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BOROUGH OF MANHATTAN COMMUNITY COLLEGE
The City University of New York
Department of Science

BIO220
Semester: Fall 2021
Class Hours: 6

Lecture Hours per Week: 3
Laboratory Hours per Week: 3

Professor: Dr. Joanna I. Giza
E-mail: jgiza@bmcc.cuny.edu
Office (if in person): N699J
Tel (if in person): 212-220-1310

Credits: 4

Course Description: BIO220 is the second part of the two-semester course that acquaints students with the basic properties of living systems: metabolism, growth, responsiveness to environment and reproduction at the cellular and organism levels as illustrated by assorted plants and animals. The students gain the understanding of evolutionary concepts and how functional adaptation is achieved at the level of a single cell and in more complex organisms. They learn details about the structure and function of each organ system including digestive, circulatory, immune, nervous, endocrine system in addition to exploring the topics related to ecology and environment. Two terms are required.

The computer/laptop/iPad and camera as well as access to the internet ARE REQUIRED for this class.

BMCC Mask Mandate Policy for In-Person Classes
CUNY has put in place a temporary mask mandate policy that requires the wearing of masks indoors in all campus buildings.

See: https://www.cuny.edu/coronavirus/university-updates/clarity-new-mask/

Face masks help prevent the spread of COVID-19. As it is possible to have or carry the coronavirus without having or showing symptoms, it is necessary for every person in our community to wear a mask even if you are fully vaccinated and/or have tested negative for COVID19, or think you are completely healthy. For appropriate/acceptable masks and guidelines on use, see CDC guidelines at: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html.

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- Students who are not fully vaccinated are also required to maintain social distancing between themselves and all others in a classroom.

You are expected to participate in course discussions via zoom and discussion board (participation will be a part of your grade).

Basic Skills: Same as Biology210
Prerequisites: BIO 210
Corequisites: None
ALL EXAMS WILL BE CONDUCTED VIA BLACKBOARD!
Quizzes and exams in the lecture will be in a form of multiple choice and critical thinking questions.
Quizzes, lab practical and lab final exams will be consisting of answering short answer questions and/or identifying the structures or their roles presented as photos.

<table>
<thead>
<tr>
<th>Course Student Learning Outcomes</th>
<th>Measurements (means of assessment for student learning outcomes listed in first column)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will learn the fundamental role of the concepts of evolution in the modern biology; the history of life on earth and its continuing changes</td>
<td>1. Quizzes and examinations.</td>
</tr>
<tr>
<td>2. Students will learn concepts of homeostasis and negative and positive feedbacks.</td>
<td>2. Quizzes and examinations.</td>
</tr>
<tr>
<td>3. Students will be able to understand the relevance of structure/function relationships of tissues, organs and organ systems</td>
<td>3. Quizzes and examinations; laboratory exercises and assignments.</td>
</tr>
<tr>
<td>4. Students will be able to understand the importance of ecology, its current and possible future effects on the environment and on living things.</td>
<td>4. Quizzes, examinations and oral presentations.</td>
</tr>
<tr>
<td>4. Ability to find credible scientific sources (e.i. understanding impact factor of the journal, verify the author(s)'credentials in the field, use credible websites such as pubmed.gov, google scholar) to cite as scientific evidence</td>
<td>4. Short writing assignment, long written assignment (20% of the grade)</td>
</tr>
</tbody>
</table>
  - Distinguish between different types of scientific papers (e.g. research papers, review papers, medical case study)
  - Assess the appropriateness of the model organism, cellular model, etc.
  - Identify difficulties in finding appropriate treatments stemming from your understanding of the system and research approaches discussed in class
  - Summarize the most recent scientific findings in this field and how they relate to development of the current treatments |
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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.)

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

Required Textbook and Online Tutorial:
Course material type: Book
Status: required
Title – Campbell Biology 12th edition
Edition – 12th
ISBN – 9780136852384
Publisher – Pearson
Price: 165
Year Published – 2020

Required Online Tutorial:

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.

Mastering Biology homework will be assigned weekly.

Note:
1. There are textbook reading assignments for both lectures and laboratories. You will be tested on all textbook readings. For some laboratories there could be a write-up handed out in addition.
2. Read the assigned laboratory pages each week before coming to the laboratory. The quizzes will be given in each or some of the laboratory classes.
3. A dissection kit containing a blunt (or small) probe will be provided for use during the laboratory sessions (DOES NOT APPLY TO ONLINE CLASSES)

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 ______________________________________________________________________

Study partner’s name(s) and info ______________________________________________________________________
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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 (at Instructor's discretion):**

The instructor will administer 4 or 5 examinations. One or more assessment examinations (not counted in student grades) may also be administered. Some laboratories will begin with a pre-lab quiz. Laboratory quizzes/examinations may also be given. A final examination will cover both lecture and laboratory material. Students might be required to submit reports for some laboratory experiments. Papers on various topics may be assigned at the instructor’s discretion.

**TO PASS THIS CLASS, A STUDENT MUST HAVE A PASSING GRADE OF 60% OR MORE IN LECTURE AND A PASSING GRADE OF 60% OR MORE IN THE LABORATORY PORTION.**

**Class Participation**

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, **actively participating in class discussions in the breakout rooms or in person during face-2-face classes**, 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 it 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.

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Advocacy and Resource Center (Former Single Stop) 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, 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, 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 or 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, 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. For further information on integrity and behavior, please consult the college bulletin (also available online).

Please, note the following dates on BMCC Fall 2021 calendar:

**LECTURE SYLLABUS**

<table>
<thead>
<tr>
<th>WEEK</th>
<th>DATE</th>
<th>TOPIC</th>
<th>CHAPTE RS IN</th>
<th>ASSIGNMENTS AND EXAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Evolution: The Origin of Species, The History of Life on Earth, Phylogeny &amp; the Tree of Life.</td>
<td>Chapter 24, 25, 26</td>
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<tr>
<td>3</td>
<td>Basic Principles of Animal Form and Function Histology, Intercellular Junctions, Homeostasis, Metabolism, Bioenergetics, Thermoregulation</td>
<td>Chapter 40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Animal Nutrition Nutritional Requirements and Nutrients, Intermediary Metabolism, Structure and Functions of Digestive Tracts of Different Organisms, Evolution</td>
<td>Chapter 41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>The Immune System Innate and Specific (Adaptive or Acquired) Immunity</td>
<td>Chapter 43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>The Immune System Immunization, MHC, Autoimmune Diseases, Allergies, Cancer, Immunodeficiency Diseases</td>
<td>Chapter 43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Osmoregulation and Excretion Nitrogenous Waste, Osmoregulation and Waste Disposal, Excretory Systems of Different Animals, Kidney and Mammalian Blood Pressure Regulation, Homeostasis Peer review of abstracts in small groups</td>
<td>Chapter 44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Hormones and the Endocrine System Signaling Modes, Invertebrates, Nervous and Endocrine Integration, Vertebrate Endocrine Organs and their Hormones, Hormone Actions and Controls</td>
<td>EXAM 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Neurons, Synapses &amp; Signaling Neurons, Potentials, Impulses, Synapses, Integration</td>
<td>Chapter 48</td>
<td></td>
<td></td>
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<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>POSSIBLE QUIZZES</th>
</tr>
</thead>
</table>
| 12   | Nervous Systems  
Lower Animal and Vertebrate Nervous Systems, Brain Functions, Memory, Depression, Diseases, Sleep | Chapter 49 |
| 13   | Sensory and Motor Mechanisms  
Sensory Transduction, Photoreception, Receptors, Hearing and Equilibrium, Chemoreception, Vision, Movement and Locomotion, Skeletons, Muscle Contraction | Chapter 50 |
| 14   | Ecology and Environmentalism  
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 |
| 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.

<table>
<thead>
<tr>
<th>WEEK</th>
<th>DATE</th>
<th>TOPIC</th>
<th>POSSIBLE QUIZZES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Evolution I. Taxonomy and Protista</td>
<td></td>
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<tr>
<td>2</td>
<td></td>
<td>Evolution II. Animal Diversity Earthworm dissection</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Histology I: Introduction, Epithelial and Connective Tissues</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Histology II: Muscle and Nervous Tissues</td>
<td>Quiz#1</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Crayfish and Grasshopper dissection; Other optional exercises</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>External Anatomy of the Pig and Dissection of their Digestive Tracts and Thoracic Cavity</td>
<td>Quiz#2</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Continuation: External Anatomy of the Pig and Dissection of their Digestive Tracts and Thoracic Cavity; Practice, Perch dissection (optional)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Lab Practical (at Instructor's discretion); Circulatory System Pig/Sheep Heart; comparison with lower vertebrate hearts</td>
<td>Lab practical</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>Blood Vessels of Pig; Comparative Analysis of the Circulatory and Urogenital Systems throughout the different groups; Other optional exercises</td>
<td>Quiz#3</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Nervous System, Spinal Cord and Reflexes Sheep Brain Dissection Reflexes and Cranial Nerve Function</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Senses I: Eye Vision, Cow Eye dissection</td>
<td>Quiz#4</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Senses II: Taste, Olfaction, Touch, Hearing, Balance</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Ecology Presentations</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>Ecology Presentations</td>
<td></td>
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15 Laboratory Final Exam

***Notes for distance classes:

• Online labs will include a combination of lab manual activities on inclusive pages and/or virtual simulations and/or videos to substitute “wet lab” activities, including dissections.
• Online practical examinations are at the discretion of the instructor and will be conducted via blackboard and while present in class. Exams and quizzes dates are subject to change. THERE ARE NO MAKE-UP exams in this class!

GRADING SCALE:

• EXAMS-LECTURE (100pts EACH (4 EXAMS)=lowest grade exam gets dropped=300pts
• 4 quizzes –LAB=40pts
• 1 “practical” exam-LAB=60pts
• Presentation =100pts
• Participation=100pts
• Podcast project=100pts
• Lab final=100pts
• Lecture final=100pts
• Mastering Biology=100pts

TOTAL=1000pts

• Extra credit opportunities will be offered throughout the semester