

Angelina College
Science and Mathematics Division
BIOL 2401 Anatomy and Physiology I (BIOL 2401.001, Summer II, Lecture and Lab)
Instructional Syllabus

I. BASIC COURSE INFORMATION**A. Course Description**

BIOL 2401. Anatomy and Physiology I is the first part of a two course sequence. It is a study of the structure and function of the human body including cells, tissues and organs of the following systems: integumentary, skeletal, muscular, nervous and special senses. Emphasis is on interrelationships among systems and regulation of physiological functions involved in maintaining homeostasis. Prerequisite: Prerequisite: TSI exempt, or passing scores on all sections of TSI Assessment Test (TSI complete). Three lecture and three lab hours each week. Lab fee.

B. Intended Audience

This course is the first semester of the two-semester human anatomy and physiology course sequence, continued as BIOL 2402. The intended audience is any student needing the first semester of a sophomore level course in human anatomy and physiology. 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: by appointment only

Phone: 936-366-9632 (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. Use anatomical terminology to identify and describe locations of major organs of each system covered.
2. Explain interrelationships among molecular, cellular, tissue, and organ functions in each system.
3. Describe the interdependency and interactions of the systems.
4. Explain contributions of organs and systems to the maintenance of homeostasis.
5. Identify causes and effects of homeostatic imbalances.
6. Describe modern technology and tools used to study anatomy and physiology.
7. *Apply appropriate safety and ethical standards.*
8. *Locate and identify anatomical structures.*
9. *Appropriately utilize laboratory equipment, such as microscopes, dissection tools, general lab ware, physiology data acquisition systems, and virtual simulations.*
10. *Work collaboratively to perform experiments.*
11. *Demonstrate the steps involved in the scientific method.*
12. *Communicate results of scientific investigations, analyze data and formulate conclusions.*
13. *Use critical thinking and scientific problem-solving skills, including, but not limited to, inferring, integrating, synthesizing, and summarizing, to make decisions, recommendations and predictions.*

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. 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.
2. Students will explain interrelationships among molecular, cellular, tissue, and organ functions in each system by answering questions during lecture activities and on lecture exams.
3. Students will describe the interdependency and interactions of the systems by answering written questions during lecture activities and on lecture exams.
4. Students will explain contributions of organs and systems to the maintenance of homeostasis by answering written questions about case studies and on lecture exams.
5. 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.
6. 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.
7. *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.*
8. *Students locate and identify anatomical structures by answering written questions about simulated lab activities, dissections, and by identifying anatomical structures during lab exams.*
9. *Students will demonstrate the appropriate utilization of laboratory equipment 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.*
10. *Students will work collaboratively to perform experiments and demonstrate teamwork ability by working together to answer questions during teamwork activities.*
11. *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.*
12. *Students will communicate results of scientific investigations, analyze data and formulate conclusions by orally answering questions and writing answers to questions during lab activities.*
13. *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 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.

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. **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 (<https://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. *Students will need 5 FORM NO. 882-E scantrons and 1 FORM NO. 884-E scantron.*

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 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.
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:** *Chapters (Ch.) are found in the textbook and Exercises (Ex.) are found in PhysioEx 9.1. Assignments, Quizzes and Exams are marked in Red.*

A. Lecture content, schedule, and reading assignments (M, T, W, R...10:00 – 11:50 am)

<u>Day(s)</u>	<u>Chapter</u>	<u>Topic</u>	<u>Instructions/Description</u>
07/11	Ch. 1	Introduction to Anatomy and Physiology	Study introductory class notes thoroughly, watch online videos (if available); supplement by reading textbook sections: 1.1-1.4. Answer appropriate review questions and complete online Quiz #1 before 6:00 pm, 07/12
07/12-07/13	Ch. 2	Chemistry Comes Alive: Basic Chemistry	Study class notes thoroughly, watch online videos; supplement by reading textbook sections: Part 1: 2.1-2.5. Answer appropriate review questions and complete online Quiz #2 before 6:00 pm, 07/17
07/17-07/18	Ch. 2	Chemistry Comes Alive: Biochemistry	Study class notes thoroughly, watch online videos (if available); supplement by reading textbook sections: Part 2: 2.6-2.11, 2.12. Answer appropriate review questions and complete online Quiz #3 before 6:00 pm, 07/19
07/19	Ch. 3	Cells: The Living Units	Study class notes thoroughly, watch online videos (if available); supplement by reading textbook sections: 3.1, Part 1: 3.2-3.3. Answer appropriate review questions.
	Lab: Ex. 1 (for lecture)	<i>PHYSIOEX 9.1</i>	<i>Computer Simulations:</i> Cell Transport Mechanisms and Permeability, Activity 1-3: Simple Diffusion – Simulating Osmotic Pressure. Submit the PDF of the completed Lab Reports (Activities 1-3, 5) via email by 07/20 at 6:00 pm.
07/20	Ch. 3	Cells: The Living Units	Study class notes thoroughly, watch online videos (if available); supplement by reading textbook sections: Part 1: 3.4-3.6; Part 2: 3.7, 3.8. Answer appropriate review questions.
	Lab: Ex. 1 (for lecture)	<i>PHYSIOEX 9.1</i>	<i>Computer Simulations:</i> Cell Transport Mechanisms and Permeability, Activity 5: Simulating Active Transport. Submit the PDF of the completed Lab Reports (Activities 1-3,5) via email by 07/20 at 6:00 pm.
	Ch. 3	Cells: The Living Units Protein Synthesis	Study class notes thoroughly, watch online videos (if available); supplement by reading textbook sections: Part 3: 3.9, 3.11 (fig. 3.34). Answer appropriate review questions.
07/24	LECTURE EXAM I (Chapters 1, 2, 3)		
07/24 (online)	Ch. 5	The Integumentary System	Study class notes thoroughly, watch the online video; supplement by reading textbook sections: 5.1-5.9. Answer appropriate review questions and complete online Quiz #4 before 6:00 pm, 07/25

07/25-07/26	Ch. 6	Bones and Skeletal Tissue	Study class notes thoroughly, watch online videos (if available); supplement by reading textbook sections: 6.1-6.8, also Developmental Aspects of Bones. Answer appropriate review questions and complete online Quiz #5 before 6:00 pm, 07/26
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07/27 LECTURE EXAM II (Chapters 5, 6)

07/31-08/01	Ch. 9	Muscle and Muscle Tissue	Study class notes thoroughly, watch online videos (if available); supplement by reading textbook sections: 9.1-9.6, 9.9: Refer to Table 9.3, Comparison of Skeletal, Cardiac, and Smooth Muscle. Answer appropriate review questions and complete online Quiz #6 before 6:00 pm, 08/02
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08/02-08/03	Ch. 11	Fundamentals of the Nervous System and Nerve Tissue	Study class notes thoroughly, watch online videos (if available); supplement by reading textbook sections: 11.1-11.9 (through p. 420), 11.10. Answer appropriate review questions and complete online Quiz #7 before 6:00 pm, 08/03
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08/07 LECTURE EXAM III (Chapters 9, 11)

08/08-08/09	Ch. 12	The Central Nervous System	Study class notes thoroughly, watch online videos (if available); supplement by reading textbook sections: 12.1-12.10, also Developmental Aspects of the Central Nervous System. Answer appropriate review questions.
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08/10	Ch. 13	The Peripheral Nervous System and Reflex Activity	Study class notes thoroughly, watch online videos (if available); supplement by reading textbook sections: Part 2: 13.3-13.5, Refer to Table 13.2, Cranial Nerves, Part 4: 13.8, 13.9. Answer appropriate review questions.
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08/14	Ch. 14	The Autonomic Nervous System	Study class notes thoroughly, watch online videos (if available); supplement by reading textbook sections: 14.1-14.4. Answer appropriate review questions.
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	Ch. 15	The Special Senses	
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Online only	Ch. 16	Endocrine System Overview	Study class notes thoroughly, watch the online video; supplement by reading textbook sections: 16.6-16.11 (through The Pancreas). Complete Endocrine System Disorders Worksheet using textbooks and online sources. <u>Note: Online topic only.</u> Answer appropriate review questions and complete online Quiz #8 before 6:00 pm, 08/15
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08/15 LECTURE EXAM IV (Chapters 12, 13, 14, 15)

08/16 ***FINAL EXAM (Comprehensive); Wednesday, 10:00 – 12:00 p.m.***
See the *Final Exam Schedule* posted on the Angelina College website for the exact time of your final exam. <http://www.angelina.edu/>

B. Lab content, schedule, and reading assignments (M, W...12:30 – 3:30 pm)

<u>Day</u>	<u>Exercise</u>	<u>Topic</u>	<u>Instructions/Description</u>
07/12	Lab: Ex. 1	Language of Anatomy	Read all sections pp. 1-9; Be able to label or identify all regions, orientation and direction terms, planes, cavities, and serous membranes listed in the terminology list, p. 1 (fig. 1.1), p. 7 (fig. 1.5 a), p. 9 (fig. 1.8 a b)
	Lab: Ex. 2	Organ System Overview	Activity 5: Examining the Human Torso Model, p. 23, 24 (fig. 2.7); use lab manual illustration
	Lab: Ex. 4	The Cell: Anatomy and Division	Be able to label all cell organelles p. 42 (fig. 4.3), Be able to explain and describe all major events in the stages of the cell cycle p. 46, 47 (fig. 4.4). Watch online videos.
	Lab: (Ex. 3)	The Microscope	Study <u>only</u> the labelled illustration and functional definitions in the Lab Study Guide.
07/17		Lab Quiz #1	Language of Anatomy, Organ System Overview, and Cell Anatomy and Division
07/17	Lab: Ex. 6	Classification of Tissues	Be able to identify the tissues, their locations, and accessory structures using the lab book (also other slide images), and terminology list: p. 70-73 (figs. 6.3 a b c d e h), p. 76-82 (figs. 6.5 b c d e f g h i j k l), p. 83 (fig. 6.6), p. 84, 85 (fig. 6.7 a b c); Study textbook Chapter 4 (Tissue: The Living Fabric) for help and specific details.
	Lab: Ex. 7	The Integumentary System	Label structures using lab images, lab book, and terminology list: p. 94 (fig. 7.1), p. 99 (fig. 7.6 b); watch online video
07/19	<u>LAB EXAM I</u>		
07/19	Lab: Ex. 9	Axial Skeleton	Label skeletal structures using lab images, lab specimens, lab book, and terminology list: p. 123 (figs. 9.1 a b), p. 124 (figs. 9.2 a b), p. 125 (figs. 9.3 a b c), p. 128 (fig. 9.6), p. 129 (fig. 9.7), p. 130 (figs. 9.8 a b), p. 132 (figs. 9.11, 9.12), p. 133 (fig. 9.13), p. 134 (fig. 9.15), p. 135 (fig. 9.16), p. 136 (figs. 9.17 a b c), p. 137 (figs. 9.18 a b), p. 138 (fig. 9.9 a), p. 139 (figs. 9.20 a b c), p. 140 (fig. 9.21 c)
07/24		Lab Quiz #2,3	Axial Skeleton (Note: lab quiz counts twice)
07/24	Lab: Ex. 10	Appendicular Skeleton	Label skeletal structures using lab images, lab specimens, lab book, and terminology list: p. 151 (figs. 10.2 c d), p. 153 (figs. 10.3 a b), p. 154 (figs. 10.4 a b), p. 155 (fig. 10.5 a), p. 156 (fig. 10.6), p. 159 (figs. 10.7 a b), p. 160 (figs. 10.8 a b), p. 161 (fig. 10.9 a)

07/26			Lab Quiz #4,5 Appendicular Skeleton (Note: lab quiz counts twice)
07/26	Lab: Ex. 9-10	Skeletal System	Continued, see above list
07/31	<u>LAB EXAM II</u>		
07/31	Lab: Ex. 11	Articulations and Body Movements	Label structures using lab image and terminology list: p. 174 (fig. 11.2), p. 180 (figs. 11.7 a b, use images in lab manual); Be able to explain and identify the various joint movements (refer to terminology list); Study all of Table 11.3 on p. 183, 184, be able to “name” the joints, and classify them “structurally” and “functionally”. Study notes titled ARTICULATIONS (JOINTS) in Lab Study Guide.
	Lab: Ex. 13	Muscular System	Be able to locate muscles using lab images and “flayed men” models, lab book, and terminology list. Also, use the terminology list to learn each muscle’s “action”. Read “Classification of Skeletal Muscles”, p. 200, 201. Use the terminology list and lab manual to learn the “origin” and “insertion” of each muscle with an asterisk: p. 202, 203 (figs. 13.2, 13.3), p. 205 (fig. 13.4 a), p. 209 (fig. 13.6), p. 211 (13.8 a), p. 213 (fig. 13.9 a), p. 216 (fig. 13.10), p. 217, 219 (fig. 13.11), p. 221 (fig. 13.12), p. 223 (13.13 a), p. 225 (figs. 13.14 a b), p. 227 (fig. 13.15)
08/02			Lab Quiz #6,7 Muscular System, be able to label all muscles and know their actions (Note: lab quiz counts twice)
08/02	Lab: Ex. 13	Muscular System	Continued, see above list
08/07	<u>LAB EXAM III</u>		
08/07	Lab: Ex. 15	Histology of Nerve Tissue	Label structures using lab images, lab book, and terminology list: p. 259 (figs. 15.2 a c), p. 263 (fig 15.70, p. 264 (15.8 a)
	Lab: Ex. 17	Gross Anatomy of the Brain and Cranial Nerves	Label structures using lab images, lab book, and terminology list: p. 282 (figs. 17.2 a b d), p. 284 (figs. 17.4 b), p. 289 (figs. 17.8 a b c), p. 290 (fig. 17.9), p. 293-295 (figs. 17.11 a c, 17.12, 17.13); See list of Cranial Nerves and their nerve types in the Lab Study Guide.
08/09			Lab Quiz #8,9 Histology of Nerve Tissue and Gross Anatomy of the Brain and Cranial Nerves (Note: lab quiz counts twice)

08/09	<i>Lab: Ex. 17</i>	<i>Sheep brain dissection</i>	<i>Class activity: Be able to label structures on specimen, refer to p. 292-296</i>
	Lab: Ex. 23	Special senses: Eye	Label structures using lab images, lab book, and terminology list: p. 363 (fig. 23.2 a), p. 365 (fig. 23.3 a)
	<i>Lab: Ex. 23</i>	<i>Sheep eye Dissection</i>	<i>Class activity: Be able to label structures on specimen, refer to p. 365-367</i>
	Lab: Ex. 19	Spinal Cord and Spinal Nerves	Label structures using lab images, lab book, and terminology list: p. 312 (fig. 19.1), p. 314 (fig. 19.3), p. 317 (fig. 19.7), p. 318 (figs. 19.8 c), p. 320 (fig. 19.9 b), p. 321 (fig. 19.10 b)
	Lab: Ex. 21	Human Reflex Physiology	Label structures using lab images, lab book, and terminology list: p. 340 (fig. 21.1)
	Lab: Ex. 25	Special Senses: Ear	Label structures using lab images, lab book, and terminology list: p. 384 (fig. 25.1)
	Lab: Ex. 26	Special Senses: Nose and Tongue	Label structures using lab images, lab book, and terminology list: p. 400 (fig. 26.1 a), p. 401 (fig. 26.2 a)
	Lab: Ex. 27	Endocrine Glands	Label structures using lab images, lab book, and terminology list: p. 408 (fig. 27.1)

08/14 LAB EXAM IV

VII. EVALUATION AND GRADING:

A. Grading Criteria (*percent, 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)	= 100 points total (quizzes/assignments are averaged to reach this total)*
Comprehensive Final	= <u>100</u> points
	600 ÷ 6 = 100 points

Lab

4 Virtual Practical Exams	= 100 points each
Lab Quizzes (9)	= <u>100</u> 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 = <u>40</u>
	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. These four may exams include multiple-choice, short answer questions, and/or "essay". 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 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.* Most lab exam questions are fill-in-the-blank questions where spelling counts for anatomical terminology, but some 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. Some lecture quizzes (i.e. blackboard quizzes) are to be taken online and some will be given in class. Collectively, the lecture quizzes are worth a possible 100 points (i.e. the average of the quizzes will count as another exam grade). Lab quizzes will cover material from the previous week's lesson. Collectively, the lab quizzes are worth a possible 100 points. ***One lowest lecture and lab quiz grade for the semester will be dropped. 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.