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| **Human Anatomy & Physiology I BIOL-2401** * **Full Term Spring 2015**
* **Section 068.16311**
* **4-3-3 Credits**
* **01/20/2015 to 05/16/2015**
* **Modified 01/19/2015**
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**Meeting Times**

**Lecture**

     Saturday, 8:00 AM to 10:45 AM, SCI 200

**Lab**

     Saturday, 11:00 AM to 1:30 PM, SCI 209

**Contact Information**

Mrs. Willie Grant

     Email:  wgrant4@alamo.edu

     Phone:  210-486-2870

     Office Hours:  Saturday, 7:30 AM to 8:00 AM, SCI 200

**Materials**

*Fundamentals of Anatomy and Physiology*, 10th edition by Martini, Nath and Bartholomew. Package includes Lab Notes for Biology 2401.

You will also need to purchase access to *Mastering A&P*, which is Pearson’s online resource site.

Once you purchase the access code, register with Mastering A&P. The Course ID for this semester is: **grant51586.**

**Description**

Recommendation: Students should take CHEM 1405 prior to enrollment in this class. Students study the structure and function of cells, tissues and body systems with emphasis on the integumentary, skeletal, muscular, nervous systems including the special senses. This course fulfills the Life and Physical Sciences foundational component area of the core and addresses the following required objectives: Critical Thinking, Communication, Empirical Quantitative Skills, and Teamwork.

**Prerequisites**

INRW 0420

MATH 0310

**Outcomes**

1 Develop a vocabulary of appropriate terminology to effectively communicate information related to anatomy and physiology.

2 Recognize the anatomical structures and explain the physiological functions of body systems.

3 Recognize and explain the principle of homeostasis and the use of feedback loops to control physiological systems in the human body.

4 Use anatomical knowledge to predict physiological consequences, and use knowledge of function to predict the features of anatomical structures.

5 Recognize and explain the interrelationships within and between anatomical and physiological systems of the human body.

6 Synthesize ideas to make a connection between knowledge of anatomy and physiology and real-world situations, including healthy lifestyle decisions and homeostatic imbalances.

7 Demonstrate laboratory procedures used to examine anatomical structures and evaluate physiological functions of selected organ systems.

8 Interpret graphs of anatomical and physiological data.

9 Demonstrate information literacy skills to access, evaluate, and use resources to stay current in the fields of anatomy and physiology.

10 Approach and examine issues related to anatomy and physiology from an evidence-based perspective.

11 Communicate clearly and in a way that reflects knowledge and understanding of the human body and demonstrates the ability to adapt information to different audiences and applications. (These are all copyrighted HAPS objectives)

**Evaluation**

**Criteria**

The mastery of the subject will be measured by the average of lecture exams, lab exams, and a comprehensive final exam.

The dates for each of the five exams are listed in the lecture schedule.  Each examination will include materials covered in the lecture notes and explained in the classroom.  Examination format may vary and may consist of single best answer, multiple choice, true/false, and matching.  No essay questions will be asked during lecture exams.

Five lecture exams plus a comprehensive final exam will be given during this course.  The four highest grades will be counted.  NOTE that the final exam will not be dropped.

The following percentage will compose the final grade:

      50% = Lecture average

      25% = Lab average

      10% = *Mastering A&P* Assignments

      15% = Final Examination

The final grade will be assigned as follows:

       90-100%             A

       80-89%               B

       70-79%               C

       60-69%               D

       Below 60              F

There are no make up lecture exams.  One lecture exam grade will be dropped.  NOTE that only ONE makeup lab test is allowed.  The lab instructor must approve your makeup lab test.  If prior arrangements are not made, a zero grade will be assigned for the missed exam.

**Deliverables**

**STUDENT LEARNING OUTCOMES:**

1. After the completion of Anatomy and Physiology I Lecture, students will be able to:
	1. get familiarized with all the basic terms used in Anatomy
	2. describe and locate all the body structures and give an overview of their functions
	3. understand homeostasis and explain how the nervous system and endocrine system regulate it.
	4. name all the levels of the body organization from atom to organ systems
	5. Explain the difference between inorganic and organic compounds and how they are related to body structures and functions.
	6. Describe the cell ultrastructure and the function of each of its components
	7. identify all the different types of body tissues and their function
	8. understand the structure of the integumentary system, skeletal muscular system, nervous system, and the endocrine system and discuss their function
	9. think critically about the relationship between the physiology of the different systems discussed and their application in clinical issues
2. After the completion of Anatomy and Physiology I Laboratory, students will be able to:
	1. identify all the organs and find their location in all the body cavities
	2. use the light microscope and identify the structure of various tissues
	3. identify all the mitotic stages by using the light microscope and models
	4. dissect the sheep brain, spinal cord, bull eye, and identify all the structures therein
	5. demonstrate an understanding of the physiology of the organs studied by using clinical case studies.

**COURSE CONTENT: BY CHAPTER**

**COURSE CONTENT:**

Chapter 1 – Introduction

* Define anatomy & physiology
* Explain homeostasis, negative and positive feedback
* Describe the different levels of the body organization from atom to organ systems
* Define basic anatomical terms
* Name all the body planes
* Identify body organs and body cavities

 Chapter 2 –

* Define basic chemistry terms
* Explain chemical bonds
* Define pH and describe scale
* Contrast acidic, alkaline and neutral solutions
* Contrast inorganic and organic compounds
* Classify organic compounds and discuss each category (carbohydrates, ,proteins, lipids, ,and nucleic acid)

 Chapter 3 – Cells: The Basic Units of Life

* List four basic parts of the cell
* Explain the function and the structure of the plasma membrane.
* Compare endocytosis and exocytosis
* Explain the structure and function of the organelles
* Explain the function of the nucleolus
* Describe DNA replication
* Discuss the events associated with each stage of mitosis.

 Chapter 4 – Tissues of the Body

* Give an overview of the major functions of epithelial tissues
* Describe the general classification of epithelial tissues
* List three exceptions to the general classification of epithelial tissues
* Define extracellular metrics
* Discuss the main types of connective tissues including cartilage, and give their functions
* Describe the four types of membranes found within the body

 Chapter 5- Integumentary System

* Enumerate all the skin main function and relate them to its function
* List the main components of the integumentary system (skin and its derivatives
* List and describe the three skin layers
* Identify and describe the all sublayers which make up the epidermis
* List and describe the histological structure of the dermis and the hypodermis
* Describe the histology and functions of all the skin derivatives ( Eccrine sweat glands, Apocrine sweat glands, sebaceous glands, ceruminous glands, hair and nails)

 Chapter 6 – Bones and Osseous Tissue

* Describe mechanical and physiological functions of bone
* Identify the parts of a long bone anatomically
* Describe the bone microscopically
* List the functions of osteogenic cells, osteoblasts, osteocytes, osteoclasts and bone lining cells.
* Describe the composition of spongy (cancellous) bone tissue
* Describe intramembranous and endochondral ossification
* Describe how specific hormones and bones work together to maintain homeostasis
* Describe how bones grow and remodel

 Chapter 7 – Axial Skeleton

* Describe the physiological and structural/mechanical functions of the skeleton
* Distinguish between the axial and appendicular divisions of the skeleton and identify their components
* Define sutures and fontanels and identify them
* Identify the five sections of the vertebral column and describe their location, ,main features and functions
* Identify the bones of the thorax and describe their location, main features and functions.

 Chapter 8 – Appendicular Skeleton

* Identify the bones of the upper extremities and describe their locations, features and functions.
* Identify the bones of the lower extremities and describe their locations, features and functions.

 Chapter 9 – Articulations

* Define articulations and explain the basis for the two principal methods of classifying articulations
* Describe the three types of fibrous joints and give an example of each
* Describe the four basic structural features of a synovial joint and give their functions
* Give the functions of bursae and tendon sheaths
* Differentiate between uniaxial, biaxial, and multiaxial joints
* Describe the structures and movements of the six major types of synovial joints

 Chapter 10 – Muscle Tissue

* Identify the four important physiological properties and three general functions of the muscle tissue
* List the three types of muscle tissue and relate each to its special functions and characteristics
* Describe the cell structures and organization of skeletal muscle
* Define the motor unit, neuromuscular junction and synaptic cleft.  Explain their functions in the nervous control of muscles.
* Explain the all-or-none principle as it relates to muscular contraction
* Explain the difference between fast and slow twitch muscle fibers
* Distinguish between single unit and multi-unit smooth muscle
* Describe the basic structure and function of cardiac muscle tissue

 Chapter 11 – Muscular System

* Explain how muscles are attached to bone and how the attachment sites are related to the skeleton
* Describe the action of the following types of muscles:  flexor, extensor, abductor, adductor, pronator, supinator, rotator, levator, depressor, tensor, and sphincter
* Define the roles of agonist, antagonist, synergist, and fixator.  Explain how they are coordinated in a group of muscles.
* Give examples of muscles named according to their shape, size attachment site, heads of origin, and action

 Chapter 12 – Nervous System

* Give an overview of the function of the nervous system
* Define neurotransmitters and give an example
* Establish the difference between the somatic and visceral nervous system
* Compare sympathetic and parasympathetic nervous systems
* Classify the neuron based upon structure and function
* Explain the all or none principle in nerve conduction

 Chapter 13 – Spinal Cord and Spinal Nerves

* Briefly explain the function of the spinal cord
* Describe the basic external anatomic features of the spinal cord (e.g., length,, shape, termination).
* Identify the number of spinal nerves.
* List the names of the spaces found between for the vertebral canal, meninges and spinal cord.
* Describe the internal anatomy of the spinal cord
* Describe a sensory and motor tract and identify their function
* Explain the distribution of the spinal cord plexuses

 Chapter 14 – The Brain

* List the major components of the brain
* Name the layers of the cerebrum
* Name the meninges of the brain
* Explain the blood-brain barrier
* Name the components of the diencephalon
* List the function of the thalamus, hypothalamus and epithalamus
* Explain the organization of the brainstem and the role of the reticular formation
* Locate the cerebellum in relation to the brain as a whole and define its function
* Name the cranial nerves

 Chapter 15 – Special Senses

* Give an overview of the structure and function of the eye, the ear, and the tongue

 Chapter 16 – Endocrine System

* Describe a typical endocrine gland
* Define hormones
* Classify hormones
* Define a receptor
* List and describe all the major endocrine glands
* Give specific function of each endocrine gland mentioned above

**Schedule**

**ADDITIONAL ITEMS**

**General Description of the Subject Matter of Each Lecture or Lab**

Anatomy and Physiology I is designed to instruct students in the study and functions of the human body.  Topics to be covered include anatomical terms, cell structure and function, different types of tissues, Integumentary, Skeletal, Muscular, Nervous and Endocrine Systems.

**Biology 2401 Tentative Lecture Schedule**

Exam          Material To Be Tested        Tentative Exam Date

1                Chapters 1 and 2              February 14, 2015

2                Chapters 3, 4, 5                February 28, 2015

3                Chapters 6, 7, 8, 9            March 7, 2015

4                Chapters 10, 11                April 4, 2015

5                Chapters 12-16                 May 2, 2015

FINAL          Chapters 1-18                   May 16, 2015

**Biology 2401 Laboratory Schedule**

Exam           Material To Be Tested       Exam Dates

1                 Chapters 1-7                   February 2, 2015

2                 Skeletal System               March 7, 2015

3                 Muscular System              April 11, 2015

4                 Nervous System               April 25, 2015

5                 Special Senses/

                   Endocrine System             May 9, 2015

**Attendance**

For Saturday class, which meets only once a week, any total combination of four absences in lab and or lecture will constitute grounds for being dropped.  Absences are counted regardless of whether  they occur consecutively.

As part of the college's policy on absences, it is required for a student to be present for the first day of class.  For this course, you must attend the first class on **Saturday, January 24, 2015.**   If you do not attend this class, you will be dropped for non-attendance.

The last day to withdraw for this semester is **April 17, 2015.**

**Additional Instructor Requirements**

**Mandatory *Mastering A&P:***It is imperative for students to bear in mind that *Mastering A&P* assignments are mandatory and will make up 10% of the final grade in this course.  Therefore, students will be required to complete their assignments in accordance with the assignments dates posted in the "*Mastering A & P* website calendar.

Please go to <http://www.pearsonmylabandmastering.com/northamerica/> to purchase the access code.  You will need access to *Mastering A&P*in order to complete the mandatory assignments.

          The Course ID for Biol 2401 is:  **grant51586**

**Biology 2401 Website:** This course can be followed at

                                 http://biol2401,weebly.com/

The website contains all of the class information from each week's class.  In the event of an absence, students will still be able to find all of the information from the missed class.

**Cell Phone Policy:**  During lecture or lab exams, students may not have their cell phones available.  Any students found using a cell phone during an exam will get a zero for that particular exam. Students should not take calls or text during lectures or labs.

**Study Tools:**  DVD's for Biol 2401/2402 Labs are available to view in the St. Philip's Library and in the Byrd Sanctuary, SCI 206.  DVD's may be purchased in the Business Office and picked up in the Byrd Sanctuary with the receipt of purchase.

**Please Note:** The Syllabus will be followed as presented save for circumstances which may arise and cause changes to be made.  Any changes which might arise would be announced to students.  Problems arising will be dealt with on an individual basis.

There is no magic bullet for completing this course successfully.  However, if you utilize all of the resources and study diligently, one will have success.  If there are any questions or problems, always ask.

**Institutional Policies**

**STUDENT RESPONSIBILITIES:**

**A. Attendance:**

Effective Spring Term 2010, student absences will be recorded from the first day the class meets. Regular and punctual attendance in all classes and laboratories, day and evening, is required. Students who are absent for any reason should always consult with their instructors. Course syllabi must provide specific information regarding attendance, including, for courses involving the internet, online activity that constitutes “attendance.” Also, both tardiness and early departure from class may be considered forms of absenteeism. In all cases, students will be held responsible for completion of course requirements covered in their absence.

Additionally, it is the student’s responsibility to drop a course for nonattendance. Course instructors establish policy with regard to attendance in their respective syllabi and may drop a student for excessive absences. Absences are considered excessive when more than 12.5 percent of the total contact hours of instruction in a semester, including lecture and lab, are missed. For example, in a three-credit-hour lecture class, students may be dropped after more than six contact hours of absences. In a four-credit-hour lecture/lab class, students may be dropped after more than eight contact hours of absences. Absences are counted regardless of whether they occur consecutively.

In special programs with additional accreditation or certification standards, additional attendance requirements may be enforced but faculty must clearly explain these policies in their syllabi. Students who stop attending class for any reason should contact the instructor and the college registrar to officially withdraw from the class. Students may be required to consult with an advisor or designee before dropping.

Failure to officially withdraw may result in a failing grade for the course. It is the student’s responsibility to withdraw officially from a class by submitting a completed Withdrawal Form to the Admissions and Records Office.

**B. Student Responsibility for Success (Alamo Colleges Policy F.6.2):**

As members of the Alamo Colleges learning community, students, faculty, staff and administrators all share the responsibility to create an atmosphere where knowledge, integrity, truth, and academic honesty are valued and expected. A clear acknowledgment of the mutual obligations of all members of the academic community emphasizes this implicit partnership in fostering the conditions necessary for student success.

In this relationship, the Alamo Colleges provides institutional policies, procedures, and opportunities to facilitate student learning that encourage interaction, involvement and responsible participation. Inherent in the academic climate is the expectation that students will assume responsibility for contributing to their own development and learning. Academic success is directly tied to the effort students put into their studies, the degree to which they interact with faculty and peers, and the extent to which students integrate into the campus life.

**1. Engagement**

1. Create connections and build relationships with faculty, staff and students (visit during office hours, join clubs and organizations, participate in student activities, etc.);
2. Stay informed of policies, procedures, deadlines and events for academic and co-curricular activities;
3. Complete all requirements for admission, registration, and payment by deadlines;
4. Apply for financial assistance, if needed, complying with all federal, state and local regulations and procedures;
5. Meet all federal, state and local health care regulations.

**2. Communication**

1. Seek guidance from faculty, advisors or counselors for questions and concerns in regards to degree plans, major selection, academic status, grades, and issues impacting college success;
2. Develop a peer support system to identify student contacts for questions, group assignments, etc. regarding academic and co-curricular activities;
3. Communicate with College personnel promptly regarding academic or co-curricular concerns and assistance requests;
4. Carefully consider the information provided by College personnel and make decisions using that information;
5. Check the Alamo Colleges’ Web Services regularly for emails, holds, student records, financial aid status and announcements;
6. Submit disability documentation if seeking services and request academic accommodations in advance of each semester.

**3. Academic Success**

1. Complete courses with passing grades and maintain in good academic standing (2.0 GPA) status;
2. Read and follow all syllabi;
3. Purchase textbooks and required supplies in a timely manner;
4. Attend classes regularly and on time, with as few absences, late arrivals, and early exits as possible;
5. Arrive to class with all needed materials and completed assignments for that class period;
6. Be attentive in class and actively participate as appropriate;
7. Devote sufficient time for studying;
8. Ensure integrity in all aspects of academic and career development;
9. Accurately represent one’s own work and that of others used in creating academic assignments. Use information ethically and exercise appropriate caution to avoid plagiarism on all assignments;
10. Notify faculty in advance or as soon as possible about absences and provide documentation as appropriate;
11. Consult faculty members in advance when unable to complete projects, assignments, or take examinations as scheduled.

**4. Self-Responsibility and Responsibility to Others**

1. Maintain accurate and complete degree/certificate major selection and contact information including name, address, phone number and emergency contact;
2. Balance personal obligations and educational pursuits. Work with a counselor / advisor to design a realistic schedule that dedicates adequate effort to be successful in college studies;
3. Know and follow the regulations and guidelines outlined in the Student Code of Conduct and Student Handbook;
4. Maintain respectful and appropriate behavior within and outside the classroom;
5. Ask for help when needed. Use all available resources and facilities provided by the College to enhance the learning experience;
6. Attend scheduled advising sessions, tutorials, and other appointments. Cancel or reschedule only with good reasons as early as possible;
7. Arrive prepared for tutorial sessions, bringing all needed materials (books, syllabi, rough drafts, calculators, assignment sheets, etc.).

**C.  Textbook Availability**

A student of this institution is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

**COLLEGE REQUIREMENTS:**

A comprehensive final evaluation, not to exceed three hours in length, shall be given at the end of each course at the official scheduled final exam time. Any exceptions to this requirement must be approved by the appropriate Dean. Other evaluations are given at the discretion of the instructor.

A student who must be absent from a final evaluation should petition that instructor for permission to postpone the evaluation. A student absent without permission from a final evaluation is graded "0" on the exam.

Incomplete Grades.  The conditional grade of “I” may be issued to a student having a passing average on all completed coursework but for a justified reason, such as illness or death in the family or by providential hindrance, has been prevented from taking the final examination or completing other required coursework. The “I” becomes an “F” in one hundred twenty (120) calendar days from the end of the term unless the student completes the balance of the coursework with a performance grade of “D” or higher. Re-enrollment in the course will not resolve the “I.”  The student and faculty must fill out an Incomplete Contract, clearly defining the work remaining to be finished.

**College Policies**

**Policies for St. Philip's College:**

**A.** All of the Alamo Colleges are tobacco free.

**B.** Alamo Colleges DPS Emergency Phone Numbers:

Emergency Phone (210) 485-0911

General Phone (210) 485-0099

Weather Phone (210) 485-0189 (For information on college closures)

Disability Access Statement – In accordance with the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act, it is the responsibility of the student to self-identify with the campus Disability Support Services office. Only those students with appropriate documentation will receive a letter of accommodation from the Disability Support Services office. Instructors are required to follow only those accommodation and/or services outlined in the letter of accommodation. For further information, please contact the Disability Support Services office at (210) 486-7175 or visit the office located:

**MLK Campus**
Norris Technical Center 100
**SWC**
LIFEspace Center, ITC A-135
**Web**
 [http://www.alamo.edu/spc/disability-resource-center/](http://www.alamo.edu/spc/disability-resource-center/%22%20%5Ct%20%22_blank)

If you have specific needs, please discuss them privately with your instructor.

All times are **America/Chicago**. The time is **2:34 PM**.

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