BIO 100

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

Fall 2019 – Spring 2020

Syllabus and Course Information

Instructor: Navneet Kaur
Email: Navneet.kaur@kbcc.cuny.edu
Office: S133; Phone: 718-368-4578
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 online openstax book titled “Concepts of Biology”.  
The online link to the book is:  
https://openstax.org/details/books/concepts-biology

Additional instructional materials:

Smart Science Lab Units: Students are required to perform online labs on Smart Science. Students require codes for registering to this site and the online codes are available and can be purchased at link below  
https://link.waveapps.com/gpk2rk-hc48fu

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%
Smart science lab reports: 30%
Presentation: 10%
Class/Lab activities: 10% (these include the group activities, class discussions, writing assignments, Field trips etc. If a student misses any class activity due to absence, student will score a zero)
<table>
<thead>
<tr>
<th>Week #</th>
<th>Topics</th>
<th>Resources</th>
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| 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) |
| 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)  
http://www.exploratorium.edu/imaging-station/activities/classroom/characteristics/ca_characteristics.php  
Chapter 3 (Topic 3.2)  
Chapter 12 (Topic 12.1)  
Chapter 13 (Topic 13.1-13.4) |
| 3     | **Evolution**  
Principle: Darwin’s observations and deductions  
Natural selection  
Evidence:  
  - Fossil record  
  - Comparative anatomy & physiology (form/function)  
Smart Science lab: Natural Selection Lab. Lab report to be submitted online | Chapter 11  
(Topics 11.1 to 11.5) |
| 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)  
Collaborative lab report on Hall of Man study  
On campus group activity to compare skull of hominins | Handouts 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  
Field observations on campus (done as a class)  
Population examination | Chapter 19  
(Topic 19.1 to 19.4) |
### Analysis of population data

- [http://www.populationinstitute.org/?gclid=CJjt4vXKlg4CFUFN4Aod8CGNKQ](http://www.populationinstitute.org/?gclid=CJjt4vXKlg4CFUFN4Aod8CGNKQ)

### 6. Ecology:
Food chain, food web and trophic levels  
Biomes and the biosphere  
Changes in ecosystems over time  
2 Smart Science labs: Food Webs and Food web exercise  
Lab report to be submitted online  
Field observations on campus (done as a class)

### Human impact on the Biosphere
Global warming, Pollution, Population explosion, Feeding the population  
Fossil fuels, Alternative energy sources  
Use of KCC Aquarium for study of Marine Animal Behavior  
Smart Science lab: Seed germination with Pollutants  
Lab report to be submitted online

### Bioethics
Introduction to ethics and ethics in science  
Case study (in class)

### 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 (in class). Testing of label claims (example weight of food product in package)  
- Smart Science lab: Yeast and sugar. Lab report to be submitted online

### 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 (in class): BMI calculation:

Handouts will be provided for this topic
| 11 | **Current topics in biology: Genetics**  
Genetic testing  
Stem cells  
Gene Therapy  
Human genome project  
Ethical Issues | http://www.stemcellresearch.org/  
| 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  
Students 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 |