

Angelina College
Science and Mathematics Division
BIOL 2402 Anatomy and Physiology II (Friday, BIO 2402.Y01)

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 three 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: 936-633-5448 (please, leave a message if I do not answer)
 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.theccb.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

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.

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. **Students will need a computer (e.g. laptop or similar device) with a CD-ROM drive and internet capabilities (e.g. wifi) for the following class requirements:**
 - a. **PHYSIOEX 9.1 Computer Simulations**, CD ROM - Packaged with textbook
 - b. 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.
4. Students are required to supply their own scantron forms for test taking. *Both the FORM NO. 884-E scantrons (200 question) and FORM NO. 882-E scantrons (100 question)* will be used.

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 Maria Lopez or Steve Hudman in room 200 of the Student Center. At a postsecondary institution, you must self-identify as a person with a disability; Ms. Lopez and Mr. Hudman 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 Room 101 of the Student Center. You may also contact Dean Hudman by phone at [\(936\) 633-5292](tel:9366335292) 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 or 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.

THE LAST DAY TO DROP WITH A “W” IS APRIL 2, 2018

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.
- *If a student does not attend a class, it is the student's responsibility to contact the instructor for missed material or information.*
- 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. **All smart devices (phones, watches, etc.) are strictly prohibited during testing.**

VI. COURSE CONTENT:

Lecture and Lab content, schedule, and reading assignments (Assignments in **BLUE** are to be completed by the student online or with a computer during the indicated week. **Note:** Chapters (Ch.) are found in the Textbook and Exercises (Ex.) are found in the Lab Manual.)

<u>Week/Day</u>	<u>Chapter/Exercise</u>	<u>Topic</u>	<u>Instructions/Description</u>
01/13-01/18	Ch. 16 (refer to notes)	Endocrine System Overview	Watch online video, read class notes, answer review sheet, and complete online quiz before 8:00 pm, 01/18 (This material will appear on an <u>online quiz only</u> not on Lecture Exam I).
	Ch. 17	Blood	Read chapter, watch online videos (if available), answer appropriate review question, and complete online quiz before 8:00 pm, 01/18.
Note: 01/15, MLK DAY HOLIDAY			
01/19	Ch. 17	Blood	Lecture on specific topics from Ch. 17
	Safety Contract	Laboratory Safety	Students must agree to adhere to safety rules and sign the lab safety contract
	Ex. 26	Endocrine Glands	Label structures using lab packet images, lab book, and terminology list: Anatomy, p. 408-409 (figs. 27.1, 27.2). <i>Microscopic structure of Thyroid gland, Parathyroid gland, Pancreas, Adrenal gland (fig. 27.3 a, b, c, f)</i>
	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)
01/20-01/25	Ex. 11	PHYSIOEX 9.1 Computer Simulation: Blood Analysis, CD	Computer Simulation: Blood Analysis, Activity 4: Blood Typing (PEX-167–169) Submit the PDF of the completed Lab Report(s) via email by 02/08 at 8:00 pm.
	Ch. 18	The Heart	Read chapter, watch online videos (if available), answer appropriate review question, and complete online quiz before 8:00 pm, 01/25.
	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)
01/26	Ch. 18	The Heart	Lecture on specific topics from Ch. 18
	Ex. 30	Sheep Heart Dissection	Heart anatomy; Blood trace through the heart, pp. 452-454

01/27-02/01	Ch. 19	Blood Vessels	Read chapter, watch online videos (if available), answer appropriate review question, and complete online quiz before 8:00 pm, 02/01.
02/02	Ch. 19	Blood Vessels	Lecture on specific topics from Ch. 19
	Ex. 31	Conduction System of the Heart	Label structures using lab packet images, lab book, and terminology list: p 460 (fig. 31.1)
02/02		<i>Core Assessment</i>	<i>Communication Assigned. See Core Assessment folder on Blackboard Homepage for assignment.</i>
02/03-02/08	Ex. 6	PHYSIOEX 9.1 CD	Computer Simulations: Cardiovascular Physiology (PEX-93–104) Submit the PDF of the completed Lab Report(s) via email by 02/08 at 8:00 pm.

Study and complete work for Lecture and Lab Exam I

02/09 LECTURE (Chapters 17-19) AND LAB EXAM I

02/10-02/15	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)
	Ex. 35	Lymphatic System	Lymphatic pathways in body pp. 530 (fig. 35.1); Structure of a lymph node p. 533 (fig. 35.4 a)
	Ch. 20	Lymphatic System	Read chapter, watch online videos (if available), answer appropriate review question, and complete online quiz before 8:00 pm, 02/15
02/16	Ch. 20/21	Lymphatic/Immune Systems	Lecture on specific topics from Ch. 20 and begin Chapter 21
	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)
02/17-02/22	Ex. 5	PHYSIOEX 9.1 CD	Computer Simulations: Cardiovascular Dynamics (PEX-75–91) Submit the PDF of the completed Lab Report(s) via email by 03/01 at 8:00 pm.

	Ch. 21	Immune System	Read chapter, watch online videos (if available), answer appropriate review question, and complete online quiz before 8:00 pm, 02/22
02/23	Ch. 21	Immune System	Lecture on specific topics from Ch. 21
	Ex. 35	Lymphatic System	Lymphatic pathways in body pp. 530 (fig. 35.1); Structure of a lymph node p. 533 (fig. 35.4 a); <i>Microscopic structure of lymph node, spleen, and palatine tonsil (pp. 533-534, figs. 35.4 b, 35.5 c, 35.6)</i>
02/24-03/01 Study and complete work for Lecture and Lab Exam II			
<u>03/02 LECTURE (Chapters 20-21) AND LAB EXAM II</u>			
03/02		Core Assessment	Communication Due.
03/03-03/08	Ch. 22	Respiratory System	Read chapter, watch online videos (if available), answer appropriate review question, and complete online quiz before 8:00 pm, 03/08
	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: <i>Microscopic structure of Trachea and Lung Tissue</i> (figs. 36.6 b; 36.7 b)
03/09	Ch.22	Respiratory System	Lecture on specific topics from Ch. 22
	Ex. 37	Respiratory Physiology	Mechanics pp. 554-555; Respiratory volumes and capacities - spirometry pp. 557-559 <i>Core Assessment: Critical Thinking and Empirical/Quantitative Skills Assessment Assigned and due before you leave today.</i>
Note: 03/12-03/16, SPRING BREAK HOLIDAY			
03/17-03/22	Ch. 23	Digestive System	Read chapter, watch online videos (if available), answer appropriate review question, and complete online quiz before 8:00 pm, 03/22
	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: <i>Microscopic structure of Digestive system</i> (figs. 38.6; 38.8 d; 38.9; 38.13; 38.16 a, b)

03/23	Ch. 23	Digestive System	Lecture on specific topics from Ch. 23
	Ex. 36/38	Digestive and Respiratory System	<i>Microscopic structure of Trachea and Lung Tissue</i> (figs. 36.6 b; 36.7 b); <i>Microscopic structure of Digestive system</i> (figs. 38.6; 38.8d; 38.9; 38.13; 38.16 a, b)
03/24-03/29	Ch. 24	Nutrition/ Metabolism	Read chapter, watch online videos (if available), answer appropriate review question, and complete online quiz before 8:00 pm, 03/29
03/30	Ch. 24	Nutrition/ Metabolism	Lecture on specific topics from Ch. 24
		<i>Fetal Pig Dissection</i>	<i>Respiratory and Digestive Systems (See Fetal Pig Dissection Guide on Blackboard); also Urinary System</i>

03/31-04/05 Study and complete work for Lecture and Lab Exam III

Note: 04/03, LAST DAY TO DROP OR WITHDRAW WITH A GRADE OF "W"

04/06 LECTURE (Chapters 22-24) AND LAB EXAM III

04/07-04/12	Ch. 25	Urinary System	Read chapter, watch online videos (if available), answer appropriate review question, and complete online quiz before 8:00 pm, 04/12
	Ex. 40	Urinary System	Label structures using lab packet images, lab book, and terminology list: Anatomy of the Urinary System pp. 610-621 (figs. 40.1 a; 40.2; 40.3 b; 40.4 b)
	Ch. 27	Reproductive System	Read chapter, watch online videos, answer appropriate review question, and complete online quiz before 8:00 pm, 04/26 (This specific material will appear on an online quiz NOT on a regular exam, only the Final Exam).
04/13	Ch. 25	Urinary System	Lecture on specific topics from Ch. 25
	Ex. 41	Urinalysis	Characteristic of urine pp. 628-632; <i>Chemstrip (dipstick) urine test</i> - description of constituents and results on pp. 629-631; Urine sediment, read procedure and possible results, p. 632
	Ex. 45 and Ch. 29 (textbook)	Principles of Heredity	Genetics pp. 675-681; solving genetics problems; Read all of Ch. 29. <i>Genetics Problem Worksheet (in packet); Examples will be given during class for practice. Genetics Problem Worksheet is due on 04/27 in class.</i>

04/14-04/19	Ex. 9	PHYSIOEX 9.1	Computer Simulations: Renal System Physiology (PEX-131–148)	Submit the PDF of the completed Lab Report(s) via email by 04/26 at 8:00 pm.
	Ch. 26	Fluid, Electrolyte, Acid-Base Balance		Read chapter, watch online videos (if available), answer appropriate review question, and complete online quiz before 8:00 pm, 04/19
	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). Microscopic structure of human testis and ovary.
	Ex. 44	Embryonic Development		Human development p. 667-668 (fig. 44.1; fig. 44.2)
	Ex. 45 and Ch. 29 (textbook)	Genetics		Genetics Problem Worksheet (due 04/27)
04/20	Ch. 26	Fluid, Electrolyte, Acid-Base Balance		Lecture on specific topics from Ch. 26
	Ex. 45 and Ch. 29 (textbook)	Genetics		Examples will be given during class for practice.
04/21-04/26	Ex. 10	PHYSIOEX 9.1	Computer Simulations: Acid-Base Balance (PEX-149–159)	Submit the PDF of the completed Lab Report(s) via email by 04/26 at 8:00 pm.
	Ex. 45 and Ch. 29 (textbook)	Genetics		Genetics Problem Worksheet (due 04/27)

Study and complete work for Lecture and Lab Exam IV

04/27 LECTURE (Chapters 25 and 26) AND LAB EXAM IV

04/27 Teamwork Assessment Assigned and Due

05/04 FINAL EXAM (Comprehensive - Both Lecture and Lab); Friday, 9:30 – 11:30 am
See the Final Exam Schedule posted on the Angelina College website for the exact time of your final exam. <http://www.angelina.edu/final-exam-schedule/>

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/Homework/ Core Assessments	= 100 points total (quizzes are averaged to reach this total)*
Lecture Comprehensive Final	= <u>100</u> points $600 \div 6 = 100$ points

Lab

4 Lab Exams	= 100 points each
Lab Quizzes/Homework/ Core Assessments	= 100 points total (quizzes are averaged to reach this total)*
Lab Comprehensive Final	= <u>100</u> points $600 \div 6 = 100$ points

Course average will be determined according to the following:

Lecture Average (60%)	$100 \times .60 = 60$
Lab Average (40%)	$100 \times .40 = 40$
	<u>100</u>

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 each) that will be given as shown on the class schedule. Exams include multiple-choice questions. The final exam is worth 100 points and will be 100% comprehensive. The grade on the lecture comprehensive final exam can replace the single lowest grade on the regular lecture exams. **NO make-up exams will be given for any reason. If you miss a lecture exam, the LECTURE 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 FINAL EXAM grade will replace the grade of that missed exam.**
- E. Quizzes/Homework:** A series of quizzes will be given during lecture and lab. Lecture and 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/homework will count as another exam grade. **THERE WILL BE NO MAKE-UPS FOR MISSED QUIZZES WHETHER ONLINE OR IN CLASS.**
- F. Assessments:** An assessment measuring communication will be given during lecture, and assessments measuring critical thinking, empirical and quantitative, and teamwork will be given during lab. Each assignment is required, and will be counted as quiz/homework grades toward the correlating portions of the course.
- Due dates:**
- Communication (lecture): March 02, 2018
 - Critical Thinking (lab): March 09, 2018
 - Empirical & Quantitative Skills (lab): March 09, 2018
 - Teamwork (lab): April 27, 2018

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.