



DEPARTMENT OF SCIENCE
COURSE INFORMATION SHEET FOR
BIO100 – HUMAN BIOLOGY

All members of the Science Department at Clinton Community College use the respective course templates as a basis for their course syllabi. Faculty may, at their discretion, change the order of the course content or add course content.

COURSE NUMBER AND TITLE: BIO100 – Human Biology

COURSE SECTION: TBA

CONTACT HOURS: 5 **CREDIT HOURS:** 4

SEMESTER AND YEAR: TBA

INSTRUCTOR'S NAME, TELEPHONE NUMBER, EMAIL ADDRESS, OFFICE NUMBER, AND OFFICE HOURS: TBA

I. COURSE DESCRIPTION:

This course is a general science course for non-science majors. It covers general topics in biology including science, chemistry, cells, cell division, genetics, protein synthesis, biotechnology, and bioethics. Several body systems including the circulatory, respiratory, and immune systems are also covered. The objective is to raise students' science literacy to enable them to understand scientific issues for making personal and public policy decisions. There are three hours of lecture and one two-hour laboratory per week.

This course meets the SUNY General Education course requirements for natural sciences.

II. PREREQUISITE: Students receiving credit for BIO101 and/or BIO102 cannot receive credit for BIO100.

COREQUISITE: ENG101 – English Composition or equivalent

III. COURSE OBJECTIVES, SUNY GENERAL EDUCATION KNOWLEDGE AREA LEARNING OUTCOMES AND ASSESSMENT:

COURSE OBJECTIVES:

As the result of instructional activities, students will be able to:

Science

- This objective will be infused throughout the lectures and also covered by laboratory exercises.

Chemistry

- Explain the chemical composition of living systems.
 - Describe the relationship between atomic structure and bonding.
 - Describe the function of carbohydrates, proteins, lipids, and nucleic acids.

Cells

- Describe cell structure and function as it relates to specific tissues, organs, and organ systems.
 - Compare and contrast prokaryotic and eukaryotic cell structures.
 - Describe the structure and function of eukaryotic organelles.
 - Describe membrane structure and function.
 - Identify and describe the function of the four different kinds of animal tissue.

Cell Division

- Identify differences between mitosis and Meiosis.
 - Identify the stages of the cell cycle.
 - Describe the beginning and end products of meiosis including the relationship of the process to reproduction, heredity, and variation, and reduction of chromosome number.

Genetics

- Apply genetic principles to simple Mendelian and non-Mendelian inheritance problems and concepts.
 - Apply genetic principles to simple inheritance problems/concepts including monohybrid crosses.
 - Describe non-Mendelian inheritance including incomplete dominance, multiple alleles, genomic imprinting, polygenetic inheritance, sex linkage
 - Compare and contrast the relationship between mutations and genetic disorders
 - Use pedigrees/karyotypes to examine the inheritance of human genetic disorders including common Mendelian-inherited disorders, chromosomal and X-linked abnormalities

Central Dogma

- Explain how genetic information is stored in DNA and translated into protein.
 - Compare and contrast the molecular structures of DNA and RNA
 - Describe DNA synthesis
 - Describe transcription and translation
 - Describe the structure of chromosomes

Disease

- Describe genetic and pathogenic disease in humans
 - Describe the genetic basis of cancer
 - Identify characteristics and transmission of major diseases caused by parasites and pathogens

Biotechnology

- Explain how genetic engineering techniques are used to treat human disease.

The Circulatory System

- Discuss the function of the circulatory system.
- Discuss the structure of the heart and blood vessels
- Discuss the cardiac cycle
- State the function of the components of blood
- Discuss the significance of hypertension

The Respiratory System

- Describe the structure and function of the respiratory system.
- Discuss oxygen and carbon dioxide transport.
- Discuss the mechanisms that control breathing rate.
- Identify major diseases of the respiratory system and their causes.

The Immune System

- Describe nonspecific immunity
- Describe specific immunity
- Discuss the role of active and passive immunity
- State the structure and function of the lymphatic system

Bioethical

- Students should demonstrate and awareness of current bioethical issues including issues associated with the use of biotechnology.

SUNY GENERAL EDUCATION KNOWLEDGE AREA LEARNING OUTCOMES:

Students will demonstrate the ability to:

1. understand the methods scientists use to explore natural phenomena, including:
 - observation
 - hypothesis development
 - measurement and data collection
 - experimentation
 - evaluation of evidence
 - employment of mathematical analysis
2. apply scientific data, concepts and models in one of the natural sciences

IV. REQUIRED TEXTBOOK AND MATERIALS:

REQUIRED TEXTBOOK:

Human Biology, 9th edition; Mader. McGraw-Hill
ISBN # 0-073-10176-1

REQUIRED MATERIALS:

Safety glasses are required for all on-campus sections.

V. METHODS OF INSTRUCTION/COURSE ORGANIZATION: *To be determined by the respective instructor.*

VI. ATTENDANCE PROCEDURE (INCLUDING MAKEUP POLICY): *To be determined by the respective instructor.*

VII. BIBLIOGRAPHY OF READINGS (IF APPLICABLE): *To be determined by the respective instructor.*

VIII. METHODS OF EVALUATION (INCLUDING THE CALCULATION OF COURSE GRADE): *To be determined by the respective instructor. The methods of evaluation shall include tests (test types, length and weight of each), papers (weight of each), projects (weight of each), and other forms of evaluation (weight of each).*

IX. GRADING SCALE: *To be determined by the respective instructor. The grading scale shall indicate what numerical scores correspond to the following grades: A, A-, B+, B, B-, C+, C, C-, D+, D, and F.*

Please Include: If you have, or suspect you may have, any type of disability or learning problem that may require extra assistance or special accommodations, please speak to me privately after class or during my office hours as soon as possible so I can help you obtain any assistance you may need to successfully complete this course. You should also contact Laurie Bethka, Room 420M in the Academic Assistance Center, for further assistance.

X. GENERAL TOPICS OUTLINE:

1. Introduction - What is Life?
2. Science
3. Chemistry
4. Cells
5. Mitosis
6. Meiosis
7. Genetics
8. DNA and Protein Synthesis
9. Control of Gene Expression, Cancer
10. Biotechnology
11. The Circulatory System
12. The Respiratory System
13. The Immune System

XI. ACADEMIC INTEGRITY: Academic honesty is expected of all Clinton Community College students. It is academically dishonest, for example, to misrepresent another person's work as one's own, to take credit for someone else's work or ideas, to accept help on a test, to obtain advanced information on confidential test materials, or to intentionally harm another student's chances for academic success.

XII. COURSE CONTINUITY PLAN: In the case that the college officially closes because of an emergency which causes a short term disruption of this course, we will utilize e-mail to continue this course in the short term (1-3 weeks). All students need to utilize their campus e-mail to receive course related information.