Course Title: Anatomy and Physiology II (BIO-209)

Course Description: This course continues the study of human anatomy and physiology. Among the topics considered are the digestive system, metabolism, urinary system, fluid and electrolyte balance, the nervous system, the endocrine system and the reproductive system. Lectures are supplemented by writing assignments, discussion and laboratory sessions that include dissection and elementary physiology experiments.

Prerequisites: Anatomy and Physiology I (BIO 109) minimum grade C

General Education: Yes

Course Credits: 4.0

Hours per week: 6.0: 3 hours lecture and 3 hours lab

Course Coordinator: Thomas Betsy


There are two versions of the textbook available: binder or hardcover. You may select either one.


Required Laboratory Manual: ISBN# 9781133365471
Laboratory Exercises in Anatomy & Physiology with Cat dissections, (8e) Robert Amitrano and Gerard J. Tortora, Thomas Brooks/Cole, Belmont, CA, 2013*

* DO NOT, UNDER ANY CIRCUMSTANCES, PURCHASE USED LABORATORY MANUALS
STUDENT LEARNING OBJECTIVES

The student will be able to:

1. Identify the structures and explain the functioning of the Digestive System. Students will be evaluated by lecture, laboratory exams, laboratory practical exams and lab reports.

2. Describe the metabolic pathways of carbohydrates, lipids and proteins in the body; explain the importance of vitamins and minerals in the diet. Students will be evaluated by lecture, laboratory exams, laboratory practical exams and lab reports.

3. Identify the structures and explain the functioning of the Urinary System. Students will be evaluated by lecture, laboratory exams, laboratory practical exams, and lab reports.

4. Describe the importance of balance of water, electrolytes, and acid and bases in body compartments. Students will be evaluated by lecture, laboratory exams, laboratory practical exams and lab reports.

5. Identify the structures and the functioning of the Nervous System. Students will be evaluated by lecture, laboratory exams, laboratory practical exams and lab reports.

6. Describe the organs and receptors involved in sensations including proprioception, pain, touch, taste, smell, vision, hearing, and equilibrium. Students will be evaluated by lecture, laboratory exams, laboratory practical exams and lab reports.

7. Identify the structures in the Endocrine System and explain the functions of the various hormones secreted by the endocrine tissues. Students will be evaluated by lecture, laboratory exams, laboratory practical exams and lab reports.

8. Identify the structures and the functioning of the Reproductive System. Students will be evaluated by lecture, laboratory exams, laboratory practical exams and lab reports.

9. Students will model critical thinking skills and apply them to both material presented in the lecture and the analysis of data generated in the laboratory. Students will be evaluated by observation in the laboratory and analysis of experimental results.

10. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.

11. Students will use computer systems or the appropriate forms of technology to achieve educational and personal goals.

Student Assessment Tools:

The above student learning objectives will be generally assessed or evaluated by instructors using a variety of assessment instruments including lecture exams, laboratory exams, quizzes, laboratory reports, written reports, presentations, projects, etc. The decisions concerning the type or types and number of instruments that are used in a specific section of the course will be left to the instructor of that section. This information, when given by the instructor should be recorded by the student in the Student Assessment Section of this document.
### Course Content

**Lecture topics:**

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<tr>
<th>UNIT</th>
<th>TOPICS</th>
<th>CHAPTER</th>
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<td>1</td>
<td><strong>Digestive System and Metabolism</strong>&lt;br&gt;Carbohydrates, Lipids, Proteins, and Enzymes, Digestive processes, Organization of GI tract, Digestive organs, Physiology of digestion, Metabolism of nutrients, Minerals and vitamins, Metabolism and body heat</td>
<td>2, 24, 25</td>
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<td>2</td>
<td><strong>Urinary System</strong>&lt;br&gt;Anatomy of urinary organs, Physiology of urine formation, Hemodialysis</td>
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<td>3</td>
<td><strong>Fluids, Electrolytes and Acid-Base Balance</strong>&lt;br&gt;Fluid compartments, Fluid balance, Electrolytes, Movement of body fluids, pH, Acid-base balance, Acid-base imbalances</td>
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<td>4</td>
<td><strong>Nervous Tissue</strong>&lt;br&gt;Divisions of the Nervous system, Histology of neurons and neuroglia, Action potential, Synapses</td>
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<td>5</td>
<td><strong>Spinal Cord and Spinal Nerves</strong>&lt;br&gt;Protection and coverings, External and internal anatomy, Spinal cord physiology, Spinal nerves</td>
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<td>6</td>
<td><strong>Brain and Cranial Nerves</strong>&lt;br&gt;Parts of brain, Functions of brain, Neurotransmitters, Cranial nerves</td>
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<td>7</td>
<td><strong>Autonomic Nervous System</strong>&lt;br&gt;Comparison of Somatic and Autonomic nervous systems, Structure of autonomic nervous system, Functions of autonomic nervous system</td>
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<td>8</td>
<td><strong>Sensory, Motor, and Integrative Systems</strong>&lt;br&gt;Types of sensations, General senses, Sensory and motor pathways, Integrative functions</td>
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<td><strong>Special Senses</strong>&lt;br&gt;Olfactory sensation, Gustatory sensation, Visual sensation, Auditory sensation and equilibrium</td>
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<td>10</td>
<td><strong>Endocrine System</strong>&lt;br&gt;Comparison of endocrine and nervous systems, Overview of hormone effects, Mechanisms of hormonal actions, Control of hormonal secretions, Anatomy and physiology of endocrine glands</td>
<td>18</td>
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<td>11</td>
<td><strong>Reproductive Systems</strong>&lt;br&gt;Male reproductive system, Female reproductive system, Female reproductive cycle</td>
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Laboratory schedule:

Laboratory 1  Review of Microscope & the Histology of the Digestive System, Exercise 1 and 22
Laboratory 2  Digestive System, Dissection of Cat Digestive System*, Exercise 22
Laboratory 3  Digestive System, Laboratory Tests on Different Foods and Enzyme Actions, Exercise 22
Laboratory 4  Urinary System, Dissection of Cat Urinary System* and Dissection of Sheep Kidney, Exercise 23
Laboratory 5  Urinalysis, Exercise 23
Laboratory 6  pH, Buffers, and Acid-Base Balance, Exercise 24
Laboratory 7  Nervous Tissue, Nervous System: Spinal cord and spinal nerves, Reflex experiments, Exercises 12 and 13.
Laboratory 8  Nervous System: Brain and cranial nerves, Tests of Cranial Nerves and Dissection of Sheep Brain, Exercise 13
Laboratory 9  Nervous System: Autonomic NS, Dissection of cat nervous system (expose brain and spinal cord), Exercise 13
Laboratory 10 Sensory Receptors, Sensory and Motor Pathways: Characteristics of Sensations, Classification of receptors, Receptors for general senses, and Tests for general senses, Exercise 14
Laboratory 11 Sensory Receptors, Sensory and Motor Pathways: Sensory pathways, Olfactory sensations, Gustatory sensations, and Visual sensations, Exercise 14
Laboratory 12 Sensory Receptors, Sensory and Motor Pathways: Auditory sensations and equilibrium, Dissection of cat and beef eye, Exercise 14
Laboratory 13 Endocrine System, Reproductive Systems: Organs of male reproductive system, Exercises 15 and 25
Laboratory 14 Reproductive Systems: Organs of female reproductive system, Dissection of cat reproductive system and pig uterus (containing fetus), Exercise 25
Laboratory 15 Development and Genetics, Exercises 26 and 27

*SEPARATE CAT MANUAL IN LABORATORY IS ALSO AVAILABLE

Student Assessment:

A. Unit Examinations ............... _____%
B. Laboratory Tests ..................... _____%
C. Report/Project ...................... _____%
D. Class Participation ................. _____%
E. Term paper/research project ....... _____%
TOTAL .................................. 100%

If you have a medical condition or develop a medical condition during this semester, which prevents you from fulfilling the requirements of this course, you must notify your physician. You and your physician must decide whether or not it is appropriate for you to remain in this course. If the decision is to remain in this course, please obtain a letter from your physician indicating that your continued participation in this course is appropriate and present it to the Department Chair.
Faculty Addenda: As per individual faculty member

**Lecture Attendance:** As per instructor;

**Lab Attendance:** As per instructor;

**Policy Concerning Late Assignments:** As per instructor;

**Policy Concerning Make-Up Testing:** As per instructor;

**Safety Information:** As per instructor and assigned exercise;

College Policies:

**Student Responsibility**
Students will be held responsible for reading all pertinent information in college publications regarding withdrawals, course drops, college deadlines, and tuition refunds. Students are responsible for compliance with the rules and regulations as stated in college publications.

**Absence of Instructor**
Students are expected to wait twenty minutes for a faculty member to come to class. If at the end of twenty minutes, the faculty member does not come, the students should sign an attendance sheet, which indicates the course, date, and time. A student should deliver the attendance sheet to the divisional office (A304) if between 9:00 a.m. and 5:00 p.m. or to the Evening Office (C107) if before 9:00 a.m. or after 5:00 p.m. Students cannot be penalized by faculty for not waiting longer than twenty minutes.

**Academic Dishonesty and Plagiarism**
Bergen Community College is committed to academic integrity – the honest, fair and continuing pursuit of knowledge, free from fraud or deception. Students are responsible for their own work. Faculty and academic support services staff will take appropriate measures to discourage academic dishonesty. Plagiarism is a form of academic dishonesty and may be a violation of U.S. Copyright laws. Plagiarism is defined as the act of taking someone else’s words, opinions, or ideas and claiming them as one’s own.

**Consequences of Violations Academic Integrity**

**A. Instructor’s Sanctions for a Violation**
The faculty member will determine the course of action to be followed. This may include:
- Assigning a failing grade on the assignment;
- Assigning a lower final course grade;
- Failing the student in the course
- Other penalties appropriate to the violation;
In all cases, the instructor shall notify the Vice President of Student Services of the violation and the penalty imposed. The student has the right to appeal the decision of the instructor to the appropriate department head.

**B. Institutional Sanctions for Violations**
When a violation of academic integrity has been reported regarding a student, the Vice President of Student Services may impose disciplinary penalties beyond those imposed by the course instructor, which may include suspension or dismissal from the College. The student shall have the right to a hearing before the Vice President of Student Services or a designated judicial affairs committee. Judicial procedures governing violations of academic integrity are contained in the student handbook.
Class Attendance
All students are expected to attend punctually every scheduled meeting of each course in which they are registered. Attendance and lateness policies and sanctions are to be determined by the instructor for each section of each course. These will be established in writing on the individual course outline. Attendance will be kept by the instructor for administrative and counseling purposes.

Eating and Drinking
Eating or drinking in classrooms, lecture rooms, laboratories, gymnasium, swimming pool, or passageways is forbidden. Covered beverages only are permitted in the library. Eating and drinking are permitted in cafeteria and vending areas only.

Learning Assistance
Henry and Edith Cerullo Learning Assistance Center
The Tutoring Center, English Language Resource Center, Math Walk-In Center and Writing Center are collectively known as the Henry and Edith Cerullo Learning Assistance Center. The Cerullo Learning Assistance Center is located in the Pitkin Education Building, in Room L-125. The telephone number is (201) 447-7489. The Learning Assistance Center, staffed with peer and professional tutors, offers free individual and group tutoring, supplemental instruction, and online tutoring for subjects offered at the College. The Center provides alternative approaches to problem solving and organizational skills. Tutors help clarify classroom lectures and textbooks and help students prepare for exams. These services build student self-confidence and reduce fear of failure. The Center is equipped with the latest technology and software, including tapes, books, review sheets, exercises and software.

Services for Students with Disabilities
Bergen Community College aims to create inclusive learning environments where all students have maximum opportunities for success. Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Office of Specialized Services at 201-612-5269 or via email at ossinfo@bergen.edu for assistance.

Sidney Silverman Library
Main Building, Pitkin Education Center, L-wing, 2nd Floor.
Paramus Library Hours: (201) 447-7131 or visit http://www.bergen.edu/library/calendar/gcal.htm
Paramus Service Desk: (201) 447-7970
Meadowlands Location: 1280 Wall Street, Lyndhurst 2nd Floor
Meadowlands Library Hours: http://www.bergen.edu/library/calendar/gcal.htm
Meadowlands Service Desk: (201) 301-9692
www.bergen.edu/library

Testing Services
The Bergen Community College Office of Testing Services (OTS) is located in Room S-127. OTS serves the college community by identifying, developing, procuring, administering, processing, and/or evaluating examinations, which meet a variety of administrative and instructional needs. To contact the OTS, please call (201) 447-7202. The Office of Testing Services administers makeup tests as a service for students who, for compelling and exceptional reasons, have missed a scheduled classroom examination. Students must receive prior permission from and make arrangements with their course instructors to take these examinations, under specific conditions, in the Office of Testing Services, Room S-127.

WebAdvisor
WebAdvisor is a web interface that allows students to access information contained in Datatel’s Colleague, the administrative database used by Bergen Community College. Students may use WebAdvisor to register for classes, to pay tuition and fees, to view their class schedules, to check grades, to check on progress toward degree requirements, etc. WebAdvisor accounts are available for all students enrolled in credit programs. New students are strongly encouraged to attend an in-person registration or advisement session before using a WebAdvisor account. Eligible students without WebAdvisor user names and passwords may access their WebAdvisor account by going to go.bergen.edu and selecting “I’m new to WebAdvisor.” Then, follow the on-screen directions. Check the WebAdvisor FAQ for answers to common questions, such as how to reset your password. Students must have a valid e-mail address on file with the College to use WebAdvisor.