

**BOROUGH OF MANHATTAN COMMUNITY COLLEGE**

The City University of New York

Department of Science

**BIO220H\_Section\_83**

**Class Hours: 6**

**Lecture Hours per Week: 3**

**Laboratory Hours per Week: 3**

**Semester:** Spring 21

**Instructor:** Alexander Gosslau, Ph.D

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**Credits:** 4

**Course Description:** BIO220H is the enhanced second part of this two-semester course acquaints students with the basic properties of living systems: metabolism, growth, responsiveness and reproduction at the cellular and organism levels as illustrated by assorted plants and animals. Two terms required.

**Basic Skills:** Same as Biology210

**Prerequisites:** BIO 210

**Corequisites:** None

<b>Course Student Learning Outcomes</b>	<b>Measurements (means of assessment for student learning outcomes listed in first column)</b>
1. Understand the fundamental role of the concepts of evolution in modern biology; the history of life on earth and its continuing changes	1. Quizzes and examinations
2. Learn the concepts of homeostasis and negative and positive feedbacks	2. Quizzes and examinations
3. Understand structure/function relationships of tissues, organs and organ systems	3. Quizzes and examinations; laboratory exercises and assignments
4. Comprehend the importance of ecology, its current and possible future effects on the environment and on living things.	4. Quizzes, examinations and presentations
5. Use cross-disciplinary higher order thinking skills and solve academic problems using discipline-specific strategies.	5. Lab-related quizzes
6. Apply the concepts and methods of scientific reasoning in biology through independent learning and collaborative study, attain, use and develop knowledge in the biology with disciplinary specialization and the ability to integrate information across disciplines.	6. Online assignments, weighted essay questions, multiple choice, true and false settings and a cumulative final.
7. Communicate clearly, knowledgeably, and effectively in written, spoken, visual, oral, and technological modes using appropriate formats and technologies.	7. Power point slides and oral presentations
8. Conceive, plan and execute a high quality multi-disciplinary research project using qualitative research methods and	8. Submission of a scientific paper

technologies.	
9. Demonstrate an ability to give constructive criticism and accept feedback as part of the process of peer review.	9. Comprehension and judgement abilities

Below are the college's general education learning outcomes, the outcomes that are checked in the left-hand column indicate goals that will be covered and assessed in this course. (Check at least one.)

	General Education Learning Outcomes	Measurements (means of assessment for general education goals listed in first column)
x	<b>Scientific Reasoning</b> - students will be able to apply the concepts and methods of the natural sciences.	Students will learn the lecture and laboratory material in order to analyze problems and to answer questions in written form.

**Required Textbook and Online Tutorial:**

Title: Campbell Biology

Authors: Urry, Lisa A. et al.

Publisher: Pearson

Edition: Twelfth Edition, 2020

<http://www.mypearsonstore.com/bookstore/product>

**Recommended Versions:**

- a. Loose leaf edition COMBO (3 hole punched, with two semesters Modified MasteringBiology®, e-text) ISBN 9780136858263; online price (mail to home) or BMCC bookstore (mail to home); price: \$ ~165
- b. Loose leaf edition COMBO (3 hole punched, with one semester Modified MasteringBiology®, e-text) ISBN 9780136858256; online price (mail to home): \$ ~125
- c. Modified MasteringBiology (two semesters) with Pearson eText for Campbell Biology, 12<sup>th</sup> Ed. ISBN: 9780135855836; online price: \$ ~120
- d. Modified MasteringBiology (one semester) with Pearson eText for Campbell Biology, 12<sup>th</sup> Ed. ISBN: 9780136780809; online price: \$ ~70
- e. MasteringBiology alone (two semester, students who have the text); online price: ~\$74

**Required Laboratory Book:**

Title: Photomanual and Dissection Guide of the Fetal Pig

Author: Bohensky, F

Publisher: Square One Publishing

Edition: 2001

ISBN-13: 978-0757000300

(BMCC Library Call#: QL813.P54)

**Copies for following Laboratory Book will be provided:**

Title: Laboratory Outlines in Biology VI

Author: Abramoff, P. and Robert G. Thomson, R.G.

Publisher: W.H. Freeman and Company

Edition: 1999

ISBN-10: 0716721422

(BMCC Library Call#: QH17.A277 1994)

**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 in addition.

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. Bring the laboratory manuals to laboratory every week.
3. A dissection kit containing a blunt (or mall) probe will be provided for use during the laboratory sessions. A partner, the Bohensky manual and a dissection partner are required for laboratory beginning week 6 (six).

**For your convenience fill in this section:**

My Biology 220 section is \_\_\_\_\_ It meets on \_\_\_\_\_  
at \_\_\_\_\_ in room \_\_\_\_\_ and at \_\_\_\_\_  
\_\_\_\_\_ in room \_\_\_\_\_. Laboratory is on  
\_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ in room N-697.

My dissection partner's name is \_\_\_\_\_

His/her contact information (email telephone etc.) is \_\_\_\_\_

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Study partner's name(s) and  
info \_\_\_\_\_

**Use of Technology: Mastering Biology, which you are required to have with your textbook,** has on-line additional information for each chapter, study aids, study questions, and animations. Your Professor may also require some of the on-line quizzes or examinations.

The **Science Department Learning Center** (N734, schedule posted on the door) also has useful computer programs and tutors who are available without an appointment (drop in).

**Evaluation & Requirements of Students:**

You will receive a single grade, which is a weighted average of the grades from the lecture (exams) and the labs (quizzes). There will be 5 exams related to Lectures. The Mastering Biology Assignments will count as an additional exam. The mandatory Final will be cumulative counting as a double exam. The lowest grade of these exams grades will be dropped and the average counted as 70%. There will be 5 quizzes related to the Labs. A presentation related to an ecological project will count as an additional quiz. The Scientific paper related to the Cell Biology experiment will count as a double quiz. The lowest grade of these quizzes grades will be dropped and the average counted as 30%. The weighted average of exams and quizzes will then determine your final grade. There will be no make-up exams or quizzes.

**Class Participation**

Your attendance and participation will be monitored. It is **YOUR** responsibility to make up missed work. Participation in the academic activity of each course is a significant component of the learning process and plays a major role in determining overall student academic achievement. Academic activities may include, but are not limited to, attending class, submitting assignments, engaging in in-class or online activities, taking exams, and/or

participating in group work. Each instructor has the right to establish their own class participation policy, and it is each student's responsibility to be familiar with and follow the participation policies for each course.

BMCC is committed to the health and well-being of all students. It is common for everyone to seek assistance at some point in their life, and there are free and confidential services on campus that can help.

**Single Stop** [www.bmcc.cuny.edu/singlestop](http://www.bmcc.cuny.edu/singlestop), room S230, 212-220-8195. If you are having problems with food or housing insecurity, finances, health insurance or anything else that might get in the way of your studies at BMCC, come by the Single Stop Office for advice and assistance. Assistance is also available through the Office of Student Affairs, S350, 212-220- 8130.

**Counseling Center** [www.bmcc.cuny.edu/counseling](http://www.bmcc.cuny.edu/counseling), room S343, 212-220-8140. Counselors assist students in addressing psychological and adjustment issues (i.e., depression, anxiety, and relationships) and can help with stress, time management and more. Counselors are available for walk-in visits.

**Office of Compliance and Diversity** [www.bmcc.cuny.edu/aac](http://www.bmcc.cuny.edu/aac), room S701, 212-220-1236. BMCC is committed to promoting a diverse and inclusive learning environment free of unlawful discrimination/harassment, including sexual harassment, where all students are treated fairly. For information about BMCC's policies and resources, or to request additional assistance in this area, please visit or call the office, or email [olevy@bmcc.cuny.edu](mailto:olevy@bmcc.cuny.edu), or [twade@bmcc.cuny.edu](mailto:twade@bmcc.cuny.edu). If you need immediate assistance, please contact BMCC Public safety at 212-220-8080.

**Office of Accessibility** [www.bmcc.cuny.edu/accessibility](http://www.bmcc.cuny.edu/accessibility), room N360 (accessible entrance: 77 Harrison Street), 212-220-8180. This office collaborates with students who have documented disabilities, to coordinate support services, reasonable accommodations, and programs that enable equal access to education and college life. To request an accommodation due to a documented disability, please visit or call the office.

### **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 site, [www.bmcc.cuny.edu](http://www.bmcc.cuny.edu). For further information on integrity and behavior, please consult the college bulletin (also available online).

## LECTURE SYLLABUS

WEEK	DATE	TOPIC	PAGES IN TEXT BOOK	POSSIBLE EXAMS
1		<u>Evolution</u> : Introduction, Definitions, Evolution of Genomes, History of Evolutionary Thinking, The Facts of Evolution, Evidence for Evolution, Descent with Modification, Evolution of Populations	Chapter 21, 22, 23	
2		<u>Evolution</u> : The Origin of Species, The History of Life on Earth, Phylogeny & the Tree of Life	Chapter 24, 25, 26	
3		<u>Basic Principles of Animal Form and Function</u> Histology, Intercellular Junctions, Homeostasis, Metabolism, Bioenergetics, Thermoregulation	Chapter 40	Exam#1
4		<u>Animal Nutrition</u> Nutritional Requirements and Nutrients, Intermediary Metabolism, Structure and Functions of Digestive Tracts of Different Organisms, Evolution	Chapter 41	
5		<u>Circulation and Gas Exchange</u> Gastrovascular Cavities, Open and Closed Circulatory Systems, Structure and Functions of Vertebrate Circulatory Systems, Heart, 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	
6		<u>The Immune System</u> Innate and Specific (Adaptive or Acquired) Immunity	Chapter 43	Exam#2
7		<u>The Immune System</u> Immunization, MHC, Autoimmune Diseases, Allergies, Cancer, Immunodeficiency Diseases, AIDS	Chapter 43	
8		<u>Osmoregulation and Excretion</u> Nitrogenous Waste, Osmoregulation and Waste Disposal, Excretory Systems of Different Animals, Kidney and Mammalian Blood Pressure Regulation, Homeostasis	Chapter 44	
9		<u>Hormones and the Endocrine System</u> Signaling Modes, Invertebrates, Nervous and Endocrine Integration, Vertebrate Endocrine Organs and their Hormones, Hormone Actions and Controls	Chapter 45	

10		<u>Animal Reproduction and Development</u> Sexual and Asexual Reproduction, Mammalian Systems: Structure and Functions, Gametogenesis, Hormonal Controls, Fertilization, Pregnancy, Embryogenesis, Placenta, Birth Control, Sexually Transmitted Diseases	Chapters 46, 47	Exam#3
11		<u>Neurons, Synapses &amp; Signaling</u> Neurons, Potentials, Impulses, Synapses, Integration	Chapter 48	Exam#4
12		<u>Nervous Systems</u> Lower Animal and Vertebrate Nervous Systems, Brain Functions, Memory, Depression, Diseases, Sleep	Chapter 49	
13		<u>Sensory and Motor Mechanisms</u> Sensory Transduction, Photoreception, Receptors, Hearing and Equilibrium, Chemoreception, Vision, Movement and Locomotion, Skeletons, Muscle Contraction	Chapter 50	
14		<u>Ecology and Environmentalism</u> An Introduction to Ecology and the Biosphere Population Ecology; Predation, Demography, How Populations Interact: Community Ecology, Human Impact on Populations; Species Richness & Diversity; Productivity; Trophic Levels; Nutrient & Water Cycles; Conservation; the Importance of Biodiversity; Habitat Destruction; Overpopulation, Introduced Species	Chapters 52-56	Exam#5
15			Final Exam	

## LABORATORY SYLLABUS

Write ups will be handed out the week before for some laboratory exercises.

A Pre-Lab quiz may be given at the beginning of any laboratory session.

<b>WEEK</b>	<b>DATE</b>	<b>TOPIC</b>	<b>POSSIBLE QUIZZES</b>
1		Evolution I. Taxonomy and Protista	
2		Evolution II. Animal Diversity Earthworm dissection	
3		Histology I: Introduction, Epithelial and Connective Tissues	Quiz#1
4		Histology II: Muscle and Nervous Tissues	
5		Crayfish and Grasshopper dissection; Scientific Peer Review: Lecture and Demonstration how to perform a scientific experiment and write a scientific paper	Quiz#2
6		External Anatomy of the Pig and Dissection of their Digestive Tracts and Thoracic Cavity; Practice	
7		Lab Practical (at Instructor's discretion); Circulatory System Pig/Sheep Heart; comparison with lower vertebrate hearts; Perch dissection (optional)	
8		Honor's Research project; Cell Biology experiment related to the Scientific paper	Quiz#3
9		Blood Vessels of Pig; Comparative Analysis of the Circulatory and Urogenital Systems throughout the different groups; Other optional exercises	
10		Nervous System, Spinal Cord and Reflexes Sheep Brain Dissection Reflexes and Cranial Nerve Function	Quiz#4
11		Senses I: Eye Vision, Cow Eye dissection	Quiz#5
12		Senses II: Taste, Olfaction, Touch, Hearing, Balance; Discussions related to the Honor's Research project	
13		Ecology Presentations	
14		Ecology Presentations	
15		Submission of the Scientific paper	