

ESSEX COUNTY COLLEGE
Biology, Chemistry Physics Division
BIO 121- Anatomy and Physiology I
Course Outline

Course Number & Name: BIO 121- Anatomy and Physiology I

Credit Hours: 4.0 **Contact Hours:** 6.0 **Lecture:** 3.0 **Lab:** 3.0 **Other:** N/A

Prerequisites: Grades of "C" or better in MTH 092, ENG 096, RDG 096, or ESL 105/106.

Co-requisites: ENG 101

Concurrent Courses: None

Course Outline Revision Date: Spring 2021

Course Description: This course on human anatomy and physiology covers integration and regulation of physiological processes with emphasis on the structural and functional interrelationships. Lecture topics include: anatomical terms, chemical and physical constituents of living material; cell structure and function; tissues, their arrangements and their contributions to systemic function; development and functions of the skeletal system; muscle anatomy and physiology; and the nervous system. The laboratory work serves to enhance the lectures through detailed discussions, hands-on examination of specimens, and problem solving.

Course Goals: Upon successful completion of this course, students should be able to do the following:

1. Explain some of the fundamental concepts and theories that are the basis of the fields of biochemistry, cell biology, and histology;
2. Apply the scientific method using the light microscope in practice and in theory;
3. Explain the concept of complementarity of structure and function. Use this concept to identify the basic structures and functions of the integumentary, skeletal, muscular, and nervous systems;
4. Explain the concept of homeostasis. Describe how homeostasis can be used to illustrate wellness and illness in the integumentary, skeletal, muscular, and nervous systems.

Measurable Course Performance Objectives (MPOs): Upon successful completion of this course, students should specifically be able to do the following:

1. Explain some of the fundamental concepts and theories that are the basis of the fields of biochemistry, cell biology, and histology;
 - 1.1 *Explain the concepts of atoms and molecules;*
 - 1.2 *Describe how atoms form bonds during chemical reactions;*
 - 1.3 *Differentiate between organic and inorganic compounds;*
 - 1.4 *Describe the structure and function of the cell membrane;*
 - 1.5 *Identify the major intracellular components and their functions; and*
 - 1.6 *Name the four different types of tissues and describe the characteristics of each one*
2. Apply the scientific method using the light microscope in practice and in theory:
 - 2.1 *Use the light microscope to make microscopic measurements;*

- 2.2 explain the terms resolution and magnification;*
- 2.3 calculate the linear magnification of biological drawings;*
- 2.4 describe and interpret drawings and photographs of the generalized cell and the basic tissues; and*
- 2.5 interpret data in simple tables and graphs pertaining to human anatomy and physiology*

3. Explain the concept of complementarity of structure and function. Use this concept to identify the basic structures and functions of the integumentary, skeletal, muscular, and nervous systems:
 - 3.1 Explain the structures/functions of the integumentary system;*
 - 3.2 Explain the structures/functions of the skeletal system;*
 - 3.3 Explain the structures/functions of the muscular system; and*
 - 3.4 Explain the structures/functions of the nervous system.*

4. Explain the concept of homeostasis. Describe how homeostasis can be used to illustrate wellness and illness in the integumentary, skeletal, muscular, and nervous systems:
 - 4.1 Define negative and positive feedback mechanisms;*
 - 4.2 Describe how wellness/illness is a function of homeostasis in the integumentary system*
 - 4.3 Describe how wellness/illness is a function of homeostasis in the skeletal system*
 - 4.4 Describe how wellness/illness is a function of homeostasis in the muscular system; and*
 - 4.5 Describe how wellness/illness is a function of homeostasis in the nervous system*

Methods of Instruction: Instruction will consist of lectures, laboratory experiments, general class discussion, and individual study.

Outcomes Assessment: Written tests and laboratory practical exam questions are blueprinted to course objectives. A histology slide identification activity is scored with a checklist rubric. Data is collected and analyzed to determine the level of student performance on these assessment instruments in regards to meeting course objectives. The results of this data analysis are used to guide necessary pedagogical and/or curricular revisions.

Course Requirements: All students are required to:

1. Attend the entire class all of the time. Attendance is mandatory.
2. Complete assigned reading and homework in a timely manner and contribute to class discussions, which will greatly enhance your chance of success in this course. Science cannot be understood without doing a significant amount of outside study.
3. Take tests/exams in class and adhere to the test/exam schedule

Grading: 7 Class Tests(4 Lecture and 3 Laboratory)

Total= 100%

Grades will be scaled and scored as letters as follows:

- A = (90-100)%**
- B+ = (87-89)%**
- B = (80-86)%**
- C+ = (77-79)%**
- C = (70-76)%**
- D = (60-69)%**
- F = (00-59)%**

Please note the following items that pertain to grading in this course:

- Completing assigned reading and homework in a timely manner and contributing to class discussions will greatly enhance your chance of success in this course. Biology cannot be understood without doing a significant amount of outside study.
- There are NO MAKE-UP TESTS or EXAMS. If you complete all SEVEN exams, you will be able to drop the lowest exam; however, you will not be able to drop exam 7.
- In determining final course grades, consideration will be given to class attendance, punctuality, assignment completion, and participation. Excessive absences or lateness usually negatively affects student understanding of the material, and therefore, performance in this course.

Academic Integrity: Dishonesty disrupts the search for truth that is inherent in the learning process and so devalues the purpose and the mission of the College. Academic dishonesty includes, but is not limited to, the following:

- plagiarism – the failure to acknowledge another writer’s words or ideas or to give proper credit to sources of information; could result in a
- cheating – knowingly obtaining or giving unauthorized information on any test/exam or any other academic assignment;
- interference – any interruption of the academic process that prevents others from the proper engagement in learning or teaching; and
- fraud – any act or instance of willful deceit or trickery.

Violations of academic integrity will be dealt with by imposing appropriate sanctions. Sanctions for acts of academic dishonesty could include the resubmission of an assignment, failure of the test/exam, failure in the course, probation, suspension from the College, and even expulsion from the College.

Student Code of Conduct: All students are expected to conduct themselves as responsible and considerate adults who respect the rights of others. Disruptive behavior will not be tolerated. All students are also expected to attend and be on time all class meetings. No cell phones or similar electronic devices are permitted in class. Please refer to the Essex County College student handbook, *Lifeline*, for more specific information about the College’s Code of Conduct and attendance requirements.

Course Content Outline: Anatomy & Physiology “The Unity of Form and Function”, 7th edition, by Saladin; published by McGraw Hill, 2014 (ISBN 978-0-07-340371-7), or eText available on publisher website <http://connect.mheducation.com>; and **ECC Laboratory manual (found bundled with hardcopy textbook in ECC Bookstore, or can be purchased as an eBook via the publishers website; AND access to **Connect** (class webpage).**

Below is a TENTATIVE weekly schedule. This schedule is subject to change at any time. Please be aware of any changes that are announced in class by either contacting a classmate or else by contacting your professor by e-mail.

Laboratory Rules and Regulations:

To maintain your safety, all students are to comply with the standard laboratory operating procedures at all times when you are inside of a designated laboratory space. There can be NO (without exception) eating or drinking, wearing of open-toed shoes, handling of cell phones, or placing any of your belongings (i.e coats), on the laboratory tabletop surface. You will be required to sign a form indicating that you will cooperate and understand these outlined Laboratory Standard Operating Procedures. **If you fail to return your SOP, you will not be allowed to participate in laboratory exercises.**

Week	Class Topic/Text Chapter	Laboratory Reference
1.	The Human Body: An Orientation;	Anatomical Terminology; Body Cavities & Membranes; Homeostasis;
2.	The Chemistry of Life;	Organ Systems – Rat Dissection;
3.	The Chemistry of Life (continued)	Microscopy; Basic Cell Structure
4.	Cellular Form and Function;	Mitosis; Osmosis & Cell Membrane Integrity
5.	Genetics and Cellular Function;	Lab Exam 1 Histology – Epithelium & Muscle
6.	Class Test 1 – Chs 2, 3 & 4 Histology; The Integumentary System;	Histology – Connective & Nervous Tissue & Integument Histology;
7.	Class Test 2 Skeletal System – Axial Skeleton	Bone and Skeletal Tissue; handout
8.	The Skeletal System; Joints; Muscles & Muscle Tissue; Lecture Exam #2	Appendicular handout
9.	The Muscular System; Fundamentals of the Nervous System & Nervous Tissue;	Lab Exam 2 – Skeletal System Practicum, handout on Articulations; Body Movements, Head, Neck, Trunk & Shoulder Muscles; Arm Muscles Handout

- | | |
|--|---|
| 10. Class Test 3 – Chs 7 & 11; Nervous System (continued); | Abdominal, Pelvic, & Intercostal Muscles – Leg Muscles – handout, |
| 11. The Central Nervous System; The Spinal Cord and Spinal Nerves and Somatic Reflexes | Lab Exam #3 – Articulations; Body Movements & Muscles |
| 12. The Central Nervous System (continued)
The Brain and Cranial Nerves
Class Exam 4 | Brain Anatomy – External –Internal – |
| 13. The Autonomic Nervous System & Spinal Cord & Reflexes | |
| 14. Neural Integration & Spinal
The Autonomic Nervous System (continued) | |
| 15. Review and Final Exams | |