

BIOLOGY FOR LIFE
BIOL-101
SPRING 1, 2012
 (Jan 9 – Mar 5)

Instructor: David English
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Address: 5500 Peace and Plenty Ct
 New Bern, NC 28560

Class time: Sat. 8:00am-3:20pm

COURSE DESCRIPTION

BIOL 101 is an introduction to scientific reasoning and relevant biological concepts for non-science majors. The course emphasizes the ability to understand and evaluate critical issues in biology facing individuals and society. Topics covered include: growth and reproduction of cells and organisms, human genetics, human health and disease, how organisms evolve, and how living organisms interact with their environment.

Course Prerequisite(s): None

Course Credit Hours:

Lec: 3 hours credit (SHC) and 3 hours of contact
 Lab: 1 hour credit (SHC) and 2 hours of contact

Required Textbook:

Lecture: Biology: Science for Life, 3/E



Authors: Colleen Belk and Virginia Borden Maier



ISBN-10: 0321559592

ISBN-13: 978-0-3-2155959-3

Publisher: Benjamin Cummings

Copyright: 2010

Format: Paper; 512 pp

Published: 01/13/2009

Lab: No text is required; however you may be required to pay for access to some of the on-line labs. You should expect to spend less than \$50 on these supplemental materials throughout the semester.

CAMPUS REQUIREMENTS

Campbell University's Statement of Purpose: Campbell University is a university of the liberal arts, sciences, and professions which is committed to helping students develop an integrated Christian personality characterized by a wholeness that includes: a method of critical judgment; an appreciation of our intellectual, cultural, and religious heritage; and a sensitive awareness of the world and society in which they live and work with persons.

This course is consistent with the aforementioned purpose and provides students a positive environment for learning.

Campbell University's Mission Statement

The mission of Campbell University is to graduate students with exemplary academic and professional skills who are prepared for purposeful lives and meaningful service. The University is informed and inspired by its Baptist heritage and three basic theological and biblical presuppositions: learning is appointed and conserved by God as essential to the fulfillment of human destiny; in Christ all things consist and find ultimate unity; and the Kingdom of God in this world is rooted and grounded in Christian community. The University embraces the conviction that there is no conflict between the life of faith and the life of inquiry.

To fulfill its mission, the University:

- I. presents a worldview informed by Christian principles and perspectives;
- II. affirms that truth is revelatory and transcendent as well as empirical and rational, and that all truth finds its unity in Jesus Christ;
- III. influences development of moral courage, social sensitivity, and ethical responsibility;
- IV. gathers a diverse community of learners;
- V. delivers academic instruction in the liberal arts and sciences and professional preparation at both undergraduate and graduate levels;
- VI. transfers to students the vast body of knowledge and values accumulated over the ages;
- VII. encourages students to think critically and creatively;
- VIII. fosters the development of intellectual vitality, physical wellness, and aesthetic sensibility;
- IX. forges a community of learning that is committed to the pursuit, discovery, and dissemination of knowledge;
- X. provides students with servant leadership opportunities;
- XI. cooperates with other educational institutions to expand learning opportunities for students;
- XII. offers service and other opportunities to the greater community through athletics, continuing education, cultural enrichment programming, and extended-campus education.

ADA Statement: Students with documented disabilities who desire modifications or accommodations should contact the Office of Student Support Services located in the University's Hight House.

STATEMENT OF RESPONSIBILITIES

Taking a class online is challenging. For the best experience you should evaluate responsibilities that you have as a student in this course. BIOL 101 has both a lecture and a lab section, which is the equivalent to being in a seated class for 5 hours a week. Before beginning this class you should make sure that your commitments to your job and/or your family will allow you to schedule enough time to dedicate to this class so that you can get the most out of your educational experience. Additionally I have responsibilities towards you as your instructor to help guide your learning process throughout the course.

Who Should take this Course

For non-science majors only; cannot be utilized for credit towards the biology major or minor.

Expected Student Outcomes

Upon completion of this course, you should be able to:

- Describe the structure of the atom and calculate the number of protons, neutrons, and electrons, from the atomic weight and atomic mass of a given element.
- Give the four most important elements in living organisms and explain why bonds are formed.
- Understand production via photosynthesis and the use of that energy through cellular respiration
- Describe the cell structure and how it regulates materials entering and leaving a cell.
- Describe the different metabolic pathways found in cells and the roles of enzymes and ATP.
- Describe the basics of Mendelian genetics.
- Define the processes of gene expression and DNA replication and the results of mutations within the DNA molecule.
- Summarize the process of evolution and explain why it generates organism diversity
- Give examples and classify organisms in the major taxonomic categories
- Understand what ecosystems are and how the diverse communities within them are interrelate with one and other
- Evaluate the state of the world and mankind's impact on the worlds ecosystems

COURSE DESIGN

Biology for life is a multi-format course which includes both lecture and laboratory components. Topics covered within this non-major's biology course include basic biological chemistry, cell structure and function, metabolism and energy transformation, genetics and other related topics. Upon completion, students should be able to demonstrate understanding of life at the molecular and cellular levels. The laboratory portion of this course will include required experiments and online assignments that will complement subject matter covered in lecture.

All course content (lecture and lab) can be found within this online site. All work (including testing) will be completed electronically.

COURSE FORMAT AND CONTENT

This class is presented in a multi-format fashion which requires you to have daily access to the internet..

Course Design

Internet/Email Requirements - Students are expected to regularly monitor their Campbell email account. Important information or instructions may be emailed to these accounts.

Course materials are provided to you in modules. Modules contain either lecture or laboratory materials as indicated by their title.

Lecture Information- For the lecture portion of this course you will be given approximately 7 lesson modules throughout the semester.

Each Module will encompass ~2 chapters and for each Chapter you will have at least the following:

1. Powerpoint presentation and accompanying lecture notes and/or reading assignment
2. Relevant video clips
3. A discussion forum
4. A quiz for each chapter Module (MC, T&F) . All test will be done on Blackboard.

Additional assignments may be required for various chapters throughout the semester.

Lab Information- For the laboratory portion of the course you will be provided with approximately 6 laboratory modules. Each module will consist of a virtual lab. Additionally, you may be required to pay for access to some of the on-line labs.

Exams, Quizzes and Assignments

Assignments-

Module Exams - You are required to take one exam for each lecture module (exam 1 - exam 8).

Course modules will become available sequentially and at regular intervals.

Late Assignments Policy

All availability and due dates are posted in the syllabus, module summaries, and individual assignments. It is to your advantage to complete work before the scheduled due date to prevent "things from happening" that interfere with you completing your work. You may submit work early but please keep in mind that I typically do not grade work until its due date.

Please note that I will not accept late work for either lecture or lab without penalty, so it is imperative that you submit each assignment on or before its assigned due date.

Plagiarism: Plagiarism is any use of another person's words or ideas without giving proper credit to the person from whom you borrowed the words or ideas. Plagiarism is the theft of intellectual property. Plagiarism includes the following:

- Failing to cite properly any direct or indirect quotation(s) from professionally written materials (books, journal articles, etc.) student papers, projects, presentations, etc.
- Submitting as your own work a paper, project, or presentation that you did not compose (that is, write, compile, draw, etc.)
- Allowing another person to write your paper or develop your presentation or assignment.

Students who plagiarize will be subject to failing the assignment and/or failing the course. See Student Handbook for further information.

Turnitin.com: “Turnitin.com” is a web-based service that provides online reviews of written material to judge if it has been copied from another source. Turnitin.com is used to evaluate the possibility of a student plagiarizing or cheating on written material. The instructor may require students to submit written work in an electronic format for the purpose of utilizing the Turnitin.com service. Guidelines for how to do this will be posted later in the term.

Course Evaluation

Your grade will be based on your performance on module homework assignments (Blogs and Discussion Boards), module exams, chapter quizzes, laboratory work and a comprehensive final. Listed below is summary of how your final course grade will be calculated.

COURSE GRADING

Module Exams **75%**

Laboratory Exercises **25%**

Grading Policy: Official grades are issued for each student at the end of each term. Students will be graded by the letter grade system shown below.

A	90 –100	Excellent
B	80 – 89	Good
C	70 – 79	Average
D	60 – 69	Below Average
F	Below 60	Unsatisfactory

Lecture Content

<u>Lecture Assignments</u>	<u>Date Available</u>	<u>Due Date</u>
<u>Orientation</u>	<u>Jan 14</u>	
<u>Module One – Chapters 1 and 2</u>	<u>Jan 14</u>	

[Chapter Quizzes](#)
[Module Exam](#)

Chapter 1

- 1.1 The Process of Science
- 1.2 Hypothesis Testing
- 1.3 Understanding Statistics
- 1.4 Evaluating Scientific Information
- 1.5 Is There a Cure for the Common Cold?

Chapter 2

- 2.1 What Does Life Require?
- 2.2 Life on Earth

[Module Two – Chapters 3 and 4](#)

[Jan 21](#)

[Chapter Quizzes](#)
[Module Exam](#)

Chapter 3

- 3.1 Nutrients
- 3.2 Enzymes and Metabolism
- 3.3 Transport Across Membranes
- 3.4 Body Fat and Health

Chapter 4

- 4.1 The Greenhouse Effect
- 4.2 The Flow of Carbon
- 4.3 Cellular Respiration
- 4.4 Photosynthesis
- 4.5 Decreasing the Effects of Global Warming

[Module Three – Chapters 5 and 6](#)

[Jan 28](#)

[Chapter Quizzes](#)
[Module Exam](#)

Chapter 5

- 5.1 What Is Cancer?
- 5.2 Cell Division Overview
- 5.3 The Cell Cycle and Mitosis
- 5.4 Cell Cycle Control and Mutation
- 5.5 Cancer Detection and Treatment
- 5.6 Meiosis

Lecture Assignments**Date Available****Due Date****Module Three (cont.) – Chapters 5 and 6****Feb 4****Chapter 6**

- 6.1 The Inheritance of Traits
- 6.2 Mendelian Genetics: When the Role of Genes Is Clear
- 6.3 Quantitative Genetics: When Genes and Environment Interact
- 6.4 Genes, Environment, and the Individual

Module Four – Chapters 7 and 8**Feb 11****Chapter Quizzes****Module Exam****Chapter 7**

- 7.1 Forensic Science
- 7.2 Dihybrid Crosses
- 7.3 Extensions of Mendelian Genetics
- 7.4 Sex Determination and Sex Linkage
- 7.5 Pedigrees
- 7.6 DNA Fingerprinting

Chapter 8

- 8.1 Protein Synthesis and Gene Expression
- 8.2 Producing Recombinant Proteins
- 8.3 Genetically Modified Foods
- 8.4 Genetically Modified Humans

Module Five – Chapters 9 and 10**Feb 18****Chapter Quizzes****Module Exam****Chapter 9**

- 9.1 What Is Evolution?
- 9.2 Charles Darwin and the Theory of Evolution
- 9.3 Evaluating the Evidence for Common Descent
- 9.4 Are Alternatives to the Theory of Evolution Equally Valid?

Chapter 10

- 10.1 Return of an Ancient Killer
- 10.2 Natural Selection Causes Evolution
- 10.3 Natural Selection Since Darwin
- 10.4 Natural Selection and Human Health

Lecture Assignments**Date Available****Due Date****Module Six – Chapters 11 and 12****Feb 25****Chapter Quizzes****Module Exam****Chapter 11**

- 11.1 What Is a Species?
- 11.2 The Race Concept in Biology
- 11.3 Humans and the Race Concept
- 11.4 Why Human Groups Differ
- 11.5 Race in Human Society

Chapter 12

- 12.1 Biological Classification
- 12.2 The Diversity of Life
- 12.3 Learning About Species

Module Seven – Chapters 13, 14 and 15**Chapter Quizzes****Module Exam****Chapter 13**

- 13.1 A Growing Human Population
- 13.2 Limits to Population Growth
- 13.3 The Future of the Human Population

Chapter 14

- 14.1 The Sixth Extinction
- 14.2 The Consequences of Extinction
- 14.3 Saving Species
- 14.4 Protecting Biodiversity versus Meeting Human Needs

Chapter 15

- 15.1 Global and Regional Climate
- 15.2 Terrestrial Biomes
- 15.3 Aquatic Biomes
- 15.4 Human Habitats

FINAL - March 3

*****Labs are self-directed Virtual Labs and are due as listed.**

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Lab Schedule

<u>Lab Assignments</u>	<u>Date Available</u>	<u>Due Date</u>
<u>Lab One – SAS Curriculum Pathways</u>		<u>Jan 21</u>

Lab Quiz

Goes with Lecture Module 1

1. Go to: **<http://www.sascurriculumpathways.com/login>**
2. Enter the username: **campbellstudent**
3. In the Quick Launch box, enter:
Atomic Structure - **1197**
Enzymes - **1**

<u>Lab Two – SAS Curriculum Pathways</u>		<u>Jan 28</u>
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Lab Quiz

Goes with Lecture Module 2

1. Go to: **<http://www.sascurriculumpathways.com/login>**
2. Enter the username: **campbellstudent**
3. In the Quick Launch box, enter:
Photosynthesis - **2**

<u>Lab Three – SAS Curriculum Pathways</u>		<u>Feb 4</u>
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Lab Quiz

Goes with Lecture Module 3

1. Go to: **<http://www.sascurriculumpathways.com/login>**
2. Enter the username: **campbellstudent**
3. In the Quick Launch box, enter:
Cell Division - **6**

<u>Lab Four – SAS Curriculum Pathways</u>		<u>Feb 11</u>
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Lab Quiz

Goes with Lecture Module 4

1. Go to: **<http://www.sascurriculumpathways.com/login>**
2. Enter the username: **campbellstudent**
3. In the Quick Launch box, enter:
Mendelian Genetics - **869**

<u>Lab Assignments</u>	<u>Date Available</u>	<u>Due Date</u>
<u>Lab Five – SAS Curriculum Pathways</u>		<u>Feb 18</u>

[Lab Quiz](#)

Goes with Lecture Module 6

1. Go to: <http://www.sascurriculumpathways.com/login>
2. Enter the username: **campbellstudent**
3. In the Quick Launch box, enter:
Modern Taxonomy – **872**

<u>Lab Six – SAS Curriculum Pathways</u>		<u>Feb 25</u>
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[Lab Quiz](#)

Goes with Lecture Module 7

1. Go to: <http://www.sascurriculumpathways.com/login>
2. Enter the username: **campbellstudent**
3. In the Quick Launch box, enter:
Human Population Growth – **458**