

ANPH210
Principles of Anatomy & Physiology

6 Credits

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ANPH210 Version: 1



Principles of Anatomy & Physiology

Calendar Description

This is a 6 credit course that provides an introduction to the structure of the human body and an introduction to the function of the human organ systems.

Rationale

This course provides the knowledge and foundation necessary for students to further their learning in a variety of health and medical career programs.

Prerequisites

BIOL107 and CHEM101

Co-Requisites

None

Course Learning Outcomes

Upon successful completion of this course, students will be able to

1. define basic terms used in Anatomy and Physiology.
2. identify the structure and functions of the major body systems.
3. identify and name the anatomical structures in skeletal, muscular, cardiovascular and nervous systems.
4. describe how various cellular mechanisms determine the functions of the major organs.
5. describe how cells interact with each other and how their activities are coordinated to produce organ functions.
6. describe the mechanisms of neural and endocrine communication.
7. describe how organ systems interact and how their activities are coordinated.
8. explain and apply the concept of homeostasis.
9. describe the consequences of changes in normal physiology to selected disease states.

Resource Materials

Gerard J. Tortora and Bryan H. Derrickson. *Principles of Anatomy and Physiology*.

15th edition. John Wiley & Sons, Inc., 2017.

In addition, online learning tools are available through the textbook

Conduct of Course

This is a 6 credit course with 3 hours of lecture per week.

This course uses lectures, activities, videos, discussion groups, guest lecturers and peer presentations.

Lakeland College is committed to the highest academic standards. Students are expected to be familiar with Lakeland College policies related to academic conduct and academic honesty and to abide by these policies. Violations of these policies are considered to be serious and may result in suspension or expulsion from the college.

Evaluation Procedures

Assignments	15%
Exams	85%

No supplemental assignments or examination re-writes are permitted in this course.

LATE PAPERS WILL BE GIVEN A GRADE OF ZERO (0%).

Grade Equivalents and Course Pass Requirements

A minimum grade of D (50%) (1.00) is required to pass this course.

Letter	F	D	D+	C-	C	C+	B-	B	B+	A-	A	A+
Percent Range	0-49	50-52	53-56	57-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100
Points	0.00	1.00	1.30	1.70	2.00	2.30	2.70	3.00	3.30	3.70	4.00	4.00

Students must maintain a cumulative grade of C (GPA - Grade Point Average of 2.00) in order to qualify to graduate.

Attendance

Although attendance is not mandatory, those students who attend classes regularly have a greater chance of success in this class. The textbook is meant to supplement the lectures, not replace them. It is important to read the corresponding chapters in the textbook along with attending lectures.

This is a highly demanding course. It is recommended to attend all lectures, keep up with your readings, and utilize the online learning tools to quiz your understanding of topics as the course progresses. Expect to spend 1-2 hours daily reviewing the material you learned.

Course Units/Topics

Introduction (Chapter 1)

- structural and functional organizations of the body
- internal environment and concept of homeostasis

Integumentary system and biological membrane dynamics (Chapters 3, 4, 5)

- structure of skin and wound healing of skin
- biological structure of plasma membranes
- function of cell membrane and membrane transport processes (diffusion, facilitated diffusion, active transport, vesicle-mediated transport)
- resting membrane potential

Nervous System (Chapter 12, 13, 14)

- introduction to nervous system
- cellular physiology of neuron
- nerve cell structure
- synthesis and trafficking of neuronal proteins
- resting membrane potential and electrical signals in neurons (graded potentials, generation and conduction of action potential)
- cell to cell communication in nervous system (electrical and chemical synapses)
- basic neuronal circuits
- structural and functional subdivisions of brain and spinal cord
- sensory and efferent divisions
- general properties of sensory systems
- integration of sensory information and motor outputs

Regulation of autonomic functions (Chapter 15)

- ANS (autonomic nervous system)
- sympathetic and parasympathetic divisions
- central role of hypothalamus

Endocrine System (Chapter 18)

- introduction to endocrinology/hormones and their functions
- hormone receptors and transduction mechanisms
- Hypothalamic-pituitary functions
- autonomic functions and integration

Musculoskeletal system (Locomotor system) (Chapter 6, 7, 8, 10, 11)

- gross anatomy of both the skeletal system and skeletal muscles
- physiology of bone system
- structures of skeletal muscles and how they contract/develop force
- excitation-contraction coupling/contractile and metabolic properties
- motor units and control of posture and movements by motor centres in CNS
- differences between smooth and skeletal muscle

- contribution of smooth muscles to many organ systems, with emphasis on blood vessels
- local, endocrine and neural control of smooth muscle function

Cardiovascular System (Chapter 20, 21, 22)

- anatomy of CV system
- structure and function of heart and vessels
- hemodynamics: blood pressure, resistance and flow
- local, hormonal and neural control of circulatory system
- overview of lymphatic system

Hematology (Chapter 19)

- principal components of blood
- fluid dynamics and hemostasis

Respiratory System (Chapter 23)

- structure and functions of respiratory system
- lung volumes and respiratory cycle
- oxygen and carbon dioxide exchanges and transport
- regulation of breathing

Body Fluids I: Urinary System (Chapter 26)

- water and its importance in body fluid compartments
- structure and function of the kidneys
- hormonal and neural regulation of fluid and electrolyte imbalance

Body Fluids II: Acid-Base Regulation (Chapter 27)

- pH of body fluids and buffer mechanisms
- importance of respiratory and urinary systems in pH control

Digestive system and energy balance (Chapters 24, 25)

- why and what we eat/metabolic rate and caloric requirements
- enteric nervous system and neuro-endocrine control of digestion
- how we eat: the alimentary tract: structures and motility
- digestion and absorption in the gastrointestinal tract
- anatomy and functions of liver
- body fuel homeostasis: neural and hormonal control of metabolism

Reproductive System (Chapter 28, 29)

- reproductive and hormonal functions in the male
- reproductive and hormonal functions in the non-pregnant female
- pregnancy and lactation



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