Angelina College
Science and Mathematics Division
BIOL 2402 Anatomy and Physiology II (BIO 2402.002 TR)

I. BASIC COURSE INFORMATION

A. Course Description (*as stated in the bulletin, including necessary pre-requisite courses, credit hours)*
BIOL 2402--Anatomy and Physiology II. Four hours credit. Anatomy and Physiology II is the second part of a two-course sequence. It is a study of the structure and function of the human body including the following systems: endocrine, cardiovascular, immune, lymphatic, respiratory, digestive (including nutrition), urinary (including fluid and electrolyte balance), and reproductive (including human development and genetics). Emphasis is on interrelationships among systems and regulation of physiological functions involved in maintaining homeostasis. The lab provides a hands-on learning experience for exploration of human system components and basic physiology. Three lecture and two lab hours each week. Prerequisite: TSIA Complete; Grade of C or better in BIOL 2401. Lab fee.

B. Intended Audience
This course is the second semester of the two-semester human anatomy and physiology course sequence, a continuation of BIOL 2401. It is a laboratory-based course designed for those pursuing a degree in health related careers and/or pre-professional course work (i.e. nursing, pre-medical, pre-dental, etc.).

C. Instructor
Instructor's Name: Jason Lankford
Office Location: S120-B
Office Hours: schedule posted on office door (and on Blackboard)
Office Phone: 936-633-5322 (please, do not leave messages)
E-mail Address: jlankford@angelina.edu (preferred method of contact)

II. INTENDED STUDENT OUTCOMES:

A. Core Objectives Required for this Course

1. **Critical Thinking:** To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
2. **Communication:** To include effective development, interpretation and expression of ideas through written, oral and visual communication.
3. **Empirical and Quantitative Skills:** To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.
4. **Teamwork:** To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

B. Course Learning Outcomes for all Sections *(*ACGM Lower Division Academic Course Guide Manual*; http://www.thecb.state.tx.us/reports/pdf/6309.pdf?CFID=20849286&CFTOKEN=77757605)*
Upon successful completion of this course, students will:

1. **Lecture**
   - **a.** Use anatomical terminology to identify and describe locations of major organs of each system covered.
   - **b.** Explain interrelationships among molecular, cellular, tissue, and organ functions in each system.
   - **c.** Describe the interdependency and interactions of the systems.
   - **d.** Explain contributions of organs and systems to the maintenance of homeostasis.
   - **e.** Identify causes and effects of homeostatic imbalances.
   - **f.** Describe modern technology and tools used to study anatomy and physiology.
2. **Lab**
   - **a.** Apply appropriate safety and ethical standards.
   - **b.** Locate and identify anatomical structures.
   - **c.** Appropriately utilize laboratory equipment, such as microscopes, dissection tools, general lab ware, physiology data acquisition systems, and virtual simulations.
   - **d.** Work collaboratively to perform experiments.

e. Demonstrate the steps involved in the scientific method.
f. Communicate results of scientific investigations, analyze data and formulate conclusions.
g. Use critical thinking and scientific problem solving skills to make decisions, recommendations, and projections.

III. ASSESSMENT MEASURES:

A. Assessments for the Core Objectives

THE INSTRUCTOR WILL SUBMIT ALL ASSESSMENTS BY APRIL 24TH.

1. **Critical Thinking:** Students will identify, organize, and recall relevant information and demonstrate an in-depth understanding through completing an assignment/worksheet that is presented to them during a physiology topic. The Angelina College (AC) Critical Thinking Rubric will be used to assess each student's critical thinking skills and correctness.
2. **Communication:** Students will organize, analyze, and convey effective communication through writing a report that communicates information about a disease/disorder related to physiology. The Angelina College (AC) Communication Rubric will be used to assess each student's communication skills and correctness.
3. **Empirical & Quantitative Skills:** Students will demonstrate their abilities to represent, calculate, interpret, and analyze empirical and quantitative data by completing an assignment/worksheet. The Angelina College (AC) Empirical & Quantitative Skills Rubric will be used to assess each student's empirical and quantitative skills and correctness.
4. **Teamwork:** Students will demonstrate their abilities to communicate effectively with team members by evaluating one another after working through activities together. The Angelina College (AC) Teamwork Rubric will be used to assess each student's teamwork skills and correctness.

B. Assessments for Course Learning Outcomes

1. **Lecture**
   - **a.** Students will use anatomical terminology to identify and describe locations of major organs of each system covered by answering written questions during lecture activities, on lecture exams, and by orally answering questions during presentations and class activities.
   - **b.** Students will explain interrelationships among molecular, cellular, tissue, and organ functions in each system by answering questions during lecture activities and on lecture exams.
   - **c.** Students will describe the interdependency and interactions of the systems by answering written questions during lecture activities and on lecture exams.
   - **d.** Students will explain contributions of organs and systems to the maintenance of homeostasis by answering written questions about case studies and on lecture exams.
   - **e.** Students will identify causes and effects of homeostatic imbalances by answering embedded exam questions and by answering written questions about case studies and current advances in medicine.
   - **f.** Students will describe modern technology and tools used to study anatomy and physiology by answering written questions about case studies or writing critical analyses of current medically related journal articles.
2. **Lab**
   - **a.** Students will demonstrate and apply appropriate safety and ethical standards by answering written questions during lab activities and by orally answering questions during lab activities.
   - **b.** Students locate and identify anatomical structures by answering written questions about simulated lab activities, dissections, and by identifying anatomical structures during lab exams.
   - **c.** Students will demonstrate the appropriate utilization of laboratory equipment such as such as microscopes, dissection tools, general lab ware, physiology data acquisition systems, and virtual simulations by answering written questions during lab activities and by orally answering questions during lab activities.
   - **d.** Students will work collaboratively to perform experiments and demonstrate teamwork ability by working together to answer questions during teamwork activities.
   - **e.** Students will demonstrate the steps involved in the scientific method by collecting laboratory data and performing elementary comparisons of that data, as well as, answering embedded lab exam questions.
   - **f.** Students will communicate results of scientific investigations, analyze data and formulate conclusions by orally answering questions and writing answers to questions during lab activities.

g. Students will demonstrate critical thinking and scientific problem solving skills to make decisions, recommendations, and projections by answering written questions about case studies.

IV. INSTRUCTIONAL PROCEDURES: This course will be taught as a hybrid and will require computer and internet access. The course is taught using a combination of lectures and laboratory exercises that complement and supplement lecture material. Audio-visual materials, models, and dissection of specimens will be employed to enhance lecture and laboratory presentations. Some activities will require internet access and will be completed online.

V. COURSE REQUIREMENTS AND POLICIES:

A. Required Textbooks, Materials, and Equipment:

1. Human Anatomy and Physiology by Elaine Marieb (Benjamin/Cummings), **Tenth Edition.**
2. Human Anatomy and Physiology Laboratory Manual by Elaine Marieb (Benjamin/Cummings), **Eleventh Edition.**
3. ***PHYSIOEX 9.1 Computer Simulations,*** CD ROM - Packaged with textbook
4. Access to blackboard (www.angelina.blackboard.com). Obtaining a copy of the course **Lecture Notes** is highly recommended by the instructor for success in the classroom. Course lecture notes are available to print from the BIO 2402 blackboard site. Also print a copy of the **Lab Study Guide** and **Images** which can be found on the blackboard site as well.
5. Students are required to supply their own scantron forms for test taking. *Students will need 7 FORM NO. 884-E scantrons*.

B. Course Policies – (This course conforms to the policies of Angelina College as stated in the Angelina College Handbook.)

1. **Academic Assistance** – If you have a disability (as cited in Section 504 of the Rehabilitation Act of 1973 or Title II of the Americans with Disabilities Act of 1990) that may affect your participation in this class, you should see Sellestine Hunt Associate Dean of Student Services, Student Center, Room 200. At a post-secondary institution, you must self-identify as a person with a disability; Ms. Hunt will assist you with the necessary information to do so. To report any complaints of discrimination related to disability, you should contact Mr. Steve Hudman, Dean of Student Affairs, in Student Center, Room 101, (936) 633-5292 or by email shudman@angelina.edu.
2. **Attendance:** Attendance is required as per Angelina College Policy and will be recorded every day. Any student with three (3) consecutive absences of four (4) cumulative absences may be dropped from the class. Records will be turned in to the academic dean at the end of the semester. Do not assume that non-attendance in class will always result in an instructor drop. **You must officially drop a class or risk receiving an F**. This is official Angelina College Policy.
3. **Additional Policies Established by the Individual Instructor**:
   STUDENT CONDUCT
   A positive environment for learning will be maintained by students being courteous to each other and to the instructor.
   - Arrive in class on time and do not prepare to leave before class is over, unless special arrangements have been made prior to class with the instructor.
   - No eating in class.
   - Cell phones should be on “vibrate only” (silent mode) or turned off.
   - Only one person speaks at a time. Distracting conversations during lecture will not be allowed. Respect all members of the class.
   - Profanity will not be tolerated. Rude or provocative logos on clothing are not allowed in the classroom.
   - Cheating on tests is not tolerated as per Angelina College policy and may result in expulsion from the course. Plagiarism is not tolerated and will result in a zero for any assignment in which it is detected.

VI. COURSE CONTENT:

A. Lecture content and reading assignments

Day	Chapter	Topic	Post-Chapter Quiz Schedule
Online	*Ch. 16*	*Endocrine System overview*.....	**Complete online quiz before 3:30 pm, 02/14**
01/17	Ch. 17	Blood	
01/19	Ch. 17	Blood.....	**Complete online quiz before 3:30 pm, 01/24**
01/24	Ch. 18	Cardiovascular System: The Heart	
01/26	Ch. 18	Cardiovascular System: The Heart	
01/31	Ch. 18	Cardiovascular System: The Heart.....	**Complete online quiz before 3:30 pm, 02/02**
02/02	Ch. 19	Cardiovascular System: Blood Vessels	
02/07	Ch. 19	Cardiovascular System: Blood Vessels	
02/09	Ch. 19	Cardiovascular System: Blood Vessels..	**Complete online quiz before 3:30 pm, 02/14**
02/14	**EXAM I (Chapters 17-19)**		
02/16	Ch. 20	Lymphatic System.....	**Complete online quiz before 3:30 pm, 02/21**
02/21	Ch. 21	Immune System: Body Defenses	
02/23	*No class (TCCTA Conference)*		
02/28	Ch. 21	Immune System: Body Defenses	
03/02	Ch. 21	Immune System: Body Defenses.....	**Complete online quiz before 3:30 pm, 03/07**
03/07	Ch. 22	The Respiratory System	
03/09	Ch. 22	The Respiratory System	
	Spring Break (03/13-03/17)		
03/21	Ch. 22	The Respiratory System.....	**Complete online quiz before 3:30 pm, 03/23**
03/23	**EXAM II (Chapters 20-22)**		
03/28	Ch. 23	Digestive System	
03/30	Ch. 23	Digestive System	
04/04	Ch. 23	Digestive System.....	**Complete online quiz before 3:30 pm, 04/06**
04/06	Ch. 24	Nutrition, Metabolism.....	**Complete online quiz before 3:30 pm, 04/11**
04/11	Ch. 25	Urinary system	
04/13	Ch. 25	Urinary system	
04/18	Ch. 25	Urinary system.....	**Complete online quiz before 3:30 pm, 04/20**
04/20	**EXAM III (Chapters 23-25)**		
04/25	Ch. 26	Fluid, Electrolyte, Acid-Base Balance	
04/27	Ch. 26	Fluid, Electrolyte, Acid-Base Balance.....	**Complete online quiz before 3:30 pm, 05/02**
05/02	**EXAM IV (Chapters 26)**		
05/09	**FINAL EXAM** (Comprehensive) **Tuesday, 3:30 a.m. - 5:30 a.m.** **See the Final Exam Schedule posted on the Angelina College website for the exact time of all final exams.** http://www.angelina.edu/final-exam-schedule/		

B. Lab content and reading assignments. Note: Assignments in **BOLD** are to be completed by the student as homework using a computer.

Week	Chapter/Exercise	Topic	Instructions/Description
01/17-01/19	Ex. 29	Blood	Study composition of blood pp. 427-428 (include Table 29.1); Hematologic Tests: Differential WBC count and results (pp. 431-432); Hematocrit procedure and results (pp. 432-433); Blood typing procedure and results (pp. 436-438)
	Ex. 11	***PHYSIOEX 9.1***	***Computer Simulation:*** **Blood Analysis, Activity 4: Blood Typing (PEx-167–169)**
	Ex. 30	**The Heart**	**Label the anatomy of the human heart using lab packet images, lab book, and terminology list, p. 447-448 (fig. 30.2 a, b, c); p. 449 (fig. 30.3a); p. 450 (fig. 30.4); p. 450 (fig. 30.5); p. 451 (fig. 30.6)**
01/24-01/26	Ex. 30	Sheep Heart	Dissection, pp. 452-454
	Ex. 5	***PHYSIOEX 9.1***	***Computer Simulations:*** **Cardiovascular Dynamics (PEx-75–91)**
	Ex. 6	***PHYSIOEX 9.1***	***Computer Simulations:*** **Cardiovascular Physiology (PEx-93–104)**
	Ex. 32	**Blood Vessels**	**Label structures using lab packet images, lab book, and terminology list: Anatomy of arteries, veins, and capillaries p. 472 (fig. 32.1 b);** ***Schematic of arterial and venous circulation p. 474 (fig. 32.2) and p.481 (fig. 32.8)*****; Major Arteries p. 475 (fig. 32.4), p. 477 (fig. 32.5), p. 478-479 (fig. 32.6), p. 480 (fig. 32.7); Major Veins p. 482 (fig. 32.9), p. 483 (figs. 32.10, 32.11), p. 484 (fig. 32.12), p. 488 (fig. 32.15), p. 484 (fig. 32.14)**
01/31-02/02	Ex. 33	Cardiovascular Physiology	Cardiac cycle pp. 496-497 (fig. 33.1); Heart sounds (pp. 498); Pulse (pp. 499-500); Blood Pressure: using a sphygmomanometer (pp.502-503), observing the effect of exercise (p. 505)
	Ex. 35	**Lymphatic System**	**Lymphatic pathways in body pp. 530 (fig. 35.1); Structure of a lymph node p. 533 (fig. 35.4 a)**
02/07	***LAB EXAM I***		
	Ex. 36	**Respiratory System**	**Label structures using lab packet images, lab book, and terminology list: Anatomy of respiratory system, p. 543-548 (figs. 36.1 b, c; 36.2; 36.3; 36.4; 36.5 c); Refer to PowerPoint on Blackboard:** ***Microscopic structure of Trachea and Lung Tissue*** **(figs. 36.6 b; 36.7 b)**
02/14-02/16	Ex. 37	Respiratory Physiology	Mechanics pp. 554-555; Respiratory volumes and capacities - spirometry pp. 557-559
	Ex. 38	**Digestive System**	**Label structures using lab packet images, lab book, and terminology list: Anatomy of**

			digestive system, p. 578-592 (figs. 38.1; 38.2; 38.3; 38.4; 38.5 a; 38.7 b, d; 38.8 b; 38.10; 38.11; 38.12; 38.15); Refer to PowerPoint on Blackboard: *Microscopic structure of Digestive system* (figs. 38.6; 38.8 d; 38.9; 38.13; 38.16 a, b)
02/28-03/02		Respiratory/ Digestive Systems	Fetal Pig Dissection
	Ex. 40	**Urinary System**	**Label structures using lab packet images, lab book, and terminology list: Anatomy of the Urinary System pp. 613-621 (figs. 40.1 a; 40.2; 40.3 b; 40.4 b)**
03/07	Ex. 41	Urinalysis	Characteristic of urine pp. 628-632; *Chemstrip (dipstick) urine test* - description of constituents and results on pp. 629-631; Urine sediment, read procedure and possible results, p. 632
03/09	***LAB EXAM II***		
	Ch. 27 (textbook)	**Reproductive System**	**Read chapter, watch online videos, answer appropriate review question, and complete online quiz before 03:30 pm, 04/11 (This material will appear on an online quiz & NOT on an regular exam, only the Final Exam)**
	Ex. 42	**Reproductive System**	**Label structures using lab packet images, lab book, and terminology list: Gross anatomy of male reproductive system pp. 636-640 (figs. 42.1; 42.2 a); Gross anatomy of female reproductive system pp.640-644 (figs. 42.6; 42.7; 42.10)**
	Ex. 44	**Embryonic Development**	**Human development p. 667-668 (fig. 44.1; fig. 44.2)**
03/21-04/06	Ex. 45 and Ch. 29 (textbook)	Heredity	Genetics pp. 675-681; solving genetics problems; *Genetics Problem Worksheet (in packet); Examples will be given during class for practice.*
		Genetics	*Genetics Problem Worksheet (due 04/05);*
04/11	***LAB EXAM III***		
	Ex. 40	**Urinary System Review**	**Label structures using lab packet images, lab book, and terminology list: Microscopic Anatomy of the Urinary System pp. 619 (fig. 40.4 b)**
04/18-04/20	**Ex. 9**	***PHYSIOEX 9.1***	***Computer Simulations:* Renal System Physiology (PEx-131–148)**
04/25-04/27	**Ex. 10**	***PHYSIOEX 9.1***	***Computer Simulations: Acid-Base Balance* (PEx-149–159)**
05/02	***LAB EXAM IV***		

VII. EVALUATION AND GRADING:

A. Grading Criteria (*percents, extra credit, etc*.)

Questions for lecture exams and quizzes will be taken from lecture notes and textbook chapters. *It is important for the student to understand that not all of the textbook information will be discussed in class, thus it is the students responsibility to read and study all chapter material (besides lecture notes) in preparation for an exam.* Combined scores from lecture and laboratory constitute the final grade in the course:

Lecture	
4 Lecture Exams	= 100 points each
Lecture Quizzes (11 online)	= 100 points total (quizzes are averaged to reach this total)*
Comprehensive Final	= 100 points
	600 ÷ 6 = 100 points
Lab	
4 Virtual Practical Exams	= 100 points each
Lab Quizzes (~6 in class)	= 100 points total (quizzes are averaged to reach this total)*
	500 ÷ 5 = 100 points

Course average will be determined according to the following:

Lecture Average (60%)	100 x .60 = 60
Lab Average (40%)	100 x .40 = 40
	100

B. Determination of Grade (*assignment of letter grades*)

Grades for the course will be based on the following guidelines:
A = 90 - 100 points
B = 80 - 89 points
C = 70 - 79 points
D = 60 - 69 points
F = 59 points

C. Lecture Exams: There will be four lecture exams (worth a total of 100 points) that will be given as shown on the class schedule. Exams include multiple-choice and sometimes short answer questions. The final exam is worth 100 points and will be 100% comprehensive (lecture and lab). The grade on the comprehensive portion of the final exam can replace the single lowest grade on the regular exams. **NO make-up exams will be given for any reason. If you miss an exam, the LECTURE PORTION of the FINAL EXAM grade will replace the grade of that missed exam.**

D. Lab Exams: There will be four comprehensive lab exams (worth a total of 100 points) that will be given as shown on the class schedule. **The lab exams are "virtual practical exams" which are automatic, timed, and presented on PowerPoint.** Students "move" from question station to question station as the slides advance through the exam. *Exams may include line drawings, images from the text, photos of dissected lab specimens, and/or plastic lab models.* Some lab exams will also include multiple-choice questions. **NO make-up exams will be given for any reason. If you miss an exam, the LAB PORTION of the FINAL EXAM grade will replace the grade of that missed exam.**

E. Quizzes: A series of quizzes will be given during lecture and lab. All lecture quizzes (i.e. Blackboard post-chapter quizzes) are to be taken online after reading the chapter and **before the chapter is discussed in class**. Lab quizzes will cover material from the previous week's lesson. At least **one** lowest lecture and lab quiz grade for the semester will be dropped. *The average of these quizzes will count as another exam grade. ***THERE WILL BE NO MAKE-UPS FOR MISSED QUIZZES WHETHER ONLINE OR IN CLASS*.**

VIII. SYLLABUS MODIFICATION:

The instructor may modify the provisions of the syllabus to meet individual class needs by informing the class in advance as to the changes being made.