

BIOL310 – BIODIVERSITY – COURSE SYLLABUS – FALL 2014

Lecture: Tuesday & Thursday 3:00-4:15 pm, ENT 178

Laboratory sections: EXPL 2512

Instructor: Dr Weeks

Office hours and location: Weds 8-10 am and by appointment, EXPL 3416 (located in 3400 suite)

Contact information & communication policy: aweeks3@gmu.edu. I respond to all email inquiries between regular working hours Monday-Friday within 24 hours of receiving them.

Blackboard: Announcements, grades, and all documents are posted to Blackboard for lecture, section 001.

Required items:

1. Life 10th edition. Sadava, D., D.M. Hillis, H.C. Heller, and M.R. Berenbaum. Sinauer Associates, Inc.
2. A Photographic Atlas for the Biology Laboratory. 7th edition. Van De Graff & Crawley. Morton Publishing Company.
3. Your inner fish: a journey into the 3.5-billion-year history of the human body. N. Shubin (2008). Vintage Books.
4. BIOL310 Laboratory Manual for AY 2014-2015; available in University Bookstore.
5. A laptop computer meeting the minimal specifications of the Biology Department.

Course goal: Students will learn about the morphological, anatomical and physiological innovations of the major lineages of living organisms: the Archaea, the Bacteria, the Eukaryota. Organisms and biotic processes are presented roughly in the order of their appearance in geological history to provide context for their evolution and to explore their synergistic interactions with the abiotic Earth. The inquiries and investigations developed for laboratory are aligned with the goals of the university-wide Students as Scholars initiative.

Course grading: Your grade is based on points earned from lecture (65%) and laboratory (35%) assessments. Standard letter grades are applied: A+ = 97-100%, A = 94-96%, A- = 90-93%, B+ = 87-89%, B = 84-86%, B- = 80-83%, C+ = 77-79%, C = 70-76%, D = 60-69%, F = 0-59%.

Lecture Participation	50 points
Lecture Exam 1	120 points
Lecture Exam 2	160 points
Lecture Exam 3	160 points
Lecture Exam Final	160 points
Laboratory	350 points
Total	1000 points

About the “curve”: Lecture exam averages in my courses are generally lower than the typical 75% because my exams are challenging. Thus, lecture examination scores may be curved at the end of the semester. **During the semester, each student should pay close attention to where his/her exam scores lie relative to the mean of the class, as this is the best indicator of above- or below-average performance.** However, students with exam averages below 50% at the end of the term are unlikely to qualify for grades of C or better. Because of the GPA requirements of the Biology major C-grades are not given in this class. An evaluation is done of laboratory grades by the instructor at the end of the term. If there are significant differences in average scores between sections, an adjustment will be done to ensure everyone’s performance is assessed equivalently among sections.

Academic integrity: Students are required to follow the University Honor Code. In the context of this course, this means one must not “cheat, plagiarize, steal, or lie in matters related to academic work” (see <http://academicintegrity.gmu.edu/>). Violations are reported to the Honor Committee for review.

Accommodations: If you have a documented learning disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with Office of Disability Services (SUB I, Rm. 2500; 993-2474; <http://ods.gmu.edu>) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs as soon as possible in the semester.

Class attendance: Attending every lecture and laboratory is critical to learning and doing well in the course. Be aware that missing three or more weeks of laboratory will result in automatic course failure.

Extra credit: not offered in this course.

ABOUT LECTURE

Lecture participation: Participation, but not accuracy of responses, is graded and accounts for 5% of the final course grade (50 pts of 1000). Students will participate in lecture via PollEverywhere.com via SMS text or web-based response. Polleverywhere is similar to iClicker but less expensive (in some cases, free) and does not require a device students don't already have. As long as students participate in 85% or more of the lectures in which PollEverywhere is used, all 50 points will be earned. Below this benchmark, points earned will be proportional to actual participation. Students are responsible for ensuring that their devices are working properly by the third lecture period and for notifying the instructor of any errors *within the same lecture period* that they occur. This will be explained at length during the first two lectures.

Lecture etiquette: It is discourteous and distracting to others when students arrive late. Further, students may miss important announcements made at the beginning of class that they are still responsible for knowing. If arriving late, please enter quietly and take a seat at the back of the auditorium. Also, please turn off all phone audio signals before class.

Lecture exams: You will need a #2 pencil and SCANTRON Form SC982-E, which is a full 8.5' X 11' sheet with room for written answers on the back and is available for sale in the bookstore. Questions include both multiple choice and essay-style questions. Cell phones and other electronic devices may not be out or used during any exam.

a. arriving late to an exam - If you are late to an exam and one (or more) student(s) has finished the exam and left the room, you will not be allowed to take the exam – no excuses or exceptions. Make certain you bring your GMU ID to class (or your exam will not be accepted). Assigned seating may be used during exams.

b. make-up exams - Students who unavoidably miss an exam due to illness or due to family or other emergency may take a make-up exam provided that they notify the lecture instructor before the exam. Notify Dr. Weeks directly by email and be prepared to provide documentation. The make-up exam will be given at one time only, immediately after the final exam. The make-up exam covers material from exams 1, 2 and 3. Only one exam may be made up.

c. exam dates and times - Exam date and times during the semester will not be altered unless the university closes or by mutual agreement. The final exam will only be offered at the date and time given on the syllabus.

d. corrections of grading errors - If errors are made in scoring exams, notify the instructor within one week of the day the exam was returned. After one week, corrections will not be considered.

e. exam logistics - If a class is canceled for any reason in which an exam is scheduled, the exam will be given in the next regularly scheduled class. If the class meeting immediately prior to an exam date (e.g., a Tuesday when the exam is scheduled for Thursday of the same week) is canceled so that material to be covered on the exam is not finished in lecture, then the exam will be delayed one class meeting.

f. final exam - The final exam is cumulative. The final exam will only be offered at the date and time given on the syllabus.

ABOUT LABORATORY

Goal of lab: The goal of lab is to provide students with a hands-on introduction to organismal biology. Its objectives include engaging students in active investigation of all major branches of life, training students to conduct biological experiments, and giving students the opportunity to practice reasoning scientifically. Towards this end, most labs have an experimental component, organismal survey activities and practical skill-building components – including writing. Students will work with model organisms to explore biological structures or functions, practice essential skills or techniques, and investigate the suite of synapomorphies for the clade to which the model organism belongs.

Lab grading breakdown: Laboratory accounts for 35% of your final grade in BIOL310.

Pre-lab assignments	60 points (=12 pre-labs at 5 pts each)
In-class assignments	230 points
Digital Image Collection I & II	60 points (=2 assignments at 30 pts each)
Total	350 points

Make-up labs: If you must miss your regular lab period, you may be able to sit in on another lab section during that week only if space permits, and it is *scheduled in advance* of the sit-in lab. To schedule a sit-in, email both your regular lab instructor and the lab instructor of the sit-in lab; you must have both of their confirmations before arriving at the sit-in lab. You will be turned away if you do not have these confirmations. Labs cannot be made up beyond the week they are normally offered.

Pre-lab assignments: These orient you to the plan of work for lab and often touch on readings you will need to do before the upcoming lab. These are available as PDF documents on Blackboard and can be handwritten. They must be turned in

as hardcopy to your Instructor at the beginning of each lab. There are pre-labs for each lab except for the Museum Lab, for a total of 12 pre-lab assignments.

In-class assessments: Most labs will conclude with a brief multiple choice quiz regarding material from the lab. These are indicated in the lab schedule. The analysis and review questions at the end of each lab can be the basis for the quiz questions, but quiz questions may also be drawn from the pre-lab questions or lab activity itself, including digital images or slides. During some labs, students will analyze data and complete a worksheet. During other labs, students may work on brief writing assignments pertaining to the lab topic. These latter assignments mirror essay questions that will appear on lecture examinations.

Digital image collections: In lieu of submitting lab notebooks for periodic grading or lab practical examinations, students will document their microscopic observations via digital images. Students will submit two digital image collections during the semester containing multiple images. These assignments are described in detail in the lab manual. Students should work on these collections weekly throughout the semester; do not wait until the last minute to assemble the assignment.

Lab 11: The National Museum of Natural History lab can be completed *anytime* during the semester before the last laboratory class. This is an off-campus, independent activity that will take approximately 3 hours to complete. See lab manual for full details. The lab will be posted to Blackboard during the first week of classes and may be subject to change over the course of the semester if exhibits are altered.

Lab safety: Standard rules apply: Legs must be fully covered, closed-toe shoes must be worn, long hair tied back, no food or drink in lab. Personal protective equipment will be provided to students in lab where necessary.

Bring to each lab: Your lab manual and your photo atlas are required each session – the latter is essential for interpreting your microscopic observations. Bringing your textbook is recommended but not required.

GENERAL INFORMATION

Late policies on items due: 10% daily penalty after the item is due. For instance, if an item is due at 9 am and it is turned in at 5 pm it will be subject to the 10% grade penalty.

A computer with a USB drive is required for this course, PC preferred

Students will be using (in pairs) USB-connected digital microscope cameras that are controlled by PC-only software. Statistical analyses of data will also be conducted during lab using MS Excel. A limited number of desktop PC computers are available in lab. In lecture, web-based participation in Polleverywhere.com could use the laptop, if necessary.

Minimal hardware specifications: The Biology Program now requires all Biology Majors to own a laptop with the following minimal specifications: Processor: 2.3 GHz dual processors, Memory: 2 GB, Hard Drive Capacity 150 G, Network Capacity: Built-in 10/100 Fast Ethernet LAN (with RJ-45 connector).

Minimal software Requirements: Microsoft Office and Excel

GMU Email Accounts

Students must use their Mason email accounts—either the existing “MEMO” system or a new “MASONLIVE” account to receive important University information, including messages related to this class. See <http://masonlive.gmu.edu> for more information.

Other Useful Campus Resources:

Writing Center: A114 Robinson Hall; (703) 993-1200; <http://writingcenter.gmu.edu>

Learning Services: SUB I, Room 3129; (703) 993-2999; <http://caps.gmu.edu/learning-services/>

Counseling and Psychological Services (CAPS): (703) 993-2380; <http://caps.gmu.edu>

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WEEK	LECTURE		LAB	
	Subject & Textbook Reading	Subject	A. Items due at start of lab.	B. In-class activity or assessment
25-Aug	Phylogeny and the origin of life Chapters 4.2-4.2, 22 and 25	No labs		
1-Sep	Bacteria and Archaea Chapters 5.2, 26	Lab 1 *Monday lab does not meet	A. Prelab 1 B. Phylogeny construction activity B. Quiz	
8-Sep	Life with oxygen and the evolution of eukaryotes Chapters 5.3, 27	Lab 2	A. Prelab 2 B. Group Writing B. Quiz	
15-Sep	Multicellularity and its implications for biodiversity Chapter 11.5-11.6	Lab 3	A. Prelab 3 B. <i>Physarum</i> data analysis B. Quiz	
22-Sep	23-Sep, Exam 1 Invasion of land by plants Chapter 28	Lab 4	A. Prelab 4 B. Group Writing B. Quiz	
29-Sep	Plant structure & function Chapter 34, 35	Lab 5	A. Prelab 5 B. <i>Ceratopteris</i> data analysis B. Quiz	
6-Oct	Plant evolution & adaptation Chapters 10.4, 29, 39.3	Lab 6	A. Prelab 6 B. Group Writing B. Quiz	
13-Oct	Angiosperms and animal-plant interactions Chapters 38.1, 38.3, 39.1, 39.2 Tuesday lecture does not meet	Lab 7 *Monday lab meets on Tuesday *Tuesday labs do not meet	A. Prelab 7 A. Digital Image Collection I B. Group Writing B. Quiz	
20-Oct	Fungi Chapters 30, 36.4	Lab 8	A. Prelab 8 B. <i>Pilobolus</i> data analysis B. Quiz	

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WEEK	LECTURE		Subject	What's due?	LAB
	Subject				
27-Oct	28-Oct, Exam 2 Early diversification of animals Chapter 31		Lab 9	A. Prelab 9 B. Group Writing B. Quiz	
3-Nov	Animal structure & development Chapter 20, 40.2, 44.2-3		Lab 10	A. Prelab 10 A/B. Group Writing: Your Inner Fish, Chapter 1-3 B. Quiz	
10-Nov	Protostomes Chapter 32		Lab 12	A. Prelab 12 A/B. Group Writing: Your Inner Fish, Chapters 4-7 B. Quiz	
17-Nov	Deuterostomes Chapter 33		Lab 13	A. Prelab 13 B. Group Writing: Your Inner Fish, Chapters 8-11 B. Quiz	
24-Nov	Homeostasis & adaptation Chapters 40.3-5, 49.1-3, 52.1-4 Thursday lecture does not meet		No labs	Thanksgiving Recess	
1-Dec	Homeostasis & adaptation 4-Dec, Exam 3		No labs	Lab 11 assignment if not turned in earlier during the semester A. Digital Image Collection II	

Important Dates:

1-Sep, Labor Day
 23-Sep, Exam 1
 26-Sep, final drop deadline
 13-Oct, Columbus Day recess
 28-Oct, Exam 2
 26-30-Nov, Thanksgiving recess
 4-Dec, Exam 3
 11-Dec (1:30 – 4:15 pm), Cumulative final lecture exam