



Department: Life Sciences (Biology)

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| Anatomy and Physiology I FALL 2015 Biol. 2401-015 CRN 74457 |
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| Course location and times: | Westside High School Tu TBA 7:45AM-10:45AM Th TBA 7:45AM-10:45AM |
| Course semester credit hours: | 4 Semester Credit hours |
| Course contact hours: | 96 total hours; 48 hrs. lecture, 48 . laboratory |
| Course length: | 16 weeks |
| Instruction type: | Web-Enhanced |

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| Instructor: | Dr. Gideon Adjei |
| Phone: | 713-718-5435 |
| Email address: | gideon.adjei@hccs.edu |
| Office location and hours: | By Appointment in the class room. Otherwise communicate with me by email. |

Course Description:

A course of study covering the structure and function of human cells, tissues and organ systems including the integumentary, skeletal, muscular and nervous systems.
A Core Curriculum Course.

Students are encouraged to invest approximately **2-3 hours of study time for each hour of class time to master the material**. This class will have over 96 contact hours (4 hr. credit).

The **class and study time necessary to succeed in this class will be close to 300 hours (20 hours per week)**. Pay careful attention to lab work and models in the lab. You need to know these to do well in your lab exams.

Course Prerequisites:

College Level Reading as determined by SAT, ACT, TASP or successfully passing ENGL0305 with "C" or better. Biology 1406 (General Biology) is strongly recommended.

Course Goals:

This course is intended for students majoring in one of the physical sciences or life sciences, engineering, or for students who are pursuing pre-professional programs in medicine, dentistry, pharmacy, veterinary medicine, or other health programs. The course is also beneficial to students who are preparing themselves for higher-level science courses in their respective curricula.

Course Student Learning Outcomes:

The course is designed to provide information and exercises necessary for students to obtain an understanding of the anatomical and physiological processes of the human body. Topics covered in this course include the molecular, cellular, tissue and organ structures and functions of the integumentary, skeletal, muscular, nervous systems and the special senses.

Program Learning Outcomes:

Program SLO #1

To recognize, identify, and describe the basic structures and functions associated with most life forms.

Program SLO #2

To develop basic laboratory techniques appropriate to the field of Biology.

Program SLO #3

To develop study skills and habits appropriate for pre-professional students interested in health-related fields.

The following Student Learning Outcomes, with their associated assessment criteria, are not all-inclusive, and are meant to be used along with all other course learning outcomes and assessment devices, listed under Course Objectives, in the determination of the student's final course grade. Completion of the specific Student Learning Outcomes listed below, at any assessment grading level, does NOT and will NOT guarantee the student that final course grade at the end of the semester.

Course Student Learning Outcomes:

This course is designed to provide information and exercises necessary for students to obtain an understanding of the anatomical and physiological processes of the human body. Topics covered in this course include the molecular, cellular, tissue and organ structures and functions of the integumentary, skeletal, muscular, nervous systems and the special senses. After completing this course students will be able to:

1. Understand and apply the principals of homeostasis and the importance of feedback loops.
PSLO* #1
2. Evaluate information and make conclusions based on their knowledge of membrane transport.
PSLO#1
3. Apply their knowledge of muscle structure to explain how muscles function.
PSLO#1
4. Apply their knowledge of the structure of the skeletal system to its functions.
PSLO#1.

5. Understand and apply their knowledge of changes in polarity on membrane potential.
PSLO#1
6. Apply and demonstrate their knowledge concerning reflex arcs.
PSLO#s 1 and 2
7. Apply the knowledge gained in lab utilizing anatomical models, physiological experiments, histological slides and the compound light microscope.
PSLO#2
8. Utilize online interactive evaluation tools to gauge their understanding of key anatomical and physiological concepts prior to lecture/examinations/quizzes where applicable.
PSLO#3

Learning Objectives:

After completing this course, students are expected to be able to:

1. Demonstrate understanding and application of feedback loops on homeostasis without the instructor's help.
2. Explain membrane transport and determine the outcome of scenarios concerning membrane transport.
3. Describe muscle structure and use that knowledge to explain muscle function.
4. Apply relate the structure of the skeletal system to its functions.
5. Demonstrate knowledge of interactions involving changes in membrane polarity .
6. Demonstrate all parts, functions, and steps involved in a reflex arc.
7. Demonstrate skills using the body system models and laboratory techniques in the classroom. Consistently able to find and focus specimen on the microscope.
8. Use online tools to prepare for class, always ready for classroom discussions and instructor's Q&A sessions, complete all online quizzes prior to the due date.

Tentative Course Outline:

| Week of | Lecture Schedule | Lab Schedule |
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| Jan 19 | SYLLABUS AND EXPECTATIONS CHAPTER 1 (PP.1-22, 140-142): OVERVIEW OF ANATOMY & PHYSIOLOGY LEVELS OF STRUCTURAL ORGANIZATION MAINTAINING LIFE HOMEOSTASIS AND FEEDBACK SYSTEMS LANGUAGE OF ANATOMY (DIRECTIONAL & REGIONAL TERMS, BODY PLANES/SECTIONS, BODY CAVITIES & MEMBRANES) SEE PP.138-139 [NARRATED SLIDES] | Laboratory Safety Rules Regulations Microscope Anatomic Terminology |
| Jan 26 | CHAPTER 2 (PP.23-60): BASIC CHEMISTRY MATTER & ENERGY ATOMIC STRUCTURE CHEMICAL REACTIONS CHEMICAL BONDS TYPES OF CHEMICAL BONDS IONIC BONDS | Study slides of Tissues |

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| | <p>COVALENT BONDS HYDROGEN BONDS CHARACTERISTICS/TYPES OF INORGANIC COMPOUNDS PH AND BUFFERS CHARACTERISTICS/TYPES OF ORGANIC COMPOUNDS PROTEIN STRUCTURE AND FUNCTION ENZYMES</p> | |
| Feb 2 | <p><i>CHAPTER 3 (PP.61-115):</i> CELL THEORY PLASMA MEMBRANE STRUCTURE CONNECTIONS BETWEEN CELLS MEMBRANE TRANSPORT DIFFUSION OSMOSIS TONICITY ACTIVE TRANSPORT VESICLE TRANSPORT THE CYTOPLASM CELLULAR ORGANELLE TYPES & FUNCTIONS [NARRATED SLIDES] NUCLEUS & ITS FUNCTIONS PROTEIN SYNTHESIS (TRANSCRIPTION AND TRANSLATION) CELL CYCLE CELL DIVISION CELL SIGNALING EXTRACELLULAR MATERIALS</p> | <p>Integumentary system Begin Human skeletal system</p> |
| Feb 9 | <p><i>CHAPTER 4 (PP.116-149):</i> CHARACTERISTICS/FUNCTIONS OF EPITHELIAL TISSUE CHARACTERISTICS/FUNCTIONS OF CONNECTIVE TISSUE (OVERVIEW) CHARACTERISTICS OF MUSCLE TISSUE (OVERVIEW) CHARACTERISTICS OF NERVOUS TISSUE MEMBRANES TISSUE REPAIR EXAMI (CHAPTERS 1-4)</p> | <p>Human Skeletal system</p> |
| Feb 16 | <p><i>CHAPTER 5 (PP.150-172):</i> INTERGUMENTARY SYSTEM THE SKIN EPIDERMIS STRATA DERMIS SKIN COLOR SKIN APPENDAGES SUDORIFEROUS GLANDS SEBACEOUS GLANDS HAIR AND HAIR FOLLICLES NAILS FUNCTIONS OF THE INTEGUMENTARY SYSTEM SKIN CANCER AND BURNS</p> | <p>Human Skeletal system</p> |
| Feb 23 | <p><i>CHAPTER 6 (PP. 173-198):</i> BONE & SKELETAL TISSUE</p> | <p>Human Skeletal system</p> |

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| | <p>SKELETAL CARTILAGE AND GROWTH BONES CLASSIFICATION OF BONES FUNCTIONS OF BONES & THE SKELETAL SYSTEM BONE STRUCTURE TEXTURE (COMPACT AND SPONGY) TYPICAL LONG BONE MICROSCOPIC ANATOMY [NARRATED SLIDES] BONE DEVELOPMENT (INTRAMEMBRANOUS VS. ENDOCHONDRAL) POST-NATAL BONE GROWTH BONE HOMEOSTASIS IMPORTANCE OF CALCIUM & CALCIUM HOMEOSTASIS</p> | |
| Mar 2 | <p><i>CHAPTER 7 (PP. 199-248) [NARRATED SLIDES]</i> *FOCUS ON REVIEW & SLIDES OF AXIAL & APPENDICULAR SKELETON BONE MARKINGS PARANASAL SINUSES FONTANELS VERTEBRAL COLUMN PECTORAL AND PELVIC GIRDLE</p> <p><i>CHAPTER 8 (PP. 249-275):</i> CLASSIFICATIONS OF JOINTS FUNCTIONAL CLASSIFICATIONS OF JOINTS ANATOMY OF A SYNOVIAL JOINT CHARACTERISTICS OF SYNOVIAL FLUID ACCESSORY STRUCTURES OF A SYNOVIAL JOINT MOVEMENTS AT SYNOVIAL JOINTS HOMEOSTATIC IMBALANCES</p> | <p>Articulations Pre-lab exam 1 practice practical</p> |
| Mar 9 | <p>MARCH 9-16 SPRING BREAK CLASSES RESUME AT 8:AM MARCH 16</p> <p>EXAM II (CHAPTERS 5-8, PART OF 16)</p> | <p>Lab Exam #1 <input type="checkbox"/></p> |
| Mar 16 | <p>March 16-22 Spring Break</p> <p><i>CHAPTER 9 (PP. 276-318):</i> TYPES OF MUSCLE TISSUE FUNCTIONS OF MUSCLE TISSUE CONNECTIVE TISSUES OF MUSCLE GROSS ANATOMY AND MICROSCOPIC ANATOMY OF SKELETAL MUSCLE SLIDING FILAMENT MODEL OF CONTRACTION PHYSIOLOGY OF SKELETAL MUSCLE FIBERS ACTIVATION GENERATION OF AN ACTION POTENTIAL EXCITATION-CONTRACTION COUPLING CROSS-BRIDGE CYCLE CONTRACTION OF SKELETAL MUSCLES GENERATING ATP FOR CONTRACTION</p> | <p>Human Muscular system</p> |

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| | <p>CREATINE PHOSPHATE ANAEROBIC PATHWAY AEROBIC RESPIRATION MUSCLE FIBER TYPES GENERATION OF TENSION MOTOR UNITS FORCE OF MUSCLE CONTRACTION-(#, SIZE, FREQUENCY, STRETCH) ISOTONIC VS. ISOMETRIC CONTRACTIONS CARDIAC MUSCLE SMOOTH MUSCLE</p> <p><i>CHAPTER 10 (FOCUS ON PP.319-328,382-385)[NARRATED SLIDES]:</i> MUSCULAR SYSTEM NAMING SKELETAL MUSCLES MUSCLE MECHANICS FASCICLE ARRANGEMENT LEVER SYSTEMS COORDINATION OF MOVEMENT IN MUSCLE GROUP FUNCTIONS OF MAJOR MUSCLE GROUPS AND SELECTED MUSCLES</p> | |
| Mar 23 | <p><i>CHAPTER 11 (PP.386-427):</i> GENERAL ORGANIZATION OF THE NERVOUS SYSTEM HISTOLOGY OF NERVOUS TISSUE NEUROGLIA-CLASSIFICATION AND CHARACTERISTICS NEURONS-CLASSIFICATION AND CHARACTERISTICS NEURONAL COMMUNICATION MEMBRANE POTENTIALS ION CHANNELS GRADED VS. ACTION POTENTIALS IMPULSE PROPAGATION SYNAPSE POSTSYNAPTIC POTENTIALS NEUROTRANSMITTERS AND THEIR RECEPTORS</p> | Human Muscular system |
| Mar 30 | MARCH 30 | Brain and Spinal cord |
| APRIL 1-5 | EASTER HOLIDAYS | Cranial |
| April 6 | <p>EXAM III (CHAPTERS 9-11) <i>CHAPTER 12 (CENTRAL NERVOUS SYSTEM) (PP. 428-482):</i> ORGANIZATION OF THE NERVOUS SYSTEM MAJOR REGIONS OF THE BRAIN CEREBRUM-LOBES, CORTEX, WHITE MATTER, BASAL NUCLEI DIENCEPHALON-THALAMUS, HYPOTHALAMUS, EPITHALAMUS</p> | Nerves □ The Autonomic NS □ Human Reflexes |

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| | <p>BRAIN STEM-MIDBRAIN, PONS, MEDULLA OBLONGATA CEREBELLUM LIMBIC SYSTEM & RETICULAR ACTIVATING SYSTEM PROTECTION OF THE BRAIN MENINGES CEREBROSPINAL FLUID BLOOD BRAIN BARRIER DIAGNOSTIC PROCEDURES FOR ASSESSING CNS DYSFUNCTION THE SPINAL CORD</p> | |
| April 13 | <p><i>CHAPTER 13 (PERIPHERAL NERVOUS SYSTEM) (PP. 483-523):</i> SENSORY RECEPTORS AND SENSATIONS SENSATION TO PERCEPTION PERIPHERAL NERVES CRANIAL NERVES SPINAL NERVES NERVE PLEXUSES PERIPHERAL MOTOR ENDINGS INTENTION TO EFFECT REFLEXES</p> | |
| April 20 | <p><i>CHAPTER 14 (AUTONOMIC NERVOUS SYSTEM)(PP. 524-543):</i> ANS vs. SOMATIC NERVOUS SYSTEM SYMPATHETIC DIVISION - CHARACTERISTICS/FUNCTIONS PARASYMPATHETIC DIVISION – CHARACTERISTICS/FUNCTIONS GANGLIA NEUROTRANSMITTERS CHOLINERGIC vs. ADRENERGIC NEURONS & RECEPTORS VISCERAL SENSORY CHAPTER 16: BRIEF OVERVIEW OF THE ENDOCRINE SYSTEM HORMONES PITUITARY & HYPOTHALAMUS THYROID & PARATHYROID GLANDS PINEAL & ADRENAL GLANDS</p> | Pre-lab final practice practical |
| April 27 | <p><i>CHAPTER 15 (PP.547-593):</i> THE SPECIAL SENSES PHYSIOLOGY OF VISION CHEMICAL SENSES (SMELL AND TASTE) PHYSIOLOGY OF HEARING EQUILIBRIUM</p> <p>EXAM IV (CHAPTERS 12-15, PART OF 16)</p> | Lab Final |
| May 4 | | |
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| May 11 | MAY 13 COMPREHENSIVE DISTRICT FINAL EXAM 8:00 AM-10:00 AM | |

* These chapters are a review of General Biology Information. Students attempting Biology 2401 should already be well versed in this information.

THE INSTRUCTOR RESERVES THE RIGHT TO CHANGE THE CONTENT SCHEDULE BASED ON THE NEEDS WITH ADVANCED NOTICE TO THE CLASS.

Instruction Methods:

The primary focus of the course will be on instructor lectures including illustrations, animations, and group activities and assigned textbook readings. Lecture material will correspond to the topics covered in the required textbook, but your instructor may include more detail on certain topics. **Topics and concepts covered during lecture or included in the assigned reading will be included in exams.**

Laboratory sessions will include exercises from our department online lab manual website or required laboratory manual. **Lecture may be included during lab sessions to clarify or detail concepts.**

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| Student Assignments: | Students are required to read assigned chapters and to complete Chapter Quizzes. Additionally, both announced and unannounced quizzes during lecture or lab may be conducted throughout the semester at the discretion of the instructor. |
| Student Assessments: | Students will be assessed via lecture and laboratory examinations, chapter quizzes, and comprehensive final lecture and lab examinations. |
| Instructional Materials: | Textbook: HCCS PACKAGES - Fundamentals of Anatomy & Physiology: 10 Edition, Martini et al., Benjamin Cummings, New York, NY, 2012. Hardbound - MARTINI ISBN# <u>1256112291</u> "BINDER" BOUND - MARTINI ISBN# <u>1256134317</u> Lab book: Anatomy & Physiology 1-HCC Northwest |
| HCC Policy Statement: ADA | Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the Disability Services Office at the respective college at the beginning of each semester. Instructors are authorized to provide only the accommodations requested by the Disability Support Services Office. If you have any special needs or disabilities that may affect your ability to succeed in college classes or participate in any college programs or activities, please contact the designated campus official who administers ADA programs for assistance. |
| HCC Policy Statement: Academic Honesty | Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Disciplinary proceedings may be initiated by the college system against a student accused of scholastic |

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| | <p>dishonesty. Penalties can include a grade of "0" or "F" on the particular assignment, failure in the course, academic probation, or even dismissal. Scholastic dishonesty includes, but is not limited to, cheating on a test, plagiarism, and collusion.</p> |
| <p>HCC Policy Statement: Student attendance, 3rd time-repeaters, withdrawal deadline</p> | <p>Attendance Students are expected to attend classes regularly. Students are responsible for materials covered during their absences. Students are encouraged to take all exams on designated dates.</p> <p>Instructors check class attendance daily. A student may be dropped from a course for excessive absences after the student has accumulated absences in excess of 12.5% of the hours of instruction (including lecture and laboratory time). Note that 12.5% is approximately 4 classes or labs for a 4-semester hour course.</p> <p>Habitual tardiness will not be tolerated. Students are expected to be in attendance for the entirety of the scheduled class and are responsible for completing assignments scheduled during their absence/s. It is the student's responsibility to amend their professional/personal schedule to meet the provided class schedule.</p> <p>Repeaters Students who repeat a course for a third or more times may soon face significant tuition/fee increases at HCC and other Texas public colleges and universities. Please ask your instructor / counselor about opportunities for tutoring / other assistance prior to considering course withdrawal or if you are not receiving passing grades.</p> <p>Withdrawals It is the student's responsibility to initiate and complete a request for withdrawal from any course. Students will be required to formally request a drop from their campus Program Administrator prior to the administrative drop date deadline (SEE HCCS CALENDAR). Abandoning the course or failing to formally drop, will result in a grade being given based on the work completed for the entire course (including missed exams).</p> <p>The State of Texas has begun to impose penalties on students who drop courses excessively. For example, if you repeat the same course more than twice, you have to pay extra tuition. Beginning in fall 2007, the Texas Legislature passed a law limiting first time entering freshmen to no more than SIX total course withdrawals throughout their educational career in obtaining a certificate and/or degree.</p> <p>Receiving a "W" in a course may affect the status of your student Visa. Once a W is given for the course, it will not be changed to an F because of the visa consideration. Please contact the International Student Office at 713-718-8520 if you have any questions about your visa status and other transfer issues</p> |

Instructor Requirements:

Basic Requirements

Students should be on time for class and be prepared with required materials including textbook and lab manual. Attendance is mandatory, and will be checked during both lecture and lab sessions.

Phones/Electronic Devices

Absolutely no phone or other personal electronic devices are to be used during class (lecture and lab). This includes making or taking a call, reviewing messages, texting, playing games, checking email, surfing the web, anything that involves a phone or other personal electronic device. If your work or family situation requires that you be available via phone, your phone can be on vibrate mode and you can take the call during the regularly scheduled breaks or you can exit the class to receive the call. Notify your friends, family, employers, and anyone else who regularly contacts you that you will be in class and that you should be contacted only when necessary. The taking of calls during class is not only disruptive but it is also discourteous to classmates and the instructor. **STUDENTS ARE NOT PERMITTED TO HANDLE CALLS DURING EXAMS.**

Testing Procedures

Be sure to arrive early for your examinations. There are time limits for exams. You will not be given extended time for testing if you arrive late.

Entering and exiting the lecture room or lab room is not permitted once exams have begun. Please be sure to use bathroom before or after each scheduled exam.

Maintaining a Learning Environment

Maintaining a learning environment is part of the responsibilities of the instructor. Students are expected to conduct themselves as adults. This includes courteous and respectful behavior towards instructor and classmates. Disruptive behavior or any behavior that interferes with any educational activity being performed by the instructor will not be allowed. Additionally, no student may interfere with his/her fellow students' right to pursue their academic goals to the fullest in an atmosphere appropriate to a community of scholars. Disruptive behavior may result in removal from the class.

Lab Policy

Lab safety is stated in lab manual. Lab rules and regulations will be discussed during the first lab and will be adhered to at all times. Each student is responsible for cleaning up after labs. This includes glassware, utensils, specimens/models and other material used during lab exercises.

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| HCC Grading Scale: | A = 90-100% B = 80-89% C = 70-79% D = 60-69% F = less than 60% |
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Instructor Grading Criteria:

Students must adhere to testing schedule. Failure to take a test (lab or lecture) will result in a “0” for the missed exam. Exceptions include death in the immediate family, confinement to a hospital, involvement in an auto accident, and must be properly documented prior to any make-ups. The instructor must be notified within 7 days (via email), with written documentation, so that a make-up allowance can be made. Only one make-up exam per semester is allowed (with proper documentation). MAKE-UP EXAMS NEED NOT BE IN THE SAME FORMAT AS THE ORIGINAL EXAM , and will be taken concurrently with the final exam.

All TESTS/EXAMS MUST BE TAKEN. **Students who stopped attending class:** The Department of Education now requires that we make a distinction between an “earned” grade of “F” (i.e. for poor performance) and a grade of “F” due to a lack of attendance. To make that distinction, we have created a new grade, “FX” for failure due to lack of attendance. Faculty will not be allowed the option of submitting a grade change form changing the grade of FX (or F) to W, if the student stopped attending class. Failure to alert instructor of missed exams and lack of attendance will result in this grade option.

EGLS3---Evaluation for Greater Learning Student Survey System:

At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and division chairs for continual improvement of instruction.

Look for EGSS3 as part of the Houston Community College Student System online near the end of the term.

Examination Format

Lecture exams will include multiple choice questions and essay/short answer questions. Lab exams will include identification, labeling and short answers reviewing anatomical models and specimens.

Grade Calculation

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| Lecture Exam 1. | 100 pts |
| Lecture Exam 2. | 100 pts. |
| Lecture Exam 3. | 100 pts |
| Lecture Exam 4. | 100 pts |
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| Lab Exam 1 and completed labs. | 100 pts |
| Lab Exam 2 and completed labs. | 100 pts |
| Comprehensive Dept. Finals | 100 pts. |
| Final Score | 700 pts |

Scoring Rubric:

| Objective | Learning Method | Resources | Evaluation |
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| 1. Students will be able to understand and apply the principals of homeostasis and the use of feedback loops. <i>PSLO* #1</i> | <ul style="list-style-type: none"> ▪ Reading lab manual ▪ Lecture attendance ▪ Reading course textbook ▪ Interactive digital exercises ▪ Case studies | <ul style="list-style-type: none"> ▪ Textbook ▪ Textbook-related Internet resources ▪ Laboratory manual ▪ Literature searches | <ul style="list-style-type: none"> ▪ Exams- written and oral ▪ Class participation exercises ▪ Quizzes ▪ Open-ended case studies |
| 2. Students will be able to evaluate information and create conclusions based on their knowledge of membrane transport. <i>PSLO#1</i> | <ul style="list-style-type: none"> ▪ Lecture attendance ▪ Reading course textbook ▪ Interactive digital exercises | <ul style="list-style-type: none"> ▪ Textbook ▪ Textbook-related Internet resources ▪ Laboratory manual ▪ Literature searches | <ul style="list-style-type: none"> ▪ Exams- written and oral ▪ Class participation exercises ▪ Quizzes ▪ Open-ended case studies |
| 3. Students will be able to apply their knowledge of muscle function. <i>PSLO#1</i> | <ul style="list-style-type: none"> ▪ Reading lab manual ▪ Lecture attendance ▪ Reading course textbook ▪ Interactive digital exercises | <ul style="list-style-type: none"> ▪ Textbook ▪ Textbook-related Internet resources ▪ Laboratory manual ▪ Literature searches | <ul style="list-style-type: none"> ▪ Exams- written and oral ▪ Class participation exercises ▪ Quizzes ▪ Open-ended case studies ▪ Laboratory practical |

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| <p>4. Students will be able to apply their knowledge of skeletal system and its functions. PSLO#1</p> | <ul style="list-style-type: none"> ▪ Reading lab manual ▪ Lecture attendance ▪ Reading course textbook ▪ Interactive digital exercises | <ul style="list-style-type: none"> ▪ Textbook ▪ Textbook-related Internet resources ▪ Laboratory manual ▪ Literature searches | <ul style="list-style-type: none"> ▪ Exams- written and oral ▪ Class participation exercises ▪ Quizzes ▪ Open-ended case studies ▪ Laboratory practical |
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| Objective | Learning Method | Resources | Evaluation |
|---|--|---|--|
| <p>5. Students will be able to understand and apply their knowledge of changes in polarity on membrane potential. PSLO#1</p> | <ul style="list-style-type: none"> ▪ Lecture attendance ▪ Reading course textbook ▪ Interactive digital exercises | <ul style="list-style-type: none"> ▪ Textbook ▪ Textbook-related Internet resources ▪ Laboratory manual ▪ Literature searches | <ul style="list-style-type: none"> ▪ Exams- written and oral ▪ Class participation exercises ▪ Quizzes ▪ Open-ended case studies |
| <p>6. Students will be able to apply and demonstrate their knowledge concerning reflex arcs PSLO#s 1 and 2</p> | <ul style="list-style-type: none"> ▪ Reading lab manual ▪ Lecture attendance ▪ Reading course textbook ▪ Interactive digital exercises | <ul style="list-style-type: none"> ▪ Textbook ▪ Textbook-related Internet resources ▪ Laboratory manual ▪ Literature searches | <ul style="list-style-type: none"> ▪ Exams- written and oral ▪ Class participation exercises ▪ Quizzes ▪ Open-ended case studies ▪ Laboratory practical |
| <p>7. Students will be able to apply the knowledge gained in lab utilizing anatomical models, physiological experiments, histological slides and the compound light microscope. PSLO#2</p> | <ul style="list-style-type: none"> ▪ Reading lab manual ▪ Lecture attendance ▪ Reading course textbook ▪ Interactive digital exercises ▪ Classroom management | <ul style="list-style-type: none"> ▪ Textbook ▪ Textbook-related Internet resources ▪ Laboratory manual ▪ Literature searches | <ul style="list-style-type: none"> ▪ Exams- written and oral ▪ Class participation exercises ▪ Quizzes ▪ Open-ended case studies ▪ Laboratory practical |

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| | system | | |
| <p>8. Students will utilize online interactive evaluation tools to gauge their understanding of key anatomical and physiological concepts prior to lecture/examinations/quizzes where applicable.</p> <p><i>PSLO#3</i></p> | <ul style="list-style-type: none"> ▪ Interactive digital exercises ▪ Classroom management system ▪ Internet | <ul style="list-style-type: none"> ▪ Textbook-related Internet resources | <ul style="list-style-type: none"> ▪ Pre-class tests ▪ Post-class tests ▪ Quizzes |

*PSLO= Program Student Learning Outcomes