BSC 2011 – Integrated Principles of Biology II (PHPB)

Syllabus for section 1B94
Spring 2018

I. Class Meetings

Monday	Period 11	6:15 PM – 7:05 PM	FLI 113
Wednesday	Period 11-E1	6:15 PM – 7:55 PM	FLI 113

II. BSC Laboratory Courses

The BSC laboratory courses (BSC 2010L and BSC 2011L) are managed separately from the BSC lecture courses. Please read the information available at the BSC Website (http://www.bsc.ufl.edu) for more information on the laboratory courses.

III. Instructor

Mary K. Hart, PhD
Department of Biology
Office: 316A Bartram Hall
Office Hours: M immediately after class or by appointment
E-mail: mkhart@ufl.edu

IV. Course Goals and Objectives

The primary goal of this course is to establish a coherent foundation of knowledge in biology and to prepare students for comprehension in advanced biology courses and science in general. Fundamental concepts discussed include the evolution, diversity, and function of photosynthetic life; the evolution, structure, function, and physiology of animals; and the ecology of organisms, populations, communities, biomes, and the biosphere. An additional course goal is to develop critical thinking skills for development of reasoned thought and for evaluation of life experiences.

Objectives of the course will be achieved if, by its conclusion, students can:

- Read and evaluate a phylogenetic tree
- Describe the key groups of bacteria, archaea, and eukaryotes and their evolutionary relationships
- Describe a scientific hypothesis and identify testable predictions that logically follow
- Describe endosymbiotic theory and the origin of photosynthesis
- Describe the challenges of life on land and the traits that enabled plants to diversify on land
- Discuss the potential adaptive significance of synapomorphies that define major clades of plants
- Explain how alternation of generations varies in plant lineages and its significance to reproduction
- Diagram the basic components of plant vasculature and characterize their function
- Identify common plant adaptations and show how they are shaped by convergent evolution
- Discuss the role of hormones in plant development and environmental response
- Describe the types of animal tissues that make up our organ systems and explain how control mechanisms integrate them and maintain homeostasis
- Describe the principles of electrical signals in neurons and diagram the organization of the vertebrate nervous system

- Explain physical principles governing gas exchange in animals in air and water
- Diagram blood flow through the vertebrate circulatory system and describe the major functions of blood vessel types
- Explain how salt and water balance are maintained in animals
- Describe how the digestive and reproductive systems and structured and function in animals
- Describe and explain how climate and topography shape ecological systems
- Identify, compare, and contrast major terrestrial and aquatic biomes
- Explain the forces that regulate populations in natural systems
- Describe how species interactions can influence fitness, population dynamics, and species distribution and can result in evolutionary change
- Recognize the role of different components of a food web and describe how energy flow through a trophic system
- Explain how communities change over space and time and be able to calculate species diversity
- Diagram the global carbon and nitrogen cycle and identify the major stocks and fluxes.
- Identify major anthropogenic changes to the carbon, nitrogen, and phosphorus and describe how these changes have altered ecological systems
- Describe the challenges faced in conserving species, and explain different conservation approaches that can be used to help preserve biodiversity.

V. General Education Objectives for Biological Sciences

Biological science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the life sciences. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern biological systems. Students will formulate empirically testable hypotheses derived from the study of living things, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.

The General Education objectives and the associated Student Learning Outcomes for Biological Sciences are achieved through lectures, in class activities, case studies, class discussion, interactive “clicker” response systems, and online activities and exercises. The learning objectives and SLOs are further reinforced by inquiry-based and active-learning exercises in the companion laboratory course, BSC 2011L. In particular, the companion lab expands upon development and testing of specific hypotheses.

VI. General Education Student Learning Outcomes

The general education student learning outcomes (SLOs) describe the knowledge, skills and attitudes that students are expected to acquire while completing a general education course at the University of Florida. The SLOs fall into three categories: **content**, **communication** and **critical thinking**.

Every general education course must address all three SLOs. Note that the subject area objectives (detailed above) describe the context within which the SLOs are achieved

Category	Institutional Definition	Institutional SLO
CONTENT	Content is knowledge of the concepts, principles, terminology and methodologies used within the discipline.	Students demonstrate competence in the terminology, concepts, methodologies and theories used within the discipline.
COMMUNICATION	Communication is the development and expression of ideas in written and oral forms.	Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the discipline.
CRITICAL THINKING	Critical thinking is characterized by the comprehensive analysis of issues, ideas, and evidence before accepting or formulating an opinion or conclusion.	Students analyze information carefully and logically from multiple perspectives, using discipline specific methods, and develop reasoned solutions to problems.

To assess student performance in meeting these student learning outcomes for this course, students are evaluated by a variety of instruments throughout the course: three exams during the semester, daily graded "clicker" questions and in-class activities used to assess comprehension and reasoning, and graded on-line activities, exercises and assessments. Student Learning Outcomes are further assessed in BSC 2011L, the companion lab course. For example, the Communication SLO is assessed in graded written assessments and in oral presentations in the lab. In combination, BSC 2011 and BSC 2011L provide assessments of all categories of the General Education Student Learning Outcomes.

VII. Expectations

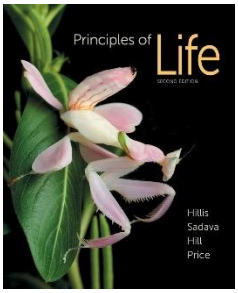
Each student is solely responsible for reading and following the instructions, guidelines and schedules in this syllabus and on the course webpage, or announced in class. Not having read the information in this syllabus or in instructor announcements will not constitute an excuse for missing an assignment, exam, or other assessment. Please **set your preferences in Canvas so that you receive timely notifications** of course announcements and other information. **Check Announcements in Canvas regularly as e-mail notifications from Canvas do not always go through.**

VIII. E-mail Communication

All e-mail correspondence to course instructor must **originate from your ufl.edu account, have your full name in the body of the e-mail, and contain your course and section number in the subject line**. E-mails not meeting these requirements may not be recognized by e-mail filters, and thus may not be answered.

IX. Course Resources

A. TEXTBOOK and online resources/homework



1. Textbook

Principles of Life, 2nd Edition, by Hillis, Sadava, Heller, & Price, Sinauer Associates and W.H. Freeman (publisher)

2. Online Resources/Homework

Launchpad is an online assignments and tutorial system from the textbook publisher. It is required for this course. Each new copy of the Principles of Life textbook comes automatically packaged with Launchpad. If you purchase a used textbook you will still need to purchase access to Launchpad. You are required to have access to Launchpad for the ENTIRE course. It is your responsibility to ensure that your access DOES NOT expire before the end of the semester.

Instructions on correctly registering for *LaunchPad* will be available on the Canvas course site once the semester has started. Please wait for these instructions before registering for *LaunchPad*; incorrect registration on *LaunchPad* may result in receiving zero points for all *LaunchPad* assignments.

3. Purchase of Textbook and LaunchPad Access

Please note that this course participates in the UF All Access program. Students will have a few options to gain access to the textbook and LaunchPad for Principles of Life when classes begin:

- **Option 1 - RECOMMENDED** - Students will have the choice to "opt-in" for a limited time to receive access to LaunchPad for a reduced price and pay for these materials through their student account. The following link will take you to where you can "opt-in" to receive discounted course materials once logged in with your Gatorlink credentials: https://www.bsd.ufl.edu/G1CO/IPay1f/start.aspx?TASK=INCLUDED.

	Author	Title	ISBN/EAN	Edition	New	Used
UF All Access	Hillis	Prin of Life (24m) UF All Access	9781319147136	2nd	$97.50	N/A
Loose Leaf Text	Hillis	Prin of Life (Print Upgrade)	9781319147129	2nd	$37.50	N/A
Access Code	Hillis	Prin of Life (24m Launchpad Access)	9781464184734	2nd	$124.50	N/A
Study Guide	Hillis	Study Guide for Prin of Life	9781464184758	2nd	$48.25	$36.25

- **Option 2** – Purchase a standalone code through the UF Bookstore. Both options provide access to the same materials.
- There are also current versions of the textbook on reserve at the Marston Science Library. Visit the Reserve Materials area to check out these copies. You will still need to purchase *LaunchPad*.

B. CLASSROOM RESPONSE SYSTEM (CLICKER)

We will use the *Learning Catalytics (LC)* Classroom Response System (CRS) for quiz questions during class. *LC* allows students to use a cell phone, laptop, tablet, or smartphone to participate in class. More information on purchasing access will be given in class.

Cost: *6 month access: $12; 12 month access: $20*

C. Course Website (E-Learning)

Class material including the syllabus, discussion readings, and problem sets, exam results, some lecture slides and other information related to the course will be posted on the course E-Learning website (http://lss.at.ufl.edu). The course is found under "E-Learning in Canvas". You are responsible for all announcements made in lecture and/or posted on the course website for this class. For help with E-Learning, call the UF Computing Help Desk at 352-392-4357, or visit the E-Learning support website: https://lss.at.ufl.edu/help.shtml.

X. Communicating with your instructor

When you have a question about any assignments, due dates, and/or grades please check the following sources **first** to see if it is already answered, **before** e-mailing or asking your Instructor:

- Course Syllabus
- e-Learning announcements (this is the primary means that your Instructor has to communicate with you in a timely manner)
- e-Learning Discussion FAQ
- e-Learning Discussion General Posts
- e-Learning Discussion General Posts

If you still cannot find the answer to your questions:

- If it is a question that others might find useful to know the answer to as well, post it in the e-Learning Discussion section.
- If it is a question specific to you (e.g. account or grade specific), e-mail me (Dr. Hart). I will generally reply within 24-36 hours (Monday through Friday). E-mails and e-Learning Discussion posts on Canvas are checked at least once per day, but sometimes not more than that.

XI. Assessments and Grading

A. Exams

There will be three "midterm" exams. The midterm exams will be administered during the normal semester and during the normal class meeting times. Each exam will cover material from lecture, the online discussions, homework, activities, and the assigned reading in the textbook. The three exams will be worth 51% of the total course grade.

Exams will be a mixture of multiple-choice and short answer or essay questions. Each student must take the exam during her/his registered section time. Each student must bring her/his Gator ID to class on exam days. No student will be allowed to start an exam after the first student to complete an exam leaves the classroom. All exams and answer sheets will be collected at the end of the exam period. No additional time will be given to complete an exam if you arrive late. Please be aware that filling in the scantron sheets is part of the exam; no extra time at the end of the class period will be given for filling out the scantron sheets.

Each exam may be curved using the following approach: The top 3% of the scores in the class will be averaged, and the difference from 100 points will be added to each individual exam score.

Exams will be available for review by appointment for one week after the exam date; specific times for exam review will be announced following each exam. Exams will not be available for review after the semester has ended.

Make-up Exams: No make-up exams will be given without prior permission or documentation of illness. Students that will be missing an exam due to a pre-arranged university-approved excused absence (sports, etc.) should let the instructor know a minimum of two weeks in advance. These students may be required to take the make-up exam *before* the scheduled in-class exam.

In case of illness on exam day, a letter from the student's primary care provider is required. This letter must state that the student was unable to complete the exam on the scheduled date (i.e., a letter stating only that the student was seen in a clinic is not sufficient). A personal matter requires a note from the Dean of Students (P202 Peabody Hall). These notes must be received within five business days after the exam. Make up exams may be short-answer or essay format.

B. Launchpad Assignments

Students will receive 15 % of their total course grade from Launchpad assignments. These include Learning Curve chapter reading quizzes (worth 10%), and on-line activities and animated tutorials with quizzes (worth 5%). Unless otherwise stated, **Launchpad assignments are due at the beginning of class on the date it appears in the schedule on the course website**.

C. In-Class/Take-home Activities

In-class activities include (but are not limited to) discussions, case studies, data analysis and interpretation, and participation in group projects. Performance for in-class activities will be assessed based on preparation, participation, and completion of associated materials or assignments. Preparation (prior reading or research) will be required for most in-class activities but some may be unannounced. From 9-12 in-class activities will be assigned during the course (3-4 per unit), worth 10 points each and totaling 9% of the course grade. **In-class activities require class attendance and CANNOT be made-up if class is missed.**

D. Online (Canvas) review and concept quizzes

Online quizzes will be created and posted on Canvas as needed for review of key concepts. These quizzes are be designed to help you prepare for the exam and to encourage review and exploration of important topics. You will generally be given a 48-72 hours window to complete these quizzes. You may expect from 2-4 online quizzes per unit; point value will be awarded based on number and difficulty of questions. Your cumulative performance on the quizzes will account for 7% of your grade.

E. In-Class Quiz Clicker" Questions

Students will receive 10% of the total course points for participation in the in-class questions that are to be answered using the classroom response system (Learning Catalytics, see above). These questions will be used during in-class activities and lectures and are designed to promote discussion of key topics among students and to assess preparation and comprehension of topics at hand. The points earned will reflect the proportion of LC questions answered correctly in class. Each question posed will be scored as 0.75 LC points for participation with an additional 0.25 LC points for a correct answer. For each course lecture unit, full in-class question credit (10 course points) will be awarded to all students achieving 75% of the total possible LC points from that unit; those achieving less than 75% will receive course points in proportion to their achieved THM points (e.g. 50% of LC points earned = 5 course points for one lecture unit).

Students may not make up LC questions, regardless of the reason (e.g., absence, malfunctioning cell phone, forgot to register, etc.). It is the student's responsibility to regularly check (i.e., daily or weekly) their gradebook in LC to ensure that their submissions were correctly received, and to contact LC support to resolve any issues with submissions not being properly recorded in the LC gradebook in a timely manner.

F. Student project presentations

Each student will be required to select and investigate a topic focusing on an interaction between a single-celled life form and a multicellular life form, broadly related to one or more topics covered in the course. In teams of two, students will conduct library research and reading of scientific articles and prepare a 10 minute presentation about their topic for the class. Students will receive up to 8% of their total course grade for their presentations.

G. Extra Credit

Extra credit MAY be offered at the discretion of the instructor. Any extra credit available will be offered to ALL students in the course.

H. Grading

Assessment	% of Total Points
Exams	51
Launchpad activities/tutorials	5
Learning curve readings	10
Activities (in-class/take-home)	9
Online Quizzes (review/concept)	7
In-class questions/clicker quizzes	10
Project (peer) presentation	8
Discussion forums	-
TOTAL	100.0

All grades will be posted on e-Learning (in terms of course points, i.e., the point scheme above), and it is the responsibility of the student to check their grades on e-Learning and make sure they match the grade issued for that assignment. If there is a discrepancy you must let us know within ONE week of the grade being posted on eLearning.

Minimum grade cutoffs are listed below. Because each exam is curved individually (see section IX-A, above), the scores for the course as a whole will not be curved (i.e. these grade cutoffs will not be lowered, so don't ask). However, these cutoffs will not be raised; in other words, if you receive 90% of the possible points, you are guaranteed to earn an A grade.

Final scores will NOT be rounded (i.e., 89.99% is not 90%).

Point Range (%)	Letter Grade
≥ 90.00	A
≥ 86.66	A–
≥ 83.33	B+
≥ 80.00	B
≥ 76.66	B–
≥ 73.33	C+
≥ 70	C
≥ 66.66	C–
≥ 63.33	D+
≥ 60	D
≥ 56.66	D–
< 56.66	E

Note that the current UF policy for assigning grade points is available at the following undergraduate catalog web page: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

I. Special Treatment

Please do not request individual special treatment regarding grading at the end of the semester; **we do not adjust grades for individuals for any reason**. Plan to do well on all exams and other assessments from the beginning of the semester; if you are having difficulty in the class, please let your instructors know *before* the exams rather than after.

XII. Academic Honesty

All students registered at the University of Florida have agreed to comply with the following statement:

> *"I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."*

In addition, on all work submitted for credit the following pledge is either required or implied:

> *"On my honor I have neither given nor received unauthorized aid in doing this assignment."*

If you witness any instances of academic dishonesty in this class, please notify the instructor or contact the Student Honor Court (392-1631) or Cheating Hotline (392-6999). For additional information on Academic Honesty, please refer to the University of Florida Academic Honesty Guidelines at: https://catalog.ufl.edu/ugrad/current/advising/info/student-honor-code.aspx#honesty.

XIII. Attendance

Students are expected to attend all classes and are responsible for all material covered during the lecture, including announcements. **In addition, your attendance is necessary to earn points for "clicker" quizzes; such points cannot be made up.** Students are strongly encouraged to read the assigned chapters before coming to class as this will make it easier to comprehend the lecture material. If you miss class, visit the e-Learning site for any lecture notes and course announcements.

XIV. Time Commitment

The UF College of Liberal Arts and Sciences expects that each student will devote 3-4 hours per week per credit-hour to each course, including time in lectures and labs. Because BSC 2011 is 3 credits, each student should therefore expect to devote 9-12 hours per week to this course. A recommended time allocation is below.

Activity	Hours per Week
Lectures	3
Online Exercises	1-2
Textbook Readings	2-3
Review and Study	2-4

If you find yourself spending more than 12 hours per week on average on these activities, discuss this with your course instructor to see if you can refine your study habits. If you find yourself spending less than 9 hours per week on average, you should recognize that you may have difficulty learning and comprehending the material in this time, and this will probably be reflected in poor performance on the various assessments, causing you to receive a lower overall course grade.

XV. Conduct in Class

Please be courteous and do not talk during lecture. This can be distracting to other students and the instructor.

Use of electronic devices in class to take notes or otherwise participate in classroom activities is approved. Approved electronic devices are laptop computers, cell phones, smart phones, tablets, iPod touch, and voice recording devices. Other uses of these devices or the use of unapproved devices will be considered disruptive. Unapproved electronic devices include video recorders, digital cameras and MP3 players. Students who use unapproved devices in class will be considered disruptive. Multiple disruptions will be considered grounds for the assignment of a failing grade.

XVI. Accommodations for Students with Disabilities

Students who will require a classroom accommodation for a disability must contact the Dean of Students Office of Disability Resources, in Peabody 202 (phone: 352-392-1261). Please see the University of Florida Disability Resources website for more information at: http://www.dso.ufl.edu/drc/. Note that the student should provide documentation of a requirement for accommodation **by the second week of classes**. No accommodations are available to students who lack this documentation. It is the policy of the University of Florida that the student, not the instructor, is responsible for arranging accommodations when needed. Once notification is complete, the Dean of Students Office of Disability Resources will work with the instructor to accommodate the student.

XVII. Counseling Center

Many students experience test anxiety and other stress related problems. "A Self Help Guide for Students" as well as a diverse array of support systems are available through the UF Counseling and Wellness Center (3190 Radio Road, 392-1575, http://www.counsel.ufl.edu/).

XVIII. Lecture Schedule

Lecture topics for this course are listed below. This is a tentative schedule; the dates and coverage of specific topics are subject to change.

Week	Day	Date	Topic	Chapter	Assignment due
			Unit 1: Plants		
1	M	8 Jan	Course Overview; Diversity of Life	19	
	W	10 Jan	Origin and Diversification of Eukaryotes	20	Learning curve (LC) Chapters 19 (19.1, 19.2, 19.3) & 20 (20.1, 20.2); Animated Tutorials and quizzes 19.1 & 20.1
2	M	15 Jan	**Martin Luther King Day-NO CLASS**	21	
	W	17 Jan	Evolution of Plants (Activity: Alternation of generations)		LC Chapter 21; Animated tutorial and quiz 21.1 (moss life cycle); Animated tutorial and quiz 21.2 (conifer life cycle)
3	M	22 Jan	Evolution of Plants/The Plant Body	21, 24	LC Chapter 24; Activities 24.1, 24.2 (roots), 24.3, 24.4 (stems), 24.5 (eudicot leaf)
	W	24 Jan	Plant body/Plant Nutrition and Transport (Activity: Transpiration-Cohesion-Tension theory)	25	LC Chapter 25; Animated tutorial and quiz 25.3 (xylem transport)
4	M	29 Jan	Plant nutrition & growth	25, 26	
	W	31 Jan	Plant growth, and development (Activity: Meristems and Phototropism)		LC Chapter 26 (26.1, 26.2); Animated tutorial and quiz 26.2 (auxin affects cell walls)
5	M	5 Feb	Plant Reproduction	27, 28	LC Chapter 27 (27.1,27.3); Media clip 27.1; Animated tutorial & quiz 27.1
	W	7 Feb	Plant Adaptations		*TBA*
6	M	12 Feb	**Unit 1 EXAM - In Class**		
			Unit 2: Animals		
	W	14 Feb	Animal function: fundamental (Activity: Control systems)	29	LC Chapter 29; Activity 29.2 (tissues); Animated tutorial and quiz 29.1 (hypothalamus)
7	M	19 Feb	Nutrition, feeding, and digestion (Nutrition & diet discussion/activity) Breathing	30, 31	LC Chapter 30; Activity 30.3
	W	21 Feb			*TBA*
8	M	26 Feb	Breathing and Circulation (Activity: Circulation)	31, 32	LC Chapter 31; Animated tutorial and quiz 31.1 (bird lungs)
	W	28 Feb			LC Chapter 32; Media Clip 32.1 (cap flow); Activity 32.1 (vert systems); Activity 32.2 (human heart); Animated tutorial and quiz 32.1 (cardiac cycle); Activity 32.3 (blood vessels)

9	M	5 Mar	**Spring Break-No Classes**		
	W	7 Mar			
10	M	12 Mar	Nervous system & Sensory organs (Activity: Neurons)	34, 35	LC Chapter 34; Animated tutorials and quizzes 34.1 & 34.2 (resting & action potentials); Animated tutorials and quizzes 34.3 & 34.4 (synapse); Animated tutorial and quiz 34.8 (spinal cord info)
	W	14 Mar	Endocrine System *Project presentations*		LC Chapter 35 (35.1, 35.2, 35.3); Animated tutorial and quiz 35.1; Activity 35.1
11	M	19 Mar	Reproductive systems	37	LC Chapter 37 (37.1, 37.20; Activity 37.2; Animated tutorial and quiz 37.2; Activity 37.3
	W	21 Mar	*Project presentations*		
12	M	26 Mar	**Unit 2 EXAM - In Class**		
			Unit 3: Ecology		
	W	28 Mar	Climate and Biomes/Animal Adaptations (Activity: Biomes, Climate diagrams)	41	LC Chapter 41; Animated tutorial and quiz 41.1 (Rain shadow), 41.2 (Terrestrial Biomes), and 41.3 (Aquatic biomes)
13	M	2 Apr	Populations I	42	LC Chapter 42; Animated tutorial and quiz 42.1 (Multiplicative Population Growth Simulation), 42.2 (Density Dependent Population Growth)
	W	4 Apr	Populations II Intro to Disease Ecology (tentative)		(tentative **Simbio**: Epidemiology)
14	M	9 Apr	Species Interactions & Communities (Activity: Food webs)	43	LC Chapter 43; Activity 43.1
	W	11 Apr			*TBA*
15	M	16 Apr	Ecosystems and the Changing Carbon Cycle (Activity)	44, 45	LC Chapter 44; Animated tutorial and quiz 44.1 (Succession after glacial retreat), 44.1 (Energy Flow Through an Ecological Community), and 44.2 (Island Biogeography Simulation)
	W	18 Apr			LC Chapter 45; Animated tutorial and quiz 45.2 (The Global N cycle) , 45.3 (The Global Carbon Cycle), and 45.4 (Earth's radiation budget due)
16	M	23 Apr	Conservation	45	*TBA*
	W	25 Apr	**Unit 3 EXAM - In Class**		