

# Principles of Biology II – Ecology & Evolution (BSCI 106)

Fall 2015 -- Dr. Alexa Bely

## COURSE POLICIES & GENERAL INFORMATION

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### Overview:

Welcome to Principles of Biology II! The goals of this course are to have students understand the major ecological and evolutionary processes that operate in the natural world and to become familiar with the diversity of life forms on Earth. As we explore major principles and patterns in ecology, evolution and diversity, we will discuss many topics of major significance and direct relevance to our lives, including human impacts on the environment and its life forms, environmental sustainability of human activities, evolution of diseases and aging, and origins of agriculture and ever-evolving ways of producing our food. Throughout the course, there will be an emphasis on how scientific data are collected, quantified, presented, and interpreted so that students improve their abilities to think scientifically and draw data-driven conclusions.

### Lecture meeting time/place:

Tu/Th 2-3:15 pm  
HJP 0226 (H. J. Patterson)

### Lecture Instructor:

Dr. Alexa Bely (pronounced "Bailey")  
0220 Biology/Psychology Bldg  
301-405-0225  
office hours: Tuesdays 11-12:30 or by appointment

### Lab Coordinator:

Hans Lemke  
BSCI106@umd.edu  
2107 H J Patterson  
301-405-6897  
*Contact Hans Lemke for questions regarding  
the Lab portion of the course*

**Contacting Dr. Bely:** Please contact me only through ELMS-Canvas; because of the large number of students in the class, regular email is not a good option for correspondence. Using ELMS-Canvas ensures that I can locate your message easily and that a compiled record of all correspondence is maintained. If for some reason you are unable to reach me through ELMS-Canvas, then you may email me directly at abely@umd.edu, but this should only be in unusual circumstances and, if you do email me directly, be sure to include "106" in the subject of the email.

**To set up an appointment with Dr. Bely:** Please contact me through ELMS-Canvas to set up a time. When you contact me, please suggest at least 3 different times that work for you and I will let you know what works with my schedule.

### Required Materials:

**Textbook:** Hillis et al, Principles of Life, 2nd edition. It can be in any format (e.g., hardcopy, looseleaf, electronic; new, used, or rented). You need to have the 2nd edition, not the 1st, since there have been significant revisions. The ISBN's for the textbook are 9781464189838 or 9781464189821 (depending on whether you are purchasing the hardcopy or looseleaf version). We will *not* be using the online resources accompanying the textbook (Launchpad), though you may find them helpful.

**Lab manual:** BSCI 106 Lab Manual (Firestone & Lemke) Fall 2015 Edition. You must have the Fall 2015 edition since much of the content is new or heavily modified from previous semesters.

**Course website:** The BSCI 106 website is maintained on ELMS-Canvas. Log in at <http://elms.umd.edu>

## GRADING

Your grade will be determined from a **total of XXX points**, with **XXX points coming from the lecture** portion of the course (with breakdown as shown below) **and XXX points coming from the lab** portion of the course (with breakdown as discussed in your lab section).

### EXAMS (400 points): 3 MID-TERM EXAMS + 1 FINAL EXAM

There will be 3 mid-term exams, each worth 100 points, and one final exam, worth 150 points. The final exam will be cumulative, with the last lectures (not covered by a mid-term) receiving slightly greater weight.

<b>Mid-term Exam 1</b>	<b>100 pts</b>
<b>Mid-term Exam 2</b>	<b>100 pts</b>
<b>Mid-term Exam 3</b>	<b>100 pts</b>
<b>Final Exam</b>	<b>200 pts</b>

**Your exam total will be out of 400 pts, not the full 500 pts. This total will be calculated in two possible ways, with the higher of the two totals used for calculating your course grade.**

**Method 1:** The mid-term exam with the lowest score will be dropped and the final exam receives full (200 pt) weight. *If you do not take one of the midterms then that midterm will be the one that is dropped. If you miss a midterm, then only Method 1 will be used.*

**Method 2:** *IF (and only if) you take all four mid-term exams*, then your exam total will be calculated in a second way, one that reduces the weights of the lowest mid-term score and the final exam score. Specifically: your mid-term exam scores will be kept as is (100+100+100 = 300 pts total) and your final exam score will be down-weighted by 1/2 (the final exam score will be converted to a 100 pt total). In effect, with this method, the relative weight of the final exam (and its associated stress!) can be reduced for those students who have taken all midterms.

### 7 HOMEWORKS (100 points)

There will be **7 homework assignments**, each worth 10-20 pts and for a total of 100 points. NOTE: *Homeworks must be uploaded through ELMS-CANVAS. Late problem sets will be accepted for only 4 hours after the time due and will be docked 20% of the total points. Homeworks will not be accepted at all beyond the 4 hours after the due time.*

See the Lecture Schedule for Homework Due Dates.

### 2 ASSIGNMENTS (10 points)

There will be two short written assignments, each worth 5 points. Both will relate to using information on topics related to this course to influence life in the "real world", such as personal choices or public policy.

### LAB (300 points)

The breakdown of lab points will be discussed in your lab section.

**Final course grade assignments:** Your course grade in percentage points will be the percentage of total points you earned in the lecture and lab. Your final letter grade will be assigned according to the following cut-offs (% grades will be rounded to the nearest whole percent prior to letter assignment):

A+ = 97-100%	B+ = 87-89%	C+ = 77-79%	D = 60-69%
A = 93-96%	B = 83-86%	C = 73-76%	F < 60%
A- = 90-92%	B- = 80-82%	C- = 70-72%	

The grade breaks may be moved down (i.e. in your favor) at the discretion of the lecturer. The grade breaks will not be moved up.

Highlighting indicates existing lectures into which more sustainability-related content will be incorporated (4, 7, 8, 22, 23, 24) and a new lecture on sustainability (25)

### COURSE SCHEDULE (approximate)

Date	Lectures & Exams	Readings	Homework Assignments	Lab
Sept 2 (Tu)	(1) Course overview	Syllabus & Learning Skills readings (ELMS)		No Lab
Sept 4 (Th)	~ <b>ECOLOGY</b> ~ (2) Distribution of ecological systems	Ch 1: Concept 1.5 Ch. 41		
Sept 9 (Tu)	(3) Population growth	Ch. 42		Introduction to Lab & Hypotheses
Sept 11 (Th)	<b>(4) Human population growth</b>	(Ch 42)		
Sept 16 (Tu)	(5) Species interactions	Ch. 43	HW1 due	Ecology of Lotic Communities & Variables
Sept 18 (Th)	(6) Community ecology	Ch. 44		
Sept 23 (Tu)	<b>(7) Ecosystem ecology</b>	Ch. 45		Analyzing Data
Sept 25 (Th)	<b>(8) Human impacts on the environment</b>	(parts of Ch 42-45)	HW2 due	
Sept 30 (Tu)	<b>EXAM 1 (lectures 2-8)</b>		<b>EXAM</b>	Mendel, Meiosis & Graphs
Oct 2 (Th)	~ <b>EVOLUTION</b> ~ (9) Natural selection	Ch. 1: Concept 1.4 Ch. 15		
Oct 7 (Tu)	(10) Particulate inheritance	Ch. 7; Ch. 8		Natural Selection
Oct 9 (Th)	(11) Hardy-Weinberg: a null model in evolution	(Ch. 15)	HW3 due	
Oct 14 (Tu)	(12) Causes of evolution; Adaptation	(Ch. 15)		Population Genetics & Evaluating Web Sites
Oct 16 (Th)	(13) Evolution of drug resistance; Aging	--		
Oct 21 (Tu)	(14) Sex, sexual selection, & evolutionary biology of reproduction	Ch. 15: 306-307; Ch. 7: 129-132; Ch. 37: all but skip Concept 37.2	HW4 due	Tree Thinking
Oct 23 (Th)	(15) Behavioral ecology & evolution	Ch. 40		
Oct 28 (Tu)	~ <b>DIVERSITY OF LIFE</b> ~ (16) Speciation; Phylogenies	Ch. 16; Ch. 17; Appendix A: 1st page	HW5 due	Advanced & Applied Tree Thinking
Oct 30 (Th)	<b>EXAM 2 (Lectures 9-15)</b>		<b>EXAM</b>	
Nov 4 (Tu)	(17) Origin of life; Archaea & Bacteria	Ch. 1: Concept 1.2; Ch. 2: 34-35; Ch. 18: Concepts 18.1&18.2; Ch. 19	HW5 due	Inquiry I: Methods
Nov 6 (Th)	(18) Origin of Eukaryotes; "Protists"	Ch. 20		
Nov 11 (Tu)	(19) Plants; Fungi	Ch. 21; Ch. 22	HW6 due	Inquiry II: Water Quality Experiment
Nov 13 (Th)	(20) Animals 1	Ch. 23		
Nov 18 (Tu)	(21) Animals 2	(Ch. 23)		Inquiry III: A Second Experiment

Nov 20 (Th)	(22) Macroevolutionary patterns of diversification and extinction	Ch. 18: Concept 18.3 Ch. 14: Concepts 14.4&14.5		
Nov 25 (Tu)	<b>EXAM 3 (Lectures 16-22)</b>		<b>EXAM</b>	<i>No Lab</i>
Nov 27 (Th)	<i>Thanksgiving Break – no class</i>			
Dec 2 (Tu)	(23) Human evolution	Ch. 23: Concept 23.7	HW7 due	Inquiry IV: Interpretation
Dec 4 (Th)	(24) Domestication	Ch. 24: Concept 24.4		
Dec 9 (Tu)	(25) Sustainability of human practices			Social Behavior
Dec 11 (Th)	review, catch-up, Q&A			
Dec 18 (Th)	<b>FINAL EXAM 10:30-12:30 pm (Comprehensive)</b>			