

Suffolk County Community College
Ammerman Campus
Biology Department
sunysuffolk.edu/Web/Selden/Biology

COURSE OUTLINE

- COURSE TITLE:** Anatomy and Physiology I - (BIO130)
- INSTRUCTOR:** Staff
- SEMESTER:** FALL 2008
- REQUIRED BOOKS:** Anatomy & Physiology: The Unity of Form and Function, 4th Ed., Kenneth S. Saladin, McGraw-Hill Higher Education, Dubuque, IA, 2007.
- Introductory Laboratory Exercises for Human Anatomy and Physiology, Part One, 3rd Ed., Donald S. Kisiel, Whittier Publications, Inc., Island Park, NY 2004
- RELATED READINGS:** Introduction to Chemistry for Biology Students, 8th Ed., George I. Sackheim, Pearson/Benjamin Cummings, San Francisco, CA, 2005
- Basic Chemistry for Biology, 2nd Ed., Carolyn Chapman, WCB/McGraw-Hill, Dubuque, IA, 1999
- Study Guide to Accompany Human Anatomy and Physiology, 7th Ed., Elaine N. Marieb and Katja Hoehn, The Benjamin/Cummings Publishing Company, Inc., Menlo Park, CA 2007.
- The Anatomy Coloring Book, 3rd Ed., Wynn Kapit and Lawrence M. Elson, Harper/Collins Publishers, NY, 2001
- The Physiology Coloring Book, 2nd Ed., Wynn Kapit, Robert I. Macey and Esmail Meisami, Benjamin/Cummings, Menlo Park, CA, 2000
- Coloring Guide to Anatomy & Physiology, Judith A. Stone and Robert J. Stone, Wm. C. Brown Publishers, Dubuque, IA, 1995
- Laboratory Atlas of Anatomy and Physiology, 3rd Ed., Douglas J. Eder, Shari L. Kaminsky and John W. Bertram, WCB/McGraw-Hill, St. Louis, MO, 2005
- A Photographic Atlas for the Anatomy & Physiology Laboratory, 6th Ed., Kent M. Van De Graaff and John L. Crauley, Morton Publishing Co., Englewood, CO, 2007
- A Guide to Anatomy & Physiology Lab, Thomas Rust, Southwest Educational Enterprises, San Antonio, TX, 1986
- Writing Papers in the Biological Sciences, 3rd Ed., Victoria E. McMillan, Bedford Books, Boston, MA, 2001
- REQUIRED MATERIALS:** Gloves (disposable, vinyl/latex)

COURSE OBJECTIVES:

The design of this course will enable students to:

1. use (follow, understand and apply) the scientific method,
 - a. by designing experiments to test formulated hypotheses,
 - b. by solving problems with the correct use of appropriate scientific notation and equipment,
 - c. by quantifying (observing, describing and measuring) various empirical phenomena,
 - d. and by logically reaching valid conclusions based on these data through critical analysis and interpretation.
2. describe how the basic structure of inorganic elements is energetically organized through chemical bonding into organic compounds,
 - a. that constitute the anatomy of the human body,
 - b. and that determine the physiology of its organ systems in the maintenance of homeostasis through negative feedback mechanisms.
3. select, apply and use appropriate mathematical functions correctly in solving various physical, chemical and biological problems.
4. explain the relationship between structure and function at each level of organization of the body commencing with the cell and culminating with the total organism.
5. identify, locate and classify various anatomical structures at the cellular, histological, organal and systemic levels of organization.
6. describe and explain selected physiological processes at the cellular, histological, organal and systemic levels of organization.
7. use and understand correct and appropriate anatomical and directional terminology and descriptions as well as scientific terminology in general.
8. identify and explain how selected pathologic conditions apply to the normal functions of the topic being studied.

Student will have opportunities to demonstrate the acquisition of these objectives on written and practical examinations and through discussion and reports.

COURSE PROCEDURE:

There will be 3 hours of lecture and 3 hours of laboratory per week. A standard lecture format will be generally utilized with the inclusion of audio-visual material (transparencies, films, slides, tapes, etc.), guest lecturers and field trips where appropriate. A familiarity with the library will be required. Additional readings, term papers or projects may be assigned.

COURSE REQUIREMENTS:

I. ATTENDANCE:

- A. **Lecture:** All students are expected to attend every session of each course for which they are registered. Students are responsible for all that transpires in class whether or not they are in attendance. The College defines excessive absence or lateness as more than the equivalent of one week of class meetings during the semester. Excessive absence or lateness may lead to failure in a course or removal from the class roster.
- B. **Laboratory:** Students must attend all laboratory sessions. A student who misses a session must contact the laboratory instructor before the next laboratory meeting to make up missed work. Failure to comply with this policy will result in being dropped from this course.

II. EXAMINATIONS AND GRADING:

- A. **Lecture:** A minimum of 3 class examinations will be given. At the instructor's discretion, additional examinations and quizzes may be administered. The final examination will be a standardized departmental comprehensive examination. (Any "make-up" policy will be announced by your instructor.) The final examination, in combination with the other lecture grades, will constitute approximately 2/3rds of the final course grade.
- B. **Laboratory:** A minimum of 2 laboratory examinations will be given. Completion of these examinations is **mandatory**. Along with these scheduled examinations, your instructor may require quizzes, problems, laboratory reports, homework, etc. These laboratory grades will be combined to total approximately 1/3rd of your final course grade.

COURSE COLLEGIALITY:

In order to allow the pursuit of knowledge to its fullest, without unnecessary distractions and to maintain common courtesy to others, every student

1. should refrain from bringing food and drink to the classroom for the purpose of consuming them during the lecture and/or laboratory as College policy forbids doing so, and
2. should refrain from bringing beepers and cellular phones to the classroom, unless they have been turned OFF. In the event that a beeper or cellular phone interrupts the class proceedings, the student should immediately leave the room.

MATERIALS AVAILABLE AT THE SCCC LIBRARY FOR ANATOMY & PHYSIOLOGY

I. MEDIA RESOURCES CENTER (main floor - south reserve section)

1. A video series in Anatomy & Physiology. (call #VH488)
2. Introduction to the Human Cadaver & Dissection, audio-video by WCB/McGraw-Hill (25 min)
3. Video Tutor for Anatomy & Physiology, Prentice Hall
 - Protein Synthesis (15.5 min)
 - Membrane Transport (14.5 min)
 - Neurophysiology (15 min)
 - Muscle Physiology (12.5 min)
 - The Eye: Vision (10 min)
 - The Ear: Hearing & Equilibrium (9.5 min)
4. Student Video Series for Human Anatomy & Physiology: Volume 1, by Benjamin/Cummings
 1. Human Musculature (23 min)
 2. The Human Nervous System: The Brain and Cranial Nerves (28 min)
 3. The Human Nervous System: The Spinal Cord and Spinal Nerves (29 min)
5. An audio-video series on Cell Respiration (1988). (call #VH898)
 - Volume 1. The Cell and Energy (10 min)
 - Volume 2. Glycolysis 1 (10 min)
 - Volume 3. Glycolysis 2 (10 min)
 - Volume 4. The Krebs Cycle (10 min)
 - Volume 5. Oxidative Phosphorylation (10 min)
6. An audio-video series on Protein Synthesis(1988). (call #VH1611)
 - Volume 1. Protein: The Stuff of Life (10 min)
 - Volume 2. DNA: The Molecule of Heredity (10 min)
 - Volume 3. DNA Replication: The Repeating Formula (10 min)
 - Volume 4. RNA Synthesis: The Genetic Messenger (10 min)
 - Volume 5. Transfer RNA: The Genetic Messenger (10 min)
 - Volume 6. Ribosomal RNA: The Protein Maker (10 min)
7. A programmed approach to Anatomy & Physiology by Robert J. Brady & Company. (circulation)
 - a. Skin
 - b. Nutrition, Metabolism, Fluid & Electrolyte Balance
 - c. Muscular System
 - d. Nervous System
8. A two-part video series on A Journey Through The Cell (20 min each) (call #VH1542)
9. A video on Cell Division (15 min) (call #VH1533)
10. A CD Rom on Eroschenko's Interactive Histology (CDR19)
11. A CD Rom on Anatomical Computer - Human Anatomy Multimedia Study Aid (CDR20)
12. Pronunciation Tapes for Martini Fundamentals of Anatomy and Physiology.
13. ABC News/Prentice Hall Video Library: 23 video segments from 20/20, Nightline, and The Health Show (see listing in lab room)
14. A set of 70 cadaver dissection slides that fully depict key body regions and systems.

II. RESERVE READING SECTION: (main floor)

1. current textbooks available (see listing in lab room)
2. recent ancillary work/handbooks and laboratory/clinical manuals (see listing in lab room)

III. ACADEMIC COMPUTING LABORATORY: (basement)

1. The Dynamic Human CD-ROM, v.2.0, WCB/McGraw-Hill
2. Virtual Biology Laboratory CD-ROM, by John T. Beneski and Jack Waber, WCB/McGraw-Hill
3. The Virtual Physiology Lab, WCB/McGraw-Hill
4. Explorations in Cell Biology & Genetics, by George B. Johnson, WCB/McGraw-Hill
5. InterActive Physiology, A.D.A.M. Benjamin/Cummings
 - Muscular System by Marvin J. Branstrom
 - Nervous System by Susan J. Mitchell

LECTURE OUTLINE

- I. Homeostasis
- II. Biochemical Molecules
 - A. Water
 - B. Electrolytes
 - C. Carbohydrates
 - D. Lipids
 - E. Proteins
 - F. Nucleic Acids
- III. The Cell
 - A. Cellular Membranes
 - B. Cellular Organelles
 - C. Transport Mechanisms
 - 1. Passive Transport
 - 2. Active Transport
 - D. Transmembrane Potential
 - E. Cell Cycle
 - 1. Replication
 - 2. Transcription
 - 3. Translation
 - 4. Mitosis
 - F. Cellular Respiration
 - 1. Glycolysis
 - 2. Citric Acid Cycle
 - 3. Electron Transport System
- IV. Tissues
- V. Integument (Skin)
- VI. The Skeleton
 - A. Bone Structure
 - B. Bone Development
 - C. Articulation
 - D. Lever Systems
- VII. Neuromuscular Membrane Physiology
 - A. Excitatory/Action Potential
 - B. Membrane Conduction
 - C. Synapse/Neuromuscular Junction
- VIII. Skeletal Muscles
 - A. Structure
 - B. Sarcomere Contraction
 - C. Twitch
- IX. Nervous System
 - A. Reflexes
 - B. Brain and Spinal Cord
 - C. Autonomic Nervous System
 - D. Special Senses

**LABORATORY
MEETINGS**

LABORATORY OUTLINE

LABORATORY TOPICS

- 1 **Introduction to the Study of the Human Body**
Exercises #1 - 4
- 2 **Biologically Important Molecules**
Exercises #5 - 10
- 3 **Enzymatic Hydrolysis of Starch**
Exercise #11
- 4 **The Microscope & The Cell**
Exercises #12 - 22
- 5 **Membrane Transport: Osmosis**
Exercises #23 - 25
- 6 **Nuclear Functions**
Exercises #26 - 29
- 7 **MIDTERM LABORATORY EXAMINATION**
- 8 **Cellular Respiration**
Exercises #30 - 31
- 9 **Tissues & The Integument**
Exercises #32 - 34
- 10 **Hard Connective Tissue & The Skeletal System**
Exercises #35 - 43
- 11 **Muscle Tissue & the Muscular System**
Exercises #44 - 51
- 12 **Nervous Tissue & The Nervous System**
Exercises #52 - 58
- 13 **Special Senses**
Exercises #59 - 75
- 14 **FINAL LABORATORY EXAMINATION**

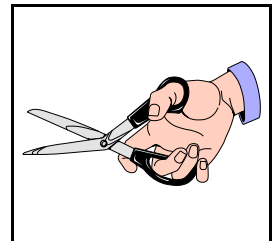
LABORATORY SAFETY PROCEDURES

1. Smoking, eating, drinking, storing food, and applying cosmetics is NOT permitted in the laboratory.
2. Proper footwear is required: **No** bare feet or sandals are permitted in the laboratory.
3. Mechanical pipetting devices are to be used; **NO** mouth pipetting is allowed.
4. All glassware, with the exception of pipettes, are to be **WASHED, DRIED** and **RETURNED** to the glassware cabinet/area after use.
5. All laboratory materials that have come into contact with body fluids are to be cleaned and disinfected; contaminated work surfaces are to be cleaned with a 10% bleach solution at the end of the laboratory session.
6. Disposable gloves must be worn when touching blood or other body fluids and when handling items soiled by blood or other body fluids; disposable gloves (and safety glasses) are recommended for dissection of preserved specimens.
7. **ALL** disposable material (gloves, mouthpieces, swabs, toothpicks, etc.) that come into contact with body fluids are to be placed in a disposable autoclave bag for autoclaving before disposal.
8. **ALL** sharp disposable objects (lancets, capillary tubes, cover slips, etc.) are to be disposed of in a puncture-resistant container marked *Sharps*.
9. Wash hands before leaving the laboratory.
10. Immediately notify the laboratory instructor if any injury occurs, no matter how slight.
11. All materials, including microscope slides, used during the laboratory are to be properly **RETURNED** to the **DESIGNATED AREA** after use.
12. Immediately notify the laboratory instructor about any malfunctioning or broken equipment.
13. Long hair and clothing or jewelry that can become entangled in machinery, catch fire, or disrupt glassware on work surfaces is potentially dangerous and is not appropriate dress for laboratory work.
14. Specific safety instructions pertaining to each laboratory will be posted when appropriate. It is your responsibility to seek these out and read them before beginning work.

To: _____
(your instructor's name)

From: _____
(print your name)

Date: _____



I have read the laboratory safety instructions, have had an opportunity to ask questions about them, and fully understand them.

Your Signature _____

