## BIOL 2301 (Anatomy & Physiology, Level 1)

**Credit:** 3 semester credit hours (3 hours of lecture)

**Prerequisite/Co-requisite:** Successful completion of Reading and Writing portion of TSI; must be enrolled in BIOL 2101 at the same time

## Course Description:
A study of the regions/planes of the body, cells, tissues, integumentary system, skeletomuscular and neurological systems of the body.

## Required Text(s) and Materials:
*Human Anatomy & Physiology* by Elaine Marieb, Pearson Publishing, 8th edition or most current edition. **ISBN-10: 0805395695**

*The Anatomy Assignment*, Level 1 edition 2, by Stephanie Lanoue. Kendall-Hunt Publishing, 2014. **ISBN: 9781465251015.**

## Course Objectives
Upon completion of the course, the student will be able to:

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.

## Core Objectives

1. Critical Thinking Skills: To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
1. Communication Skills: To include effective development, interpretation and expression of ideas through written, oral, and visual communication
2. Empirical & Quantitative Skills: To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusion
3. Teamwork: To include the ability to connect choices, actions, and consequences

to ethical decision-making

4. Personal Responsibility: To include ability to connect choices, actions and consequences to ethical decision-making

## Course Outline

I. Human Body Intro
- A. Homeostasis
  - 1. Problem-solving scenario
  - 2. Body system and examples
- B. Regional and Descriptive Terms that describe the human body
  - 1. Correct anatomical position
  - 2. Practice and diagramming
- C. Planes of the Body
  - 1. Demonstration of planes using paper
  - 2. Interpretation of x-ray, CT scans and MRI images

II. Cells
- A. Structures
  - 1. Organelles within an animal cell
  - 2. Features of the plasma membrane
  - 3. Cytoskeleton components
- B. Functions
  - 1. Physiology of the organelles
  - 2. Physiology of the plasma membrane
  - 3. Physiology of the cytoskeleton components
- C. Mitosis
  - 1. Stages
  - 2. Special terminology
  - 3. Cancer – mitosis gone wrong

III. Tissues
- A. Main types of epithelial tissue
  - 1. 3 basic types
  - 2. Characteristics of each
- B. Other tissues of the body
  - 1. Pseduostratified
  - 2. Stratified tissues

IV. Integumentary System
- A. Skin
  - 1. Layers of the epidermis and specialized cells within those layers
  - 2. Dermis and its components
  - 3. Hypodermis
- B. Appendages
  - 1. Hair

2. Nails

V. Bones and Skeletal System
A. Basic Shapes of Bones
1. How to classify bones
2. Practice activity
B. Bone Markings
1. 18 different bone markings
2. Practice activity
3. Location on skeleton

VI. The Skeleton
A. Bones of the axial skeleton
1. Skull
2. Ribs and vertebrae
3. Pelvis
B. Bones of the appendicular skeleton
1. Arms, wrists and hands
2. Legs, ankles and feet
C. Joints
D. Synovial joints
1. Characteristics
2. Synovial fluid
E. Other joints
1. Hinge
2. Pivotal
3. Saddle
4. Ball-n-socket, etc.
F. Movements of Joints
1. Class demonstration
2. Practice activity

VII. Muscles and Muscle Tissue
A. Introduction
1. Physics behind muscle movement
2. 3 basic types of muscle
B. Characteristics of Muscle Tissue
1. Striations of skeletal muscle
2. Specialized branching of cardiac muscle
C. Related muscle terms

VIII. Muscular System
A. Major muscles (anterior)
B. Major muscles (posterior)

IX. Fundamentals of the Nervous System

A. Neurons
1. Anatomy of the neuron
2. Physiology of the neuron

B. Neuroglia and supporting cells of the nervous system
1. Einstein's brain versus most humans; latest research findings
2. 6 types of neuroglia and their locations and characteristics

C. Central Nervous System
1. Structures of the Brain
2. All the parts of the brain, their locations
3. Distinguishing characteristics
4. Functions
5. Physiology
6. Hormones related to certain structures

D. Peripheral Nervous System
1. Structures
2. Cranial nerves
3. Thoracic nerves
4. Lumbar nerves
5. Functions
6. Physiology
7. Reaction times/ reflex

## Grade Scale

| | |
|---|---|
| A | 900 – 1000 points |
| B | 800 – 899 points |
| C | 700 – 799 points |
| D | 600 – 699 points |
| F | 599 or below |

## Course Evaluation

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|---|---|
| MRSA scientific commentary paper | 5% |
| Exams | 60% |
| Quizzes | 20% |
| Current Event | 5% |
| Group Presentation | 10% |

## Course Requirements

Reading and writing assignments
Quizzes
Research Group Presentation (Power Point) - *Assigned topics*
Research current event with individual presentation
Exams

## Course Policies

**General:**

- Students must provide their own textbooks, writing instruments, and other necessary supplies for classes.
- No food or drinks will be allowed in the classroom.
- Students must respect one another and all faculty.

**Attendance:**

- Absences must be limited to serious illness and/or immediate family emergencies.
- Tardiness is discouraged. Excessive tardiness (more than 10 minutes/class or more than 2 consecutive classes) will result in an absence being awarded
- In the event that LIT is forced to cancel classes due to inclement weather, notification of closures will be made through local radio and TV stations. Students out of the immediate broadcast area should contact their instructor.

**Policies associated with Assignments:**

- All assignments are due when stated.
- Late assignments are not accepted.
- If a student has an ***excused absence*** with written documentation, assignments will be accepted at the beginning of class upon return.

**Policies associated with Examinations:**

- All exams will be on the dates specified unless the instructor makes a change.
- Students are responsible for material in handouts and on videos/DVDs. Exam questions may come from this material.
- There are no make ups for either a missed test or a missed quiz. The lowest quiz test grade and the lowest exam grade will be dropped.

## Academic Dishonesty

Cheating and Plagiarism are two types of academic dishonesty.
Cheating is taking an examination or test in a dishonest way, as by improper access to answers. Plagiarism is taking someone else's work and misrepresenting it as your own. Student's work should always be his/her own unless participating in a group project. Cheating and/or plagiarism will result in disciplinary action; i.e., zero on assignment/exam or an **F** in the course, expulsion, etc.

## Drop/Withdrawal:

The student is responsible for initiating the drop/withdrawal process. Please refer to the LIT Catalog for the Institute policy on student initiated drop/withdrawal.

## Students with Disabilities:

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator, (409) 880-1737 or visit the office located in the Cecil Beeson Building.

## Course Calendar

### Course Schedule (Tentative)

**Week**

### Course Schedule (Tentative)*

| Week | Topic | Reference |
|---|---|---|
| **1** | Go over syllabus ; Start Ch 1<br>Take Pre-test on scantron | Class website |
| **2** | **Quiz 1** – Regions of the Body; Ch 3 | Class website |
| **3** | Ch 4 | Class website |
| **4** | **EXAM 1** | Class website |
| **5** | Ch 5<br>**Papers Due** | Class website |
| **6** | Ch 6 | Class website |
| **7** | **Quiz 2** Bone Markings (Ch 6)<br>Start Ch 7 | Class website |
| **8** | Spring Break - No Classes | Class website |
| **9** | Finish up Ch 7 | Class website |
| **10** | **EXAM 2**<br>Ch 8 | Class website |
| **11** | Finish Ch 8<br>Ch 9 | Class website |
| **12** | Finish Ch 9<br>**Quiz 3** – Muscles (Ch 9) | Class website |
| **13** | **EXAM 3**<br>Ch 10 | Class website |
| **14** | Ch 10 | Class website |
| **15** | Ch 10 | Handout on website |

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|---|---|---|
| **16** | Group Presentations begin | Handout on class website |
| **17** | Last Class Day; Finals begin | Final Exam Review Guide on website |

## Contact Information

*to be announced per instructor

## Office Hours

*to be announced per instructor