BSC 2005L - Laboratory in Biological Sciences
Syllabus

COURSE INFORMATION

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PRE(CO)REQUISITE

Officially, BSC 2007, 2008, 2009. However, any biology course, including high school biology and access to a biology text will be adequate.

COURSE DESCRIPTION

The amazing intricacies and complexities of life tend to obscure basic underlying relationships among all living species. This course attempts to elucidate the principles of biological organization and function that tie together seemingly unrelated forms. The tendency of species to change over time (i.e. evolution) will provide the bases of our approach to interpreting biological phenomena. Biological principles will be examined at all levels, from cellular to organs and organisms, and from populations to communities and ecosystems. Attention will be paid to the relationships between structure (anatomy) and function (physiology) at all levels of organization.
This is a hands-on laboratory, even though it is online. This means that students will be using the best available tools both online and offline, to understand biological principles through an interactive approach. The course material is divided into 4 units and each unit is subdivided into modules where each module corresponds to a course objective that is designed to be taught over a one week period. Each module consists of 3 assignments: 1) readings, 2) virtual, hands-on or blended activities, and 3) collaborative activities. This will be further explained in this syllabus.

OBJECTIVES

General: With this laboratory, students will obtain a hands-on introduction to living systems, including an understanding of the scientific method, cell structure and function, genetic mechanisms, evolutionary processes, human anatomy and physiology, and ecology.

Specific per modules/weeks:

UNIT (1): INTRODUCTION
Module 1: The students will understand the objectives of the course, activities, assessments and the technologies**.**
Module 2: The student will be able to describe the scientific method.
UNIT (2): CELLS, GENETICS AND EVOLUTION
Module 2.1. The student will be able to describe the main organelles of cells, their functions and the phases of cell division.
Module 2.2. The student will be able to describe the characteristics and function of DNA and complete the process of extraction.
Module 2.3. The student will be able to describe the general principles of genetics.
Module 2.4. The student will be able to describe the general principles of evolution.
UNIT (3): ECOLOGY
Module 3.1. The student will be able to describe the principles of population ecology.
Module 3.2. The student will be able to describe the main ecological interactions.
Module 3.3. The student will be able to debate the human impact on global ecology.
UNIT (4): ANATOMY (OPTION 1)
Module 4.1. The student will be able to perform a pig dissection.
Module 4.2. The student will be able to identify the main organs of the circulatory, respiratory and digestive systems.
Module 4.3. The student will be able to identify the main organs of the reproductive system and describe the principles of reproduction in humans.
UNIT (4): ANATOMY (OPTION 2)
Note: This option is **only** *available if the student can't perform a pig dissection due to religious reasons*
Module 4.1. The student will be able to describe the principles of sensory physiology.
Module 4.2. The student will be able to identify the main organs of the circulatory, respiratory and digestive systems.
Module 4.3. The student will be able to identify the main organs of the reproductive system and describe the principles of reproduction in humans.

TEACHING PHILOSOPHY

The design and teaching of this course is grounded in the theoretical framework of community of inquiry. Accordingly, it supports connection and collaboration, creating an environment that enhances reflection, discourse, critical thinking and meaningful learning. In this course, we *blend* the best online resources with the best traditional hands-on technique. We also incorporate social, cognitive, and pedagogical principles; and take into consideration student-centered learning theories.

READING ASSIGNMENTS

For every module/objective/week, you should read one or more book chapters from the textbook, and/or an interactive reading specially developed to cover a particular subject.

REQUIRED MATERIAL

- eBook: BioPortal for Scientific American Biology for a Changing World. Author: Shuster, Michelle (Second Edition).
- Laboratory kits from Carolina Biological (http://www.carolina.com/).
  - This will include the Strawberry DNA extraction Kit and the Fetal pig dissection Kit.
  - You will need to purchase your own strawberries for the Strawberry DNA Lab.
- Digital camera, smart phone or your computer to take photos and record video.
- Headsets and microphone for the online debate.

ACTIVITIES

Unit	Week	Module	Assignments
1 Intro	1 Jan 26	1.1 Introduction	1. Read Syllabus and go over the course material, do assessment 2. Watch video and presentation 3. Post an entry and comments on discussion board
	2 Feb 2	1.2 Scientific Method	1. Read chapter 1 and complete reading assessment. 2. Complete Virtual Activity 3. Post answers and comments on discussion board
2 Cells, Genetics and Evolution	3 Feb 9	2.1 Cells	1. Read chapters 3 and 9, and complete reading assessment 2. Complete 1 Virtual Activity 3. Post worksheet/answers and comments on discussion board
	4 Feb 16	2.2 DNA	1. Read chapters 7 and 8, and complete reading assessment 2. Complete Hands-on Activity 3. Post worksheet, video and comments on discussion board
	5 Feb 23	2.3 Genetics	1. Read chapters 11 and Milestones in Biology 3, and complete reading assessment 2. Complete 1 Blended Activity 3. Post worksheet, video and comments on discussion board
	6 Mar 9	2.4 Evolution	1. Read interactive reading and chapter 16, and complete reading assessment 2. Complete Blended Activity 3. Post artifact and comments on discussion board
3 Ecology	7 Mar 16	3.1 Populations	1. Read chapter 21, and complete reading assessment 2. Complete Virtual Activity 3. Post worksheet/answers and comments on discussion board
	8 Mar 23	3.2 Communities	1. Read chapter 22, and complete reading assessment 2. Complete Blended activity 3. Post artifact and comments on discussion board
	9 Mar 30	3.3 Human Impact	1. Read chapters 23 and 24, and complete reading assessment 2. Complete 1 Blended activity 3. Participate in conference debate

Unit	Week	Module	Assignments
	10 Apr 6	4.1 Overview of Physiology	**Option 1** 1.Read chapter 25, and complete reading assessment 2.Complete Hands-on activity 3.Post video and comments on discussion board **Option 2** 1.Read chapter 25, and complete reading assessment 2. Complete Blended activity 3. Post data-sheet and comments on discussion board
4. Anatomy	11 Apr 13	4.2 Organs	**Option 1** 1.Read: chapter 26 and 27, and complete reading assessment 2.Complete Hands-on activity 3.Post artifact, and comments on discussion board **Option 2** 1.Read chapters 26 and 26, and complete reading assessment 2. Complete Blended activity 3. Post worksheet/answers and comments on discussion board
	12 Apr 20	4.3 Reproduction	**Option 1** 1.Read chapter 28, and complete reading assessment 2.Complete the activity 3.Post artifact and comments on discussion board **Option 2** 1.Read chapters 28, and complete reading assessment 2. Complete Blended activity 3. Post worksheet/answers and comments on discussion board

ASSESSMENT

This course has a total of 12 modules corresponding to **12 weeks**. Because the first module is an introduction, it won't be assessed the same way as the others. Instead, it will be worth **10 points** of your final grade. The remaining modules will have the same weight and each will be worth **90 points** as explained in the table bellow. **The total number of points is 1000**. Detailed information will be provided in the instructions of each module, where also, rubrics are provided. To obtain the maximum grade, go over the rubrics before submitting your assignment.

Assessment per module/week	Points
Reading assessment (One paragraph)	20
Activity deliverables (worksheets, videos, artifacts). Individual points will be explained in the activity instructions. Rubric provided for each module.	40
Collaboration (participation in discussion boards/debates). Rubric provided for each module	30
Total	**90**

GRADING

Your BSC 2009L will be graded based on raw scores from quizzes, worksheets and collaborative posts. Specific assignments are detailed in a point breakdown sheet provided with this syllabus. Quizzes will assess textbook readings, worksheets and deliverables will assess activities and collaborative posts will assess meaningful learning.

Minimum grade cutoffs are listed as follows:

Letter Grade	Percentage
A	≥ 90.0
A-	≥ 86.7
B+	≥ 83.3
B	≥ 80.0
B-	≥ 76.7
C+	≥ 73.3
C	≥ 70.0
C-	≥ 66.7
D+	≥ 63.3
D	≥ 60.0
D-	≥ 56.7
	< 56.7

TECHNOLOGY CONSIDERATIONS

You will create assignments using a wide range of technologies including a word processor, spreadsheets, presentation software, web page editors, scanners, digital cameras. All assignments will be submitted electronically. You will also participate in reflective discussion via online synchronous and asynchronous communication tools.

EXPECTATIONS

Each student is solely responsible for reading and following the instructions, guidelines and schedules in this syllabus. Not having read the information in this syllabus will not constitute an excuse for missing an assignment or assessment.

This course is time and place-independent and incorporates a degree of individual choice in assignments and projects, to capitalize on the diversity of experience and prior knowledge of the students; but, is not entirely self-paced. Online discussions will be most productive if everyone completes their assignments.

Professional conduct is expected. Know and follow university policy regarding academic honesty. The Student Honor Code is located at http://www.dso.ufl.edu/judicial/procedures/studenthonorcode.php. In your online work, follow standards of netiquette: be accountable for what you send, acknowledge online sources you reference. Professional Conduct is necessary to earn an excellent or good grade. For more details of what is expected in the discussion forums, see the instructions for each module.

Reading assignments and activities are due every **Wednesday**. **Please add your activity deliverables by Wednesday too**. Posts on your peers in the discussion board are due every **Friday**. These deadlines will be maintained during the course, unless otherwise noted. Assignments turned in after midnight will be considered late work.Late work will be penalized 10% of the total points per day. This applies to both activities and discussion posts deadlines.

Please contact your instructor if you are unable to complete an assignment, if you have an inquiry regarding your grade or for emergency situations.

STUDENTS WITH DISABILITIES

Students who will require accommodations for a disability must contact the Dean of Students Office of Disability Resources (phone:352-392-1261). Please see the University of Florida Disability Resources website for more information at: http://www.dso.ufl.edu/drp/services/. Note that all students should provide documentation of a requirement of accommodation. It is the policy of the University of Florida that the student, not the instructor, is responsible for arranging accommodations when needed.