Course Title: SCIT 1407/Science Tech - Human Anatomy and Physiology

Course Description: SCIT 1407 is the first semester of a two-semester sequence in Anatomy and Physiology. The topics covered include Biological Chemistry, Cell Morphology and Membrane Physiology, Tissues, Integumentary System, Musculoskeletal System, and Nervous System.

SCIT 1407 is designed and taught as the prerequisite course for students entering two-year Allied Health programs of study. This course is a technical/occupational course, which means it is specifically designed as a prerequisite for associate degree Allied Health programs such as Nursing, and is not for transfer to a four-year college or university.

This course requires that each student possess a written, spoken and reading knowledge of the American English language at the college level (see Placement Performance Criteria for reading, writing, mathematics skills for Biology courses by number). This policy is established in the interest of individual student success. The Biology department reserves the right to modify any and all parts of the course at any time during the semester to facilitate the learning process.

Course Instructors: Several different instructors teach this course each semester. Each instructor will notify you of their own office hours or access hours, their voice-mail number, and their email address if available. You may leave messages with the Science Division Office: K-Bldg., Room 224, Telephone 972-860-4750. Messages may be left on Voice Mail (check with your instructor for their Voice Mail Box Number) or taken by the Division secretary. Calls will be answered by the instructor in sufficient time, during school hours (8am to 8:00pm, Monday through Thursday, and 8am to 5:00pm on Friday). Appointments may be made by students to see the instructor during office hours as posted at the beginning of each semester. UNDER NO CIRCUMSTANCES WILL IT BE NECESSARY OR APPROPRIATE TO CALL THE INSTRUCTOR AT HOME.

Objectives: Specific learning objectives will be provided by the instructor. See list at end of syllabus.


(suggested) 4. Keys to Laboratory Models/Biology SCIT 1407 & 1408
5. Medical Dictionary

Activities: 1. We will meet for lecture/discussion one time per week to cover the basic concepts of the course. In addition, the objectives for that week will be reviewed. Lecture examinations will be given in the campus Testing Center, located in the S - building.
2. Each student will complete a laboratory unit each week and be tested weekly by laboratory practical exams and laboratory quizzes. Laboratory practical exams, quizzes, and reports are graded by your laboratory instructor and the grades are given to your lecture professor.
3. All examinations and quizzes are written by the department and rewritten each semester.

Grading: The final course grade is determined by the lecture section professor on the basis of points accumulated during the semester. Three types of evaluation instruments are given: lecture examinations, laboratory
examinations, and quizzes. Each lecture examination will be comprised of multiple choice questions and is worth 100 points. A 200 point cumulative final examination will be given during Final Exam Week, in class, not in the testing center. The laboratory examinations and quizzes are also comprised of multiple choice questions. Each lab exam is worth 100 points and each quiz is worth 10 points. A letter grade scale is applied to the point system based upon a percentage of the total possible points to be accumulated during the semester.

\[
\begin{align*}
90 - 100\% & = A \\
80 - 89\% & = B \\
70 - 79\% & = C \\
60 - 69\% & = D
\end{align*}
\]

Four lecture exams @ 100 pts each --------------- 400 pts.
One comprehensive final exam (emphasized on NS) @ 200 pts
One Research paper @ --------------------------------------- 50 pts
Four laboratory exams @ 100 pts each -------------- 400
12 weekly lab quizzes @ 10 pts each ------------------ 120

Note: two quizzes with lowest scores will be eliminated

Total -----------------------------------------------1150 pts.

**Extra Credit:** There are 30 extra points available in this course.

A- Regular attendance to the lectures and labs with no absence 10 points
B - Small quizzes in random order during the lectures 20 points

**Appeals concerning grades.** All appeals shall be initiated with the section instructor. If further appeal is desired, the next level is the Dean of the Science/Mathematics division followed by the Vice President of Instruction.

**Make-up Examinations:** It is up to the discretion of the section instructor to permit a student to make up any type of course work missed during the semester. In most cases, make-up exams will not be given. All situations of this kind are handled and resolved individually between student and instructor.

**Additional Information:**
1. Please bring your textbook to lecture.
2. Please purchase Six (6) long Scantron forms and twelve (12) short Scantron Forms.
3. Please notify the instructor if you have been absent.
4. The instructor reserves the right to drop students for poor performance, attendance, cheating, etc.
5. Please read the Brookhaven Code of Student Conduct in the school catalog.
6. The department reserves the right to change the syllabus at any time.
7. Open Lab Hours: To be posted during the first week of classes.
8. Biology Computer Lab, X-1009: Open hours are posted at beginning of the semester.

**Biology Resource Center:** The BRC is for review of laboratory slides, models and dissections. All open lab sessions are staffed by a qualified person who helps enrolled biology students with their laboratory, lecture and text material. This is a place where you may receive answers to your questions and receive help with difficult reading and homework assignments in addition to traditional lab review. Open hours will be posted on the door.

**Science Computer Lab:** This lab is reserved for science students. They may use specific learning software provided by the course instructors and use the internet to enhance their course success. Specific software and/or web pages may be assigned by the instructor for review or homework problems. Students are encouraged to use the computer lab on a weekly basis. Students may also communicate with their instructor by e-mail from the lab.

**Attendance:** Students are expected to attend, on time, all classes in which they are enrolled. **Attendance will be taken during each class period (lecture and lab) and excessive absences will be treated with an administrative drop from the course.** You have the responsibility to attend class and to consult with the instructor when an absence occurs. Students who miss three lecture sessions or two laboratory sessions without an adequately documented explanation may be dropped from the course.

**Promptness.** Habitual tardiness to class is an affront to the instructor and your classmates who are in class on time. If there is a reason that you cannot attend class at the scheduled time, (e.g. work, health, family), you will need to rearrange your schedule to eliminate the conflicts or drop the course.

**Holidays.** Students desiring to observe a religious holy day which will result in a class absence, must notify their instructor in writing for each class no later than the 15th calendar day after the first class
day of the semester in which the absence will occur. The student is required to complete any assignments or take any examinations which may have been missed within a reasonable time.

**Lateral transfers.** No lateral transfer will be granted without written documentation of need. Students who wish to complete a lateral transfer to another biology course must consult the instructor in the class in which they are enrolled. There will be no transfers after the second week of classes.

**Withdrawal.** If necessary, it is the responsibility of the student to withdraw from the course. This can be accomplished in the registrar’s office before the withdrawal date. **Thursday, November 13 is the final day to withdraw with a grade of “W”.**

**STOP BEFORE YOU DROP** For students who enrolled in college level courses for the first time in the fall of 2007, Texas Education Code 51.907 limits the number of courses a student may drop. You may drop no more than 6 courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions. Remember that once you have accumulated 6 non-exempt drops, you cannot drop any other courses with a “W”. Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access: https://www1.dcccd.edu/6drop

**Repeating this course:** Effective Fall semester 2005, the Dallas County Community College District (DCCCD) will charge additional tuition to students registering the third or subsequent time for a course. All third and subsequent attempts of the majority of credit and Continuing Education/Workforce Training courses will result in additional tuition to be charged. Developmental Studies and some other courses will not be charged a higher tuition rate. Third attempts include courses taken at any DCCCD college campus since the Fall of 2002 semester.

**Academic Dishonesty:** Academic dishonesty is the unauthorized giving or receiving of assistance on any grade assignment. All students are encouraged to examine the *Brookhaven College Catalog* section on Academic Dishonesty available in the registrar’s office, the Admissions office or in the LRC. Cheating in any form will be grounds for a performance grade of F, removal from the course, a block placed on your transcripts, a record of the incident placed in your permanent file and Academic/Disciplinary suspension. In addition, your professor may seek further penalties. Academic dishonesty is interpreted as theft.

**Intellectual Competencies**

This course reinforces all six of the Core Curriculum Intellectual Competencies defined by the Texas Higher Education Coordinating Board.

1. **READING:** Reading at the college level means the ability to analyze and interpret a variety of printed materials--books, articles and documents. A core curriculum should offer students the opportunity to master both general methods of analyzing printed materials and specific methods for analyzing the subject matter of individual disciplines.

2. **WRITING:** Competency in writing is the ability to produce clear, correct and coherent prose adapted to purpose, occasion, and audience. Although correct grammar, spelling and punctuation are each a sine qua non in any composition, they do not automatically ensure that the composition itself makes sense or that the writer has much of anything to say. Students need to be familiar with the writing process including how to discover a topic and how to develop and organize it, how to phrase it effectively for their audience. These abilities can be acquired only through practice and reflection.

3. **SPEAKING:** Competence in speaking is the ability to communicate orally in clear, coherent and persuasive language appropriate to purpose, occasion and audience. Developing this competency includes acquiring poise and developing control of the language through experience in making presentations to small groups, to large groups and through the media.

4. **LISTENING:** Listening at the college level means the ability to analyze and interpret various forms of spoken communication.

5. **CRITICAL THINKING:** Critical thinking embraces methods of applying both qualitative and quantitative skills analytically and creatively to subject matter in order to evaluate arguments and to construct alternative strategies. Problem solving is one of the applications of critical thinking, used to address an identified task.

6. **COMPUTER LITERACY:** Computer Literacy at the college level means the ability to use computer-based technology in communicating, solving problems and acquiring information. Core-educated students should have an understanding of the limits, problems and possibilities associated with the use of technology and
should have the tools necessary to evaluate and learn new technologies as they become available.
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<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Lecture Topic/Chapter</th>
<th>Laboratory Topic/Number</th>
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<tbody>
<tr>
<td>1</td>
<td>Jan 21</td>
<td>Body/1 &amp; Chemistry/2</td>
<td>Safety, Microscope/3, Cell/4</td>
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<td>2</td>
<td>Jan 28</td>
<td>Labor Day &amp; Cells/3</td>
<td>Tissue/6, Skin/7</td>
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<td>3</td>
<td>Feb 4</td>
<td><strong>Lecture Exam 1</strong></td>
<td>Tissue/6, Skin/7</td>
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<td>Integument/5</td>
<td>Lab Practical Exam 1</td>
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<td>4</td>
<td>Feb 11</td>
<td>Integument/5</td>
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<td>5</td>
<td>Feb 18</td>
<td>Bone/6</td>
<td>Bone/9</td>
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<td>6</td>
<td>Feb 25</td>
<td>Skeleton/7 &amp; Joints/8</td>
<td>Axial Skeleton/10</td>
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<td>7</td>
<td>March 3</td>
<td><strong>Lecture Exam 2</strong></td>
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<td>Muscles/9</td>
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<td></td>
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<td>Tissue/6</td>
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<td>Skin/7</td>
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<td>8</td>
<td>March 10</td>
<td>Muscular System/10</td>
<td>Lab Practical Exam 2</td>
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<td>10</td>
<td>March 24</td>
<td><strong>Lecture Exam 3</strong></td>
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<td>Nervous/11</td>
<td>Muscle Histology/14</td>
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<td>11</td>
<td>March 31</td>
<td>Central Nervous/12</td>
<td>Face, Torso (muscle)</td>
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<td>12</td>
<td>April 7</td>
<td>Central Nervous/12</td>
<td>Arm, Leg/15 (muscle)</td>
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<td>13</td>
<td>April 14</td>
<td><strong>Lecture Exam 4</strong></td>
<td>Lab Practical Exam 3</td>
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<td>Peripheral/13</td>
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<td>14</td>
<td>April 21</td>
<td>Autonomic/14</td>
<td>Brain, Spinal Cord, Peripheral Nerves/ 17,18,19, 21</td>
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<td>15</td>
<td>April 28</td>
<td>Special Senses/15</td>
<td>Special Senses/ 24,25</td>
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<td>16</td>
<td>May 5</td>
<td>Special Senses/15</td>
<td>Lab Practical Exam 4</td>
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<td>17</td>
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<td><strong>Exam 5 - Final Exam in class</strong></td>
<td>No Labs</td>
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Note: March 12-17 is Spring Break. Saturday class will resume on March 24.
Note: On April 6 and 7 campus is closed. Class has to attend to other labs.

**These exams are taken in the Testing Center. Any irregularity in the Testing Center will result in a zero on that exam. Know the rules for testing.**

*Lecture Exams will not be given late under any circumstance.*

Lecture Exam 1: Body, Chemistry, and Cells in Testing Center – Ch 1-3
Lecture Exam 2: Tissues, Skin, Bone, and Joints Testing Center – Ch 4 - 8
Lecture Exam 3: Skeletal muscles in Testing Center – Ch 9, 10
Lecture Exam 4: Neuropysiology and Central Nervous System – Ch 11, 12
Lecture Exam 5: Comprehensive, All Chapters, 1 - 15

Note: Deadlines for exams, quizzes, and extras activities are final. Any past due will result in half credit.
Human Anatomy and Physiology Course Objectives

You should be able to:

1. Describe the body planes and cavities.
2. List and define the function of the organ systems as presented in Chapter 1.
3. Describe the structure of the atom.
4. Learn the chemical symbols for the elements found in the body.
5. Describe the forces which hold the atom together.
6. Define chemical bonding.
7. Compare the three types of chemical bonds: covalent, ionic and hydrogen.
8. Describe the solvent characteristics of water.
9. Describe the derivation of the pH scale.
10. Write the chemical equations for acid and base formation in water.
11. What is the function of a buffer in living systems and how do they work?
13. Describe the characteristics of carbon which make it suited for its role as the basic element in biomolecules.
14. Recognize the basic functional groups: methyl, ethyl, hydroxyl, carbonyl, carboxyl, aldehyde, ketone, phosphate, amino.
15. Define: monomer, polymer, dehydration synthesis, hydrolysis, catalyst, enzyme, macromolecular building blocks, carbohydrate, monosaccharide, glucose, fat, steroid, fatty acid, glycerol triglyceride, nucleic acid, nucleotide, ribose, deoxyribose, phosphate, nitrogenous base, adenine, thymine, uracil, guanine, cytosine, glycoside linkage, peptide linkage, conformation, helix, pleated sheet, globular protein, fibrous protein, saturated fatty acid, primary structure, secondary structure, tertiary structure, quaternary structure.
16. Describe some of the functions of the different biomolecules.
17. What are the functions of enzymes and how do they work in the cell.
18. Describe the major characteristics of the four tissue types.
19. List the human cell organelles and their functions.
20. Describe the structural characteristics of the cellular membrane and how these characteristics explain the function of the membrane.
21. Describe the stages of the cellular division process known as mitosis.
22. Outline the process of protein synthesis beginning with transcription and ending with peptide elongation.
23. List the names of all the tissue subtypes and gives examples of locations in the body.
24. List the histological layers of the skin and give their characteristics and functions.
25. Describe the structure and function of hair.
26. Describe the structure and function of nails.
27. Describe the function of skin.
28. Compare the architectural differences between spongy bone and compact bone.
29. Describe the methods of bone formation in the body: intramembranous and endochondral.
30. Discuss the roles of Vitamin D, calcitonin, parathyroid hormone, and calcium metabolism on bone development and maintenance.
31. Describe and diagram the microscopic anatomy of skeletal muscle including the subcellular basis of visible cross striation.
32. Describe the cellular events during muscle contraction: a sequential list of events beginning with excitation, through contraction and ending with relaxation.
33. Describe the mechanism of action of acetylcholine at the neuromuscular junction as well as the mechanism of destruction of acetylcholine by cholinesterase.
34. Discuss the energy sources utilized by cells for contraction.
35. List and give examples of the types of joints found in the body.
36. Describe the actions and list the muscles producing these movements at the following joints: shoulder, elbow, wrist, hip, knee, ankle.
37. Describe the major divisions and major functions of the nervous system.
38. Describe the events involved in neuron excitation and impulse transmission: resting potential, depolarization, repolarization, action potential, conduction.
39. Draw and describe the major ascending and descending tracts of the spinal cord and their functions.
40. Describe the reflex arc associated with spinal cord reflexes.
41. Distinguish between excitatory and inhibitory transmitters.
42. Explain the difference between the white and gray matter.
43. Draw midsagittal and coronal sections through the brain and label.
44. Locate and give the functions of the following: thalamus, hypothalamus, corpus callosum, internal capsule, basal ganglia.
45. Locate these functional areas of the brain: motor cortex, sensory cortex, association area of the cortex, limbic system, reticular activating system.
46. Describe the structure and function of the cerebellum.
47. List the name, number and function of the cranial nerves.
48. Describe the structural and functional differences between the sympathetic and parasympathetic branches of the autonomic nervous system.
49. List the type and function of the different sensory receptors.
50. Describe the function of the eyes, ears, taste receptors, and smell receptors (vision, audition, gustation, olfaction).