdivide the work in books, but please, coordinate when it comes to the writing. (A great way to do this is to do presentations to each other before you begin to write.)

All books are available in Audiobook and Kindle format on Amazon unless otherwise stated. Some are available for free through the Chicago Public Library and some suburban libraries through Hoopla. I have noted these.

The books I chose for the projects are fun. No more than three to a book (with the exception of Life's devices; it's harder). The topics to explore are:

1. *Sharks: Emperors of the Deep*, by William McKeever SBN-13: 978-0062880338 336 pp
(also available as an e-book on Hoopla)
2. *Bird Sense: What It's Like to Be a Bird*, by Tim Birkhead ISBN-13: 978-1408830543
3. *Life's Devices: The Physical World of Animals and Plants*, by Steven Vogel
ISBN-13: 978-0691024189. 384 pp. (up to four people could use this one)
(sorry, but this one's expensive, but you can get a used paperback
on Amazon for about \$20; expensive on Kindle)
4. *Tales from the Ant World*, by E. O. Wilson, ISBN-13: 978-1631495564
(not for free on Hoopla)
5. *Soul of an Octopus: A Surprising Exploration into the Wonder of Consciousness*
by Sy Montgomery . ISBN-13: 978-145169 :
(available as an audiobook on Hoopla)
6. *The Rise and Fall of the Dinosaurs: A New History of a Lost World* by Steve Brusatte
ISBN-13: 978-1509830060
(available as an ebook on Hoopla)
7. *The Shark's Paintbrush: Biomimicry and How Nature Is Inspiring Innovation*,
by Jay Harman. ISBN-13: 978-1935952848 (an expensive purchase, free on Hoopla.)
8. Two books, by Matt Simon each a bit shorter:
The Plight of the Living Dead ISBN-13: 978-0143131410
(not available on Hoopla) and
The Wasp that Brainwashed the Caterpillar ISBN-13: 978-1472242013
(available on Hoopla as an audiobook)
9. *This is your Brain on Parasites* by Kathleen McAuliffe ISBN-13: 978-0544947252
(available through Hoopla as an ebook)
10. *Spineless Wonders*, by Richard Conniff ISBN-13: 978-0805055313
(available as an audio book on Hoopla.)
11. *Smart and Spineless* by Ann Downer ISBN-13: 978-1467737395
(out of print but available used on Amazon. e-book free on Hoopla)

The book you choose should act as your starting point and inspiration. It does not have to be your only source or stopping point.