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: 1) MTH 092, ENG 096, and RDG 096, or 2) MTH 092, and ESL 105/106 (passing grade of “C” or better for each or placement). High school biology or BIO 100 is strongly recommended.

Co-requisites: None  Concurrent Courses: None

Course Outline Revision Date: Fall 2010

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: 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.

General Education Goals: The aggregate of the core courses required for any major at ECC have the following goals:

1. Written and Oral Communication: Students will communicate effectively in both speech and writing.

2. Quantitative Knowledge and Skills: Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

3. Scientific Knowledge and Reasoning: Students will use the scientific method of inquiry through the acquisition of scientific knowledge.

4. Technological Competency/Information Literacy: Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

5. Society and Human Behavior: Students will use social science theories and concepts to analyze human behavior and social and political institutions and to act as responsible citizens.
General Education Goals (continued):

6. **Humanistic Perspective:** Students will analyze works in the field of art, music, or theater; literature; and philosophy and/or religious studies; and will gain competence in the use of a foreign language.

7. **Historical Perspective:** Students will understand historical events and movements in World, Western, non-Western, or American societies and assess their subsequent significance.

8. **Global and Cultural Awareness of Diversity:** Students will understand the importance of global perspective and culturally diverse peoples.

9. **Ethics:** Students will understand ethical issues and situations.

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; (GEG 3)

2. 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; (GEG 3) and

3. explain the concept of homeostasis. Describe how homeostasis can be used to illustrate wellness and illness in the integumentary, skeletal, muscular, and nervous systems. (GEG 3)

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. 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:

   2.1 explain the structures/functions of the integumentary system;
   2.2 explain the structures/functions of the skeletal system;
   2.3 explain the structures/functions of the muscular system; and
   2.4 explain the structures/functions of the nervous system.
Measurable Course Performance Objectives (MPOs) (continued):

3. Explain the concept of homeostasis. Describe how homeostasis can be used to illustrate wellness and illness in the integumentary, skeletal, muscular, and nervous systems:

   3.1 define negative and positive feedback mechanisms;
   3.2 describe how wellness/illness is a function of homeostasis in the integumentary system;
   3.3 describe how wellness/illness is a function of homeostasis in the skeletal system;
   3.4 describe how wellness/illness is a function of homeostasis in the muscular system; and
   3.5 describe how wellness/illness is a function of homeostasis in the nervous system.

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

Outcomes Assessment: Test 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 class regularly. Excessive absences or late arrivals negatively affect student understanding of the material and, therefore, performance in the course.

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 exams when scheduled. Policies regarding make-up exams are established by individual instructors.

Methods of Evaluation: Final course grades will be computed as follows:

<table>
<thead>
<tr>
<th>Grading Components</th>
<th>% of final course grade</th>
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<tbody>
<tr>
<td>8 Tests (dates specified by the instructor)</td>
<td>100%</td>
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</tbody>
</table>

Tests will show evidence of the extent to which students meet course objectives.
**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;
- 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.

<table>
<thead>
<tr>
<th>Week</th>
<th>Class Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Terminology; Homeostasis</td>
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<tr>
<td>2</td>
<td>Inorganic Chemistry</td>
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<tr>
<td>3</td>
<td><strong>Test 1</strong>; Organic Chemistry</td>
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<tr>
<td>4</td>
<td>Cell Biology</td>
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<tr>
<td>5</td>
<td>Cell Biology/Histology; <strong>Test 2</strong></td>
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<td>6</td>
<td>Histology/Integumentary System</td>
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<tr>
<td>7</td>
<td><strong>Test 3</strong>; Skeletal System</td>
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<tr>
<td>8</td>
<td><strong>Test 4</strong>; Skeletal System</td>
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<tr>
<td>9</td>
<td>Skeletal System; Articulations</td>
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<tr>
<td>10</td>
<td>Muscular System</td>
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<td>11</td>
<td><strong>Test 5</strong>; Muscular System</td>
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<tr>
<td>12</td>
<td>Nervous System – Physiology; <strong>Test 6</strong></td>
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<tr>
<td>13</td>
<td>Nervous System - CNS</td>
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<tr>
<td>14</td>
<td><strong>Test 7</strong>; Nervous System – CNS and PNS</td>
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<tr>
<td>15</td>
<td>Nervous System – PNS, <strong>Test 8</strong></td>
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