BIO 100

THE CUNY COMMON CORE: SELECTED TOPICS IN BIOLOGY
(3 credit and 3 hours)

Winter 2021

Syllabus and Course Information

Instructor: Navneet Kaur
Email: Navneet.kaur@kbcc.cuny.edu
Kingsborough Community College, The City University of New York
Department of Biological Sciences

SYLLABUS FOR BIO 100
THE CUNY COMMON CORE: SELECTED TOPICS IN BIOLOGY

Course description: For non-science majors and those who plan to transfer to senior colleges within CUNY. Through lecture and discussion, selected biological topics, such as evolution, ecology, genetics, and human biology will be explored. For each topic, interactive computerized lab experiences involving formulating hypotheses and the process of scientific inquiry will be conducted. In addition, current ethical issues in science will be studied. This course satisfies the CUNY Common Core Requirement for a course in Life and Physical Sciences.

Credits/hours: 3 credits, 3 hours per week

Textbook: We will be using free online openstax book titled “Concepts of Biology”. The online link to the book is: https://openstax.org/details/books/concepts-biology

Lab information: Labs will be performed online. We will be using a software called SimUText and students will be required to purchase access to these labs. Link for registration to SimUtext labs and more information is posted on Blackboard.

Course Goals for student learning outcomes

1. Identify and apply the fundamental concepts and methods of biology.

2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.

3. Use the tools of a scientific discipline to carry out collaborative laboratory investigations.

4. Gather, analyze, and interpret data and present it in an effective written laboratory or fieldwork report.

5. Identify and apply research ethics and unbiased assessment in gathering and reporting scientific data.

Grading Policy:

3 Lecture Exams: 30%
1 Final Exam: 20%
SimUText lab reports: 35%
Presentation: 10%
Assignments/activities: 5% (these include class discussions, writing assignments, group work etc.)
<table>
<thead>
<tr>
<th>Week #</th>
<th>Topics</th>
<th>Resources</th>
</tr>
</thead>
</table>
| 1 | **The Process of Science/The Scientific Method**  
Writing assignment on Scientific method  
Making observations: In class case study to evaluate whether MMR Vaccination increases risk of autism in children | Chapter 1 (Topic 1.2) |
| | | (Chapters are from ebook: [https://openstax.org/details/books/concepts-biology](https://openstax.org/details/books/concepts-biology)) |
| | SimUText Lab 1: Understanding Experimental design | |
| 2 | **Characteristics/Properties of life**  
Online Activity: Observing the characteristic of life.  
Life’s diversity (classification: kingdoms)  
Eukaryotes vs prokaryotes | Chapter 1 (Topic 1.1)  
Chapter 3 (Topic 3.2)  
Chapter 12 (Topic 12.1)  
Chapter 13 (Topic 13.1-13.4) |
| | | [http://www.exploratorium.edu/imaging-station/activities/classroom/characteristics/ca_characteristics.php](http://www.exploratorium.edu/imaging-station/activities/classroom/characteristics/ca_characteristics.php) |
| 3 | **Evolution**  
Principle: Darwin’s observations and deductions  
Natural selection  
Evidence: Fossil record, Comparative anatomy & physiology (form/function) | Chapter 11 (Topics 11.1 to 11.5) |
| | SimUText Lab 2: Darwinian snails | |
| 4 | **Evolution**  
Adaptations and extinction  
Human Evolution - Did humans evolve from monkeys?  
Evolution of human skin color  
Students will go to The American Museum of Natural History: Hall of Man (independent)  
On campus group activity to compare skull of hominins | PowerPoints and weblinks will be provided for this topic |
| 5 | **Ecology**  
Population and community ecology  
Organization: population, community, ecosystems, biome and biosphere  
Populations: importance of growth and size. Impact of human population on the environment  
Population examination  
Analysis of population data | Chapter 19 (Topic 19.1 to 19.4) |
| | SimUText Lab 3 Isle Royale | |
| 6 | **Ecology**  
Food chain, food web and trophic levels  
Biomes and the biosphere  
Changes in ecosystems over time | Chapter 20  
Topics (20.1 to 20.4) |
| | SimUText Lab 4 Nutrient pollution | |
| 7. | **Human impact on the Biosphere**  
Global warming, Pollution, Population explosion, Feeding the population  
Fossil fuels, Alternative energy sources | Chapter 21  
Topics (21.1 to 21.3) |
| --- | --- | --- |
| 8. | **Bioethics**  
Introduction to ethics and ethics in science  
Case study  
Discussion board assignment | [http://www.bioethics.iastate.edu/classroom/case_studies.html](http://www.bioethics.iastate.edu/classroom/case_studies.html) |
| 9. | **Current topics in biology: Food and Nutrition**  
Labels: RDA and nutritional information  
Organic foods: pros and cons  
Genetically modified foods  
Ethical concerns  
Analysis of food labels. Testing of label claims  
(example weight of food product in package) | PowerPoints and weblinks will be provided for this topic |
| 10. | **Current topics in biology: The Human Body and Wellness**  
Obesity  
Heart Disease  
Why are certain populations at greater risk? Is there an ethical issue?  
Assessing your health risk  
BMI calculation | PowerPoints and weblinks will be provided for this topic  
| 11. | **Current topics in biology: Genetics**  
Genetic testing  
Stem cells  
Gene Therapy  
Human genome project  
| 12. | **Student presentations on a biological topic of interest.**  
The presentation needs to include:  
The techniques used to study the topic  
How data are gathered and analyzed  
Ethical concerns  
Student’s position | List of topics to be given by the instructor in the class. Students can however pick a topic of their interest after consulting with instructor |