



EFFECTIVE: SEPTEMBER 2009
CURRICULUM GUIDELINES

A. Division: **Education** Effective date: **September 2009**

B. Department / Program Area: **Science and Technology/
Biology** Revision: New Course

If Revision, Section(s) Revised: **E, F and K**

Date of Previous Revision: **October 2007**

Date of Current Revision: **April 2009**

C: **Biology 1103** D: **Human Anatomy and Physiology I** E: **3**

Subject & Course No.	Descriptive Title	Semester Credits
F: Calendar Description: Human Anatomy and Physiology I is an introduction to the study of anatomy and physiology of humans. Cell biology and the biochemistry of cells are examined, and the levels of organization in the human body are studied. The anatomy and physiology of the integumentary, skeletal, muscular, circulatory, immune, and respiratory systems are covered. Enrolment is usually limited to students in Health Science and Sport Science programs.		
G: Allocation of Contact Hours to Type of Instruction / Learning Settings Primary Methods of Instructional Delivery and/or Learning Settings: Lecture / Tutorial / Laboratory. Number of Contact Hours: (per week / semester for each descriptor) 6 hours/week: 4 hours lecture / tutorial 2 hours lab Number of Weeks per Semester: 15	H: Course Prerequisites: None I: Course Corequisites: None J: Course for which this Course is a Prerequisite: Biology 1203 K: Maximum Class Size: Lecture / Tutorial = 37	
L: PLEASE INDICATE: <input type="checkbox"/> Non-Credit <input type="checkbox"/> College Credit Non-Transfer <input checked="" type="checkbox"/> College Credit Transfer: SEE BC TRANSFER GUIDE FOR TRANSFER DETAILS (www.bctransferguide.ca)		

M: Course Objectives / Learning Outcomes:

Upon completion of Biology 1103, 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 components of an atom and describe the properties of ionic and covalent bonds.
3. Describe the chemistry and properties of water, and the structure and biological significance of carbohydrates, lipids, proteins and nucleic acids.
4. Describe the basic principles of homeostasis and negative feedback systems, and provide at least one example of a homeostatic mechanism.
5. Describe anatomical structures using appropriate terminology, and specify the locations of various organs and systems.
6. Describe the components and functions of the integumentary system.
7. Identify the components of the human skeleton, and describe the structure and growth of long bones.
8. Describe the types and range of movements of skeletal articulations.
9. Describe the basic principles of biomechanics.
10. Describe the location, structure, and functions of the major muscles of the body.
11. Describe the gross anatomy of muscles and the microanatomy of muscle tissue.
12. Describe the physiology of muscle contraction.
13. Describe the structure and functions of the cardiovascular and lymphatic systems.
14. Describe the origin, composition, and functions of blood.
15. Describe the basis of the ABO blood groups and explain the significance of this to blood transfusions.
16. Describe the mechanism of blood clotting.
17. Describe the basic organization of the immune system, and distinguish between non-specific and specific resistance, and distinguish between cellular and humoral specific immunity.
18. Describe the structure and function of the respiratory system and describe the transport of gases in the blood.

N: Course Content:

The major topics in the course include the following:

1. The structure and function of cells:
 - The structure and function of cell membranes and 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. Introduction to biochemistry
 - chemistry of water
 - chemistry of carbohydrates, lipids, proteins and nucleic acids
3. Homeostasis:
 - The definition of the term **homeostasis**, its importance, and the conditions required to fulfill homeostasis.
 - The definitions of the terms **internal environment**, **stress**, **positive feedback system** and **negative feedback system**, and their roles in homeostasis.
 - Examples of homeostatic mechanisms, including negative and positive feedback systems.
4. 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.

5. The integumentary system:
 - The identification and description of the components of the epidermis and the dermis.
 - Specialized cells, structures, and glands.
6. 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).
7. 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.
 - The gross anatomy of muscles and microscopic anatomy of muscle tissue.
 - The physiology of muscle contraction.
8. The circulatory system:
 - A description of the human circulatory and lymphatic systems.
 - The composition and properties of blood.
 - The types, characteristics and functions 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.
9. Resistance and Immunity:
 - Non-specific versus specific resistance.
 - The nature and roles of cellular and humoral specific immunity.
10. 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.

O: Methods of Instruction:

This course involves four hours per week of classroom instruction and two hours per week of laboratory activity. Classroom work will consist of lectures, tutorials, and work in small groups.

P: Textbooks and Materials to be Purchased by Students:

Tortora, G.J. and Derrickson, B. *Principles of Anatomy and Physiology* (Current Edition). New York: John Wiley and Sons, Inc.

Douglas College produced manual: **Biology 1103/1109: Human Anatomy and Physiology I.**

Q: Means of Assessment:

TYPE OF EVALUATION	POINTS
Class Tests and Assignments	20 – 30 %
Laboratory Experiments and Activities (see Note 1 below)	(up to –20 %)
Laboratory Examination - final	10 – 15 %
Comprehensive Examinations - midterm	25 – 35 %
- final	25 – 35 %
TOTAL	100

Notes:**1. Laboratory Experiments and Activities:**

Laboratory work will be assigned each week. The laboratory work must be completed in the week it is assigned. If more than one lab assignment is not completed, two percentage points will be deducted for each lab assignment (in excess of the one permitted without penalty). **Laboratory experiments and assignments are a compulsory component of this course. A minimum of 50% of the laboratory experiments and assignments must be completed to receive a P or better grade in the course.**

2. Examinations:

There will be one midterm and one final examination. 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 1103 course content.

 Course Designer(s): Shamsa Jessa

 Education Council / Curriculum Committee
 Representative

 Dean / Director: Keith Ellis

 Acting Registrar: Brenda Walton