

**BIOLOGY 120L
LABORATORY IN HUMAN BIOLOGY**

BULLETIN INFORMATION

BIOL 120L - Laboratory in Human Biology (1 credit hour)

Course Description:

Exercises dealing with basic concepts of human biology. (Prereq or coreq: BIOL 120). Not for major credit

SAMPLE COURSE OVERVIEW

On a daily basis, we are subject to human biology in a variety of ways: at the doctor's office, on the back of food products, in the technologies we use, in politics, etc. How do you know what "scientific" claims are valid? What is the right medicine for you? What should you include in your diet? Whatever your chosen career path, you will undoubtedly hear about human biology in news media and political debates, and will very likely confront issues that touch you directly. To be able to follow these discussions and make informed decisions, it's crucial to have a basic understanding of human biology and how it works. This lab is designed to give you that basic understanding and teach you some of the methods and fundamentals practiced in the laboratory setting. Many of the labs will supplement lecture topics, allowing students to get a hands-on learning opportunity. Students will be able to interpret the significance of data and to learn the scientific reasoning behind some major human biology concepts.

ITEMIZED LEARNING OUTCOMES

Upon successful completion of Biology 120L, students will be able to:

1. Demonstrate understanding of the scientific method and be able to use it to solve problems.
2. Explain basic biological principles, including connections across multiple disciplines and scales. These may include molecular, cellular, genetic, organismal, and evolutionary levels.
3. Interpret and create graphical displays of data.
4. Present results of scientific investigations through both written and verbal means.
5. Analyze and evaluate topics involving human biology presented in popular outlets (TV, newspapers, internet, etc.)

SAMPLE REQUIRED TEXTS/SUGGESTED READINGS/MATERIALS

1. Human Biology laboratory Manual, 10th Edition, Sylvia Mader, McGraw Hill Higher Education, NYC, 2008. ISBN: 978-0-07-298690-7
2. Other materials and assignments posted on Blackboard, YouTube films, Journal articles from the library and valid internet sources.

SAMPLE ASSIGNMENTS AND/OR EXAM

- 1. Open Lab Book Mid-Term Exam:** The mid-term exam covers material in the first half of the course. Keep your lab book accurate and thorough so you can effectively use it for the exams!
- 2. Open Lab Book Final Exam:** The final exam covers all material for the course. Keep your lab book accurate and thorough so you can effectively use it for the exams!
- 3. Homework:** Each lab will have its own homework assignment which will be due the following week. Details of the laboratory homework assignment will be given in lab. You should pre-read the lab investigation that you will be performing before you come to lab class so that you are better prepared during lab. For most labs you should be prepared to work in pairs. Working effectively with a group is a fundamental part of science (and most other jobs).
- 4. Reports/Summaries** (Protocols & examples will be posted on blackboard in the biology 120 course menu lab folder):
 - a. You will have to write one official lab report over the course of the semester to familiarize yourself with how scientists communicate their results with one another. The material of the lab reports will come from one of your experiments. You have to write the lab report on your own, even if you share the data with other students. Lab reports that show identical data but differ in their composition are acceptable. However, lab reports that show similar compositions will both be given a score of zero and be considered cheating. See the final sheet of this syllabus for info on how to cite your paper properly! Details are posted on BB.
 - b. You will also write a one page report on a scientist of the present or the past who has made a significant contribution to science. I call this the heroes in science essay. There is a plethora of scientists from various cultural backgrounds who have devoted their lives to the betterment of their culture and humanity writ large. These people may not be part of mainstream discourse. For this assignment, identify a scientist (living or deceased) whom you know little about and explore his or her life's story. Write a brief summary of the scientist's biography, why you chose the scientist, what he or she did, and highlight why his or her work is crucial to ALL of us. Your summary should be at least 500 words but no more than 600. Details are posted on BB.
- 5. Presentation**
 - a. You and your lab partner will participate in a short debate over some bioethical issue in the world of biology. You and your lab partner will be given a topic to

research and present in a debate format during lab time. Details are posted on BB.

- b. Part 2 of this assignment involves learning how to get involved politically. Learning how to challenge the status quo and address the inequities in our society is an important part of learning. In this exercise, you will write a letter to a representative of your choosing (city, county, state or federal), asking for action on one of these bioethical topics. You DO NOT have to mail this letter. This exercise is designed to give you practice a) finding out who your representatives are, and 2) participate in active citizenship by writing a letter to one of these representatives. Details are posted on Blackboard.

SAMPLE COURSE OUTLINE WITH TIMELINE OF TOPICS, READINGS/ASSIGNMENTS, EXAMS/PROJECTS

Lab 1:	Scientific Method & Effects of Pollution on Ecosystems: 1 & 22
Lab 2:	Metric Measurements & Microscopy: 2
Lab 3:	Cell Structure and Function: 4
Lab 4:	Infectious Disease & Immunology: 16
Lab 5:	Cardiovascular System & Features of the Cardiovascular System: 7 & 8
Lab 6:	Chemical Aspects of Digestion & Chemical Composition of Cells: 9 & 3
Lab 7:	Homeostasis: 12
Lab 8:	Lab Midterm Exam
Lab 9:	Musculoskeletal System & Human Evolution: 13 & 21
Lab 10:	Nervous System & Senses: 14
Lab 11:	Human Development & Mitosis and Meiosis: 15 & 17
Lab 12:	DNA & Biotechnology: 19
Lab 13:	Human Body Tissues: 5
Lab 14:	<u>Final Exam according to university exam schedule</u>