

M: Course Objectives / Learning Outcomes

Upon completion of Biology 103, the student will be able to:

1. Use a compound microscope, and describe and identify cell and tissue types in the body.
2. Describe the basic principles of homeostasis and negative feedback systems, and provide at least one example of a homeostatic mechanism.
3. Describe anatomical structures using appropriate terminology, and specify the locations of various organs and systems.
4. Describe the components and functions of the integumentary system.
5. Identify the components of the human skeleton, and describe the structure and growth of long bones.
6. Describe the types and range of movements of skeletal articulations.
7. Describe the basic principles of biomechanics.
8. Describe the location, structure, and functions of the major muscles of the body.
9. Describe the structure and functions of the cardiovascular and lymphatic systems.
10. Describe the origin, composition, and functions of blood.
11. Describe the basis of the ABO blood groups and explain the significance of this to blood transfusions.
12. Describe the mechanism of blood clotting.
13. Describe the basic organization of the immune system, and distinguish between nonspecific and specific resistance, and further distinguish between cellular and humoral immunity.
14. Describe the structure and function of the respiratory system and describe the transport of gases in the blood.
15. Describe the gross anatomy of the digestive system and describe the digestion of carbohydrates, lipids, and proteins.
16. Describe the structure and function of carbohydrates, lipids, proteins, and nucleic acids.

N: Course Content:

The major topics in the course include the following:

1. The structure and function of cells:
 - The structure and function of various cytoplasmic and nuclear components.
 - The preparation of and examination (using a compound microscope) of human buccal and onion epidermal cells.
 - An explanation of the major cellular processes and their significance to the cell.
2. Homeostasis:
 - The definition of the term **homeostasis**, its importance, and the conditions required to fulfill homeostasis.
 - The definitions of the terms **internal environment**, **stress**, and **negative feedback system**, and their roles in homeostasis.
 - Examples of homeostatic mechanisms.

3. The organization of the human body beyond the cellular level:
 - The structure and function of the four tissue types.
 - The major body systems, their major organs, and the general function of each organ.
 - Directional terms as they relate to the human body.
 - The body cavities and their organs.
4. The integumentary system:
 - The identification and description of the components of the epidermis and the dermis.
 - Specialized cells, structures, and glands.
5. The skeletal system:
 - The basic structure, histology, and components of the human skeleton.
 - The structure, physiology, and function of bone.
 - The changes in skeletal structure during growth and development (ossification).
 - Articulations (joints) with respect to their structures and types of movement allowed.
 - The basic mechanical principles of movement as they relate to joints (biomechanics).
6. The muscular system:
 - The types of movements found in humans as a result of skeletal muscle contraction.
 - The identification of the principal muscles and muscle groups and their movements.
7. The circulatory system:
 - A description of the human circulatory and lymphatic systems.
 - The composition and properties of blood.
 - The types and characteristics of white blood cells.
 - The ABO blood groups and the Rh factor.
 - The tissues related to the heart.
 - The heart conduction system.
 - Major arteries and veins.
 - Blood pressure and pulse.
 - Major blood reservoirs in the body.
 - The mechanism of blood clotting.
8. Resistance and Immunity:
 - Nonspecific versus specific resistance.
 - The nature and roles of cellular and humoral immunity.
9. The respiratory system:
 - The major components of the human respiratory system and their functions.
 - The mechanism and types of ventilation.
 - How oxygen and carbon dioxide are transported in the blood.
 - The nervous control of breathing.
10. The digestive system:
 - The anatomy and physiology of the digestive system.
 - The structure and function of carbohydrates, lipids, proteins, and nucleic acids.
 - The digestion and absorption of carbohydrates, lipids, and proteins.
 - The control of the secretion of digestive juices.

O: Methods of Instruction

This course involves three hours per week of classroom instruction and two hours per week of laboratory activity. Classroom work will consist of two hours of lectures per week and one hour of group work (with instructor assistance) per week.

P: Textbooks and Materials to be Purchased by Students

Tortora and Grabowski. *Principles of Anatomy and Physiology*. New York: John Wiley and Sons, Inc.

Douglas College produced manual: **Biology 103: Human Biology I**.

Q: Means of Assessment

<u>TYPE OF EVALUATION</u>	<u>POINTS</u>
Class Tests and Assignments	20
Laboratory Reviews (seen Note 1 below)	(up to -22)
Laboratory Examination - final	15
Comprehensive Examinations - midterm	30
- final	35
TOTAL	100
Grades: A+ 95-100, A 90-94, A- 85-89, B+ 80-84, B 75-79, B- 70-74,	
C+ 65-69, C 60-64, C- 55-59, P 50-54, F 0-49.	

NOTES:1. **Laboratory Reviews:**

Required laboratory reviews will be assigned in most weeks, and these reviews must be completed in the laboratory in the week that they are assigned. The laboratory reviews are intended to provide an opportunity to review particular material with each student. Completion of the review will result in a grade of P (Pass), or R (Review Recommended) being marked on the laboratory sheet. If **more than one review** is not completed satisfactorily (P or R), **two marks will be deducted from the course total for each lab review in excess of one that is not completed.** A student **must complete 50 % of the reviews to receive a P or better grade in the course.**

2. **Comprehensive Examinations:**

There will be one midterm worth 30 marks in week 7 which will cover the course content to that point. The final examination will cover the entire course. If the student achieves a better grade on the final exam than on the midterm examination, the midterm grade will be raised to equal that achieved on the final examination.

R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR

There is no provision for PLAR, other than that normally done by examining transcripts and comparing course outlines of human biology courses taken within the last five years elsewhere to the Douglas College Biology 103 course content.

Course Designer(s)

Education Council / Curriculum Committee Representative

Dean / Director

Registrar