

BOROUGH OF MANHATTAN COMMUNITY COLLEGE

City University of New York

Department of Science

Title of Course BIOLOGY II

BIO 220 Section _____

Credits 4

Class hours 3

Lab hours 3

Instructor Information

Name:

Office:

Room:

Email:

A. Course Description

This is the second semester of a two-semester course that acquaints students with the basic characteristics of living organisms. Topics considered include metabolism, growth, responsiveness and reproduction at cellular and more complex levels as illustrated by the study of the tissue and organ systems of animals. In addition, evolution and ecology are studied. Optional topics (at the instructors discretion) are various plant topics and animal behavior. Function relationships of tissues, organs and organ systems as well know the principles of ecology and human effects on the biosphere.

Prerequisites/Co-requisites

Biology 210

Student Learning Outcomes

The objectives of Biology 220 are to complete the topics of a year course and understand the biological world as well as future advances in the biological sciences. Students will be able to understand the fundamental role of the theory of evolution in modern biology, comprehend structure

Required Text & Readings

Biology, 6th Edition, packaged with Study Guide & CD-ROM and access to website: www.campbellbiology.com

Authors: Campbell, Neil A., and Reece, Jane B.

Publisher: Benjamin Cummings, 2002

Abramoff Peter and Robert G. Thompson: Laboratory Outlines in Biology VI, 1999

W. H. Freeman and Company

(BMCC Library Call #: QH17.A277 1994)

Bohensky: Photomanual and Dissection Guide of the Fetal Pig,

Square One Publishing 2002

(BMCC Library Call #: QL813.P54)

Optional Books:

Rust T., *A Guide to Biology Laboratory*, 3rd Ed., South West Educational Enterprises.

(Strongly Recommended)

(BMCC Library Call #: QH302.8.R8)

Smith, D.G. and M.P. Schenk, *Dissection Guide and Atlas of the Fetal Pig*, Morton Publishing Co. 1997 (Copies will be available during laboratory sessions.)

(BMCC Library Call #: QL813.P54S65 1998)

Note:

1. There are textbook reading assignments for both lectures and laboratories. You will be tested on **all** textbook readings. For some laboratories there will be a write-up handed out.
2. Read the assigned pages in Abramoff and Thomson and/ or Bohensky each week **before** coming to the laboratory. At the Instructor's discretion a quiz may be given in each or any laboratory.
3. A dissection kit containing a blunt (or mall) probe will be available for use during the laboratory sessions. The Bohensky manual and a dissection partner are **required** for laboratory **beginning week (five)**.
4. **Bring** the laboratory manuals to laboratory **every week**.

Use the CD that comes with the textbook; it is very helpful.

My Biology 220 section is _____

It meets on _____ at _____ in room _____

_____ at _____ in room _____

Laboratory is on _____ from _____ to _____
in room N-637

Other Resources

Use of Technology (if applicable)

Evaluation & Requirements of Students

The instructor will administer 4 to 5 examinations. Most laboratories will begin with a pre-lab quiz. A final examination will cover both lecture and laboratory material. Students will be required to submit reports for some laboratory experiments. A term paper may be assigned at the instructor's discretion.

Outline of Topics

Lecture

A useful website for many topics covered in this course:
<http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/>

<u>Week (s)</u>	<u>Topics</u>	<u>Textbook Reading Assignments</u>
1-2	<u>Evolution:</u> Introduction, Definitions, History of Evolutionary Thinking, The Fact of Evolution. Evidence for Evolution, Darwin & Natural Selection, Population Genetics & Evolution, Speciation in Plants & Animals, Origin of Life, Age of the Earth	pp. .9-12 Chapter 22 Chapter 23 Chapter 24 Chapter 26
	Classification: Phylogeny & Systematics (Optional)	Chapter 25

Suggested web sites: <http://tolweb.org/tree/phylogeny.html>
<http://www.talkorigins.org>

3	<u>Tissues, Organs, Organ Systems</u> Histology, Intercellular Junctions, Homeostasis, Bioenergetics	pp. 133-135 Chapter 40
4	<u>Animal Nutrition:</u> Nutritional Requirements and Nutrients, Intermediary metabolism Structure and Functions of the Digestive Tracts of Different Organisms	Chapter 41
5-6	<u>Internal Transport: Circulation in Animals</u> Gastrovascular Cavities, Open and Closed Circulatory Systems, Structure and Functions of Vertebrate Circulatory Systems, Hearts, Blood Vessels, Lymphatic System, Blood and Lymph, Blood Cells, Gas Exchange in Aquatic and Terrestrial Animals, Avian and Mammalian Respiratory Systems, Transport of Gases	Chapter 42
7	<u>The Body's Defenses: Immunology</u> Non-Specific (Innate) and Specific (Adaptive) Immunity, Immunization, Autoimmune Diseases, Allergies, Immunodeficiency Diseases, AIDS	Chapter 43
8	<u>Homeostasis, Regulating the Internal Environment</u> Thermoregulation, Osmoregulation and Waste Disposal, Excretory Systems of Different Animals, Kidney and Mammalian Blood Pressure Regulation	Chapter 44
9	<u>Chemical Signals in Animals: Endocrine Systems</u> Signaling Modes, Invertebrates , Nervous and Endocrine Integration, Vertebrate Endocrine Organs and their Hormones, Hormone Actions and Controls Plant Responses to Internal and External Signals (Optional))	Chapter 45 Chapter 39
10	<u>Animal Reproduction, Asexual, Mammalian</u> Structures, Functions, Gametogenesis, Hormonal Controls, Pregnancy, Birth Control Plant Reproduction (Optional)	Chapter 46 Chapter 38
11-12	<u>Neuromuscular Systems: Organization</u> Neurons, Potentials, Impulses, Synapses, Integration Vertebrate Nervous Systems, Brain Functions, Memory <u>Sensory and Motor Mechanisms</u> Sensory Transduction, Photoreception, Hearing and Equilibrium, Chemoreception, Movement and locomotion, Skeletons, Muscle contraction	Chapter 48 Chapter 49
13-14	<u>Ecology</u> Ecology and Environmentalism, Levels of Organization & Study,	

The Abundance & Distribution of Organisms, Biomes	Chapter 50
Population Ecology; Predation, Demography	Chapter 52
How Populations Interact: Community Ecology, Human Impact on Populations	
Species Richness & Diversity	Chapter 53
Productivity; Trophic Levels; Nutrient & Water Cycles	Chapter 54
Conservation, the Importance of Biodiversity, Habitat Destruction, Overpopulation, Introduced Species	Chapter 55

Suggested websites: <http://www.nrdc.org>
<http://www.wcs.org>
<http://nwf.org>

Behavioral Biology (Optional) Chapter 51

Laboratory

Notes: A&T=Abramoff and Thompson; B=Bohensky;
Write ups will be handed out the week before for some laboratory exercises.
A Pre-lab quiz will be given at the beginning of most laboratory sessions

<u>Week (s)</u>	<u>Topics</u>	<u>Lab Manual Pages</u>	<u>Textbook Pages/Other</u>
1	Evolution I. Taxonomy and Protista	A&T pp. 171-173; 185-193	pp. 545-559
2	Evolution II. Lower Animal Phyla	A&T pp. 303-316, 325-333	pp. 633-642; 652-654 659-662
3	Histology I: Introduction, Epithelia, Skin	Write-up pp. 1-6 A&T pp. 377-378-, 380-382	pp. 834-839 Microtome Demonstration
4	Histology II: Connective Tissues and Muscle Tissues	Write up p. 6 to end	Video: Muscle Contraction
5	Vertebrates: Skeletons; External Anatomy of the Pig and Frog and Dissection of their Digestive Tracts	A&T pp. 375-387, 393-396 B pp. 1-10, 14, 18, 50-67	Video: Digestive System
6	Continue dissections		
7	Circulatory System I: Sheep Heart and Frog Heart; Pig Thoracic Cavity	A&T pp. 395-398, B pp. 68-73, 74-85, 86-102	Video: The Work of Heart
8	Circulatory System continued		
9	Urogenital Systems of the Pig and Frog	A&T pp. 405-406 B pp. 105-112	Video: The Work of Kidney
10	Practical Examination on Material of Laboratories 5, 6, 7, 8, 9		

11 1075	Senses I: Eye, Vision	Write up pp. 3-4 B. pp. 127-128 A&T pp. 422-425	Textbook: pp. 1057- Video
12 1075	Senses II: Taste Olfaction, Touch, Hearing, Balance	Write-up pp. 1-3, 4-5	Textbook: pp. 1057- Video
13	Nervous System, Spinal cord and Reflexes Sheep Brain Dissection, Reflexes and Cranial Nerve Functions	A&T pp. 414, 417-419 B. pp. 120-126, A&T. pp. 409-414 A&T pp. 425-429	Textbook: Chapt. 48 Video: Dissection & Anatomy of the Brain
14	Ecology/Review/ Laboratory Final Examination (Instructor's discretion)		Video

College Attendance Policy

At BMCC, the maximum number of absences is limited to one more hour than the number of hours a class meets in one week. For example, you may be enrolled in a three-hour class. In that class, you would be allowed 4 hours of absence (not 4 days). In the case of excessive absences, the instructor has the option to lower the grade or assign an F or WU grade.

Academic Adjustments for Students with Disabilities

Students with disabilities who require reasonable accommodations or academic adjustments for this course must contact the Office of Services for Students with Disabilities. BMCC is committed to providing equal access to all programs and curricula to all students.

BMCC Policy on Plagiarism and Academic Integrity Statement

Plagiarism is the presentation of someone else's ideas, words or artistic, scientific, or technical work as one's own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations, require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism.

Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC's web side, www.bmcc.cuny.edu. For further information on integrity and behavior, please consult the college bulletin (also available online).

NAME, ADDRESS, AND TELEPHONE NUMBER OF CLASSMATES:
