Bio 112: Evolution 1

- Introduction
- Outline & Policies
- Evolution: Survey & warm-up

Be sure you have 3 handouts:
- syllabus
- survey
- info sheet

- Labs start NEXT week
- Fill out, SIGN, and turn in information sheet
  or you will be dropped from class
- Hand in Survey at end of class.
- iClicker starts Friday; get transmitter from bookstore

Brian White Teach Bio 111, 112

Research: biology education

× what do you learn from lab?

Bio 111: unity of life (small stuff)

"chemistry of paints & pigments"

Bio 112: diversity of life (big stuff)

"tour of art museum"

major focus: evolution

ex. Aipotu evolving digital organisms

reproduction + mutation (random) + selection (not random) ⇒ evolution

Consent to use my Bio 112 work for research

I am constantly working on ways to improve the teaching in Bio 112 and, often, I share these tips with other teachers by publishing what I've found. The best way to understand what you learn in my class and how to improve it is to look at the work you've done in my class. To do this, I need your consent to analyze your work and share the results of this analysis with others. This work would include anything you do in Bio 111: lab reports, pre-labs, data blogs, exams, surveys, etc. There are several important issues you need to know about before you decide to give consent or not:

1. I will **always protect your anonymity**. All analyses will be done on work where your name has been replaced by a number so no-one will know that it is your work. Furthermore, if I ever quote your work in my publication, I will always use a pseudonym.
2. This **will have no effect on your grade in Bio 112**. Our analyses will not have any effect on your grade. Furthermore, agreeing to participate or not will also have no effect on your Bio 112 grade or your ability to get into the class.

It is very important that most, if not all, of the students in Bio 112 consent to allowing me to analyze their work; a small sample leads to meaningless results. Therefore, I *strongly encourage* you to consent, but I *do not require it*. Although you must *sign* in the blank below to be in the class, you don't have give your consent to analyze your work to be in the class - *checking or not checking the box will not have any effect on your chances of getting into the class.*

- By not checking the box below, I *consent* to have my Bio 112 work analyzed as described above.

☐ I *do not* *consent* to have my Bio 112 work analyzed as described above.

Please sign here:_____ Date_____

Note that you must check a box and sign to be enrolled in the class. If you have any questions, e-mail brian.white@umb.edu

General Biology 112
Spring 2010

Lecturer & Coordinator: Prof. Brian White
office: W-3-003 x7-6630
lab: W-2-074 x7-6608
office hours: Wednesdays 3:30 – 4:30
brian.white@umb.edu

World-Wide Web Site: http://intro.bio.umb.edu/111-112/

Course Policies:

Lectures: Lectures meet in Lipke Auditorium: Mon, Weds, Fri 12:00 to 12:50; regular attendance is expected. Extra copies of handouts can be found outside W-3-003; all handouts can be found on the course web site.

Lab Sections: Lab sections meet in W-2-030 and -032. Some labs involve hands-on activities; others involve problem-solving exercises. Lab sections will be assigned during the first week of class; you may not switch sections after that time. Attendance in lab is expected.

In an emergency, you may make up lab a missed lab by attending another section that meets during the *same* week *with the permission of the TA*. This is only for emergencies and you may not be admitted if the lab is full. You may make up a maximum of two labs per semester.

You are expected to read the lab manual and the readings listed in the lab manual before lab. Some labs have pre-lab exercises based on the lab manual. Pre-labs can be found in the lab manual or on-line. Pre-labs are due at the start of lab and will not be accepted late. **You will not be admitted to lab unless you have a copy the relevant section(s) of the lab manual and a completed pre-lab with you.**

The lab sections are as follows: most full

Section	Time	Room	Section	Time	Room
1	Tues 9:30 - 12:30	W-2-032	6	Wed 1:00 - 4:00	W-2-030
2	Tues 9:30 - 12:30	W-2-030	7	Thurs 9:30 - 12:30	W-2-032
3	Tues 2:00 - 5:00	W-2-032	8	Thurs 2:00 - 5:00	W-2-032
4	Wed 8:30 - 11:30	W-2-032	9	Tues 2:00 - 5:00	W-2-030
5	Wed 1:00 - 4:00	W-2-032	10	Thurs 2:00 - 5:00	W-2-030

a little space

Development Group: I will meet weekly (Tuesdays from 1:00 to 2:00 in W-2-032) with a group of students to discuss the course material. It is a combination of a tutorial for you and a chance for me to see how the class is learning the material as well as how the course can be improved. All are welcome.

Required Materials:

1. Textbooks: there are two. All are available at the bookstore.
   1. *Biology* by Campbell & Reece, 8th edition. This is available at the UMB Bookstore & some on-line bookstores like amazon.com.
   2. *Lab Atlas for Biology* (6th edition) by Van De Graaff and Crawley
2. Lecture Handouts: Each lecture has a handout; this provides material *essential* for understanding the lecture. This is not available at the Bookstore, but you can purchase ($15.25) a 3-ring binder with all the lecture handouts from Quinn Graphics (Admin Building LL-024). These handouts are also available for free download on the course website. I *strongly* advise you to buy the collected handouts.
3. Lab Manual: These materials are *essential* for performing the lab activities; the lab manual also contains pre-labs, worksheets, practice problems, and exams from past years. This is not available at the Bookstore, but you can purchase a 3-ring binder with the entire lab manual ($13.00) from Quinn Graphics (Admin Building LL-024). The sections of the lab manual are also available for free download on the course website. I *strongly* advise you to buy the lab manual.
4. iClicker: All students must have an iClicker (see later for details) and bring it to each lecture. These are available at the UMB Bookstore.
5. Population Growth SimUText: During the last two weeks of the semester, you will need to complete an on-line exercise on Population Growth. This will cost $9.00 and will be available via a web link on the Lecture resources page for Ecology 2.

Lectures and readings are designed to be complementary. Often, the emphasis of lecture will be different from the book. Although the course emphasizes lecture material more than readings, exams will draw freely from both lectures and readings.

Lab Reports: Lab reports represent a substantial fraction of your grade and should be prepared with care; you may consult your TA for comments on drafts of your report. Although you will work in groups and share data, your lab report must be in your own words. Lab reports will not be accepted late. One of the first two lab reports can be revised and re-submitted for a better grade; you should arrange this in advance with your TA before Plants 4.

Exams: There will be four exams: three hour exams given in class during the semester and a comprehensive final exam. There will be no make up exams. No conflict exams will be given. We will drop the lowest grade of the three hour exams when calculating your overall grade. The final exam will be scheduled during the semester. The final exam score cannot be dropped. You may bring one 8.5 x 11 sheet of notes to each hour exam; you may bring 4 such sheets to the final exam.

Exam	Lectures Covered
1	Evolution 1 through and including Themes 3
2	Themes 4 through and including Plants 5
3	Animals 1 through and including Physiology 8
Final	Evolution 1 through and including Ecology 8

Lecture and Lab Schedule:

Date	Topic	Lab &Due dates
M 1/25	Evolution 1: Introduction	NONE
W 1/27	Evolution 2: Details	
F 1/29	Evolution 3: Population Genetics I	
M 2/1	Evolution 4: Population Genetics II	01: Field Trip:
W 2/3	Evolution 5: Population Genetics III	Museum of Natural History
F 2/5	Evolution 6: Natural Selection	[report due week of 2/8]
M 2/8	Evolution 7: Species & Phylogeny	02: Skulls & Evolution
W 2/10	Evolution 8: Taxonomy & Earth History	
F 2/12	Evolution 9: Molecular Phylogeny	[report due week of 2/15]
M 2/15	**Presidents' Day**	03: Molecular Phylogeny
W 2/17	Themes 1: Major Groups & Nutrition	
F 2/19	Themes 2: Size and Scale	[report due week of 2/22]
M 2/22	Themes 3: Size, Respiration, and Circulation	04: Aipotu IV
W 2/24	Themes 4: Reproduction	
F 2/26	Plants 1: Introduction	[report due week of 3/1]
M 3/1	**EXAM 1**: Evolution & Themes	05: Eukaryotic Cells
W 3/3	Plants 2: Mosses & Ferns	
F 3/5	Plants 3: Gymnosperms & Angiosperms I	[report due week of 3/8]
M 3/8	Plants 4: Angiosperms II	06: Plant Diversity I
W 3/10	Plants 5: Monocots & Dicots	
F 3/12	Animals 1: Introduction	
M 3/15	**SPRING BREAK**	NONE
W 3/17	**SPRING BREAK**	
F 3/19	**SPRING BREAK**	
M 3/22	Animals 2: Invertebrates I	06: Plant Diversity II
W 3/24	Animals 3: Invertebrates II	
F 3/26	Animals 4: Invertebrates III	[report due week of 4/5]
M 3/29	Animals 5: Vertebrates	06: Plant Diversity III
W 3/31	Physiology 1: Nervous Systems Introduction	Lab Practical Exam
F 4/2	Physiology 2: Resting Potential	
M 4/5	**EXAM 2:** Themes & Plants	07: Animal Diversity I: Trout
W 4/7	Physiology 3: Action Potential	
F 4/9	Physiology 4: Nerve Communication	
M 4/12	Physiology 5: Input & Output	07: Animal Diversity II: Squid
W 4/14	Physiology 6: Scent & Smell	[report due week of 4/26]
F 4/16	Physiology 7: Muscle	
M 4/19	**Patriots' Day**	07: Animal Diversity III:
W 4/21	Physiology 8: Neurotoxins & Excretion	Lab Practical Exam
F 4/23	Ecology 1: Introduction & Climate	
M 4/26	**EXAM 3:** Animals & Physiology	08: Animal Behavior
W 4/28	Ecology 2: Population Growth	
F 4/30	Ecology 3: Interactions I	[report due week of 5/3]
M 5/3	Ecology 4: Interactions II	09: Phylogenetic Collection
W 5/5	Ecology 5: Interactions III	
F 5/7	Ecology 6: Community Structure	[rpt. to TA mailbox wk of 5/10]
M 5/10	Ecology 7: Ecosystems	NONE
W 5/12	Ecology 8: Biogeochemical Cycles	

Bio 112 Evolution Survey

- You can tear off this cover sheet.
- This is due in lecture TODAY (Monday 1/25).
- You will receive full credit (10 points) for whatever you write in the spaces below; there is no need to consult outside sources when working out your answer. The more you write, the better I can teach the course.
- This is intended to help me in setting up my lectures on evolution and as a warm-up for the material we will be dealing with in the next section of the course.
- This is also intended to help me in evaluating the lectures and lab.
- Your answers will be kept confidential.

1) Cheetahs (large African cats) are able to run faster than 60 miles per hour when chasing prey. How would you explain how the ability to run fast evolved in cheetahs, assuming their ancestors could only run 20 miles per hour?

Please enter your UMS ID# below (fill in the numbers and color in the circles).

0	0	2					

Please also write your name on the back of this sheet.

For the remaining questions, please consult the attached pages. Please be careful to color in the circles fully and to be sure that you match the number of the question with the answer.

1)	A	B	C	D	6)	A	B	C	D	11)	A	B	C	D	16)	A	B	C	D
2)	A	B	C	D	7)	A	B	C	D	12)	A	B	C	D	17)	A	B	C	D
3)	A	B	C	D	8)	A	B	C	D	13)	A	B	C	D	18)	A	B	C	D
4)	A	B	C	D	9)	A	B	C	D	14)	A	B	C	D	19)	A	B	C	D
5)	A	B	C	D	10)	A	B	C	D	15)	A	B	C	D	20)	A	B	C	D

Cheetah question

- faster cheetahs were at a duantage b/c they could

Catch prey better

Alternatives - escape from predators
- mating
- move to another area
- jump higher (fast running is accident)