



College of Nursing
UNIVERSITY OF THE PHILIPPINES MANILA
The Health Sciences Center

Sotejo Hall, Pedro Gil Street, Ermita, Manila 1000 Philippines
Tel Nos. (02) 523-1472, (02) 523-1477, (02) 523-1494 • TeleFax: (02) 523-1485
Email: upm-cn@up.edu.ph



N3: ANATOMY AND PHYSIOLOGY
1st Semester, Academic Year 2023-2024

Course Description:

This course focuses on the physiological concepts and basic anatomical facts necessary in future nursing courses.

Course Outcomes:

1. Apply knowledge from the natural and physical sciences as applied in human anatomy and physiology.
2. Use the conceptual systems approach in describing anatomical structures and physiologic processes, concepts, and principles.
3. Explains body processes using appropriate anatomic terminologies and physiologic concepts and principles.
4. Integrates knowledge of the different organ systems in explaining normal physiologic processes.
5. Recognize the importance of lifelong learning.

Course Credit: 5 units (4 units lecture: 64hrs, 1 unit lab: 32 hours):

Course Faculty

Asst. Prof. Kenny-lynn B. Baccay, RN, MA (Nursing)
Course Coordinator
Rm 303, Sotejo Hall
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Asst. Prof. Mary Abigail Hernandez, RN, MPH
Assistant Professor
Room 307, Sotejo Hall
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Asst. Prof. Josephine G. Aldaba, MD
Research Assistant Professor
Institute of Child Health and Human Development
UPM- National Institutes of Health
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Mode of Delivery and Platform

The mode of instructional delivery will be a combination of face-to-face and remote or online. Course materials will be made available to students through VLE two days prior to the schedule to allow students who want to read, study, and accomplish the activities ahead of schedule. Students are expected to follow the weekly course schedule and submit requirements on time.

Teaching and learning will be a mix of synchronous and asynchronous activities and will be done according to the schedule



Course Requirements and Bases for Grades

Components			Units	Weight
Lecture	Participation (Recitation, VLE Activities, Post-test)	10%	4.0	80%
	Long Exam (3)	60%		
	Final Exam	30%		
Laboratory	Lab Exam (3)	60%	1.0	20%
	Lab Worksheets	40%		
Total			5.0	100%

General Guidelines in the Conduct of the Course

- Proper communication for the course
 - Communicate with your course faculty through VLE and email. You may send your inquiries through email or the VLE at any time. However, should you prefer to communicate to your faculty through SMS for urgent concerns, you may do so between 8 am to 5 pm, Mondays thru Fridays. Your faculty will respond during office hours, unless for urgent/ emergent matters. Individual consultations may be scheduled with the faculty.

Asst. Prof. Kenny-lynn B. Baccay: kbbaccay@up.edu.ph
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- Observe network etiquette when posting on online discussion boards.
 - If you encounter any issues, especially with the online materials, please contact the Course Coordinator as soon as possible so that appropriate solutions may be applied. You may contact your faculty via the message system on the VLE course site or through email.
- Submission of assignments and requirements.
 - Submissions should be on time. Prepare them very well since they reflect a good portion of your final grade. Keep a duplicate soft copy with you, just in case the one you submitted gets lost in transit and the computer files get corrupted.
 - Follow instructions on file formatting of requirements as posted in appropriate submission bins. Course requirements sent as attachments via email to the faculty or any other means will not be checked unless a prior agreement was made with your faculty. This is important so that the course team is able to keep track of your submitted requirements and send you feedback.
 - Minimum Pass Level (MPL) and Examinations



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- The minimum pass level for the course components is 60% for lectures and 70% for laboratory.
 - Be sure to be in your assigned testing room on the schedule of examinations. Students are advised not to miss exams. Make-up exams will NOT be provided.
 - Students will be exempted from the Final Exam if: (1) they pass all long exams and laboratory exams (i.e. no removal taken), (2) all activities and assignments are submitted, (3) no missed lecture and laboratory sessions, and (4) have a class standing of at least 1.75.
3. Course attendance and conduct.
- Observe intellectual honesty at all times. There are University rules against plagiarism and cheating which will be strictly enforced.
 - University rules on absence shall apply. Students who are absent (excused or unexcused) for 20% or more of the course activities will be given a grade of 5.0.
 - Come to class promptly. A student is considered late if arrival is 1-15 minutes after the designated time of course activity.
 - Three (3) incidences of tardiness are equivalent to one (1) unexcused absence.
 - A student is considered absent if arrival is >15 minutes after the designated time of ALL scheduled activities.
 - Course materials should only be used for and within the course. These materials are specifically curated and consolidated for you and this course. Thus, you are not allowed to share the materials with anyone outside of the course. Taking photos/videos or any form of reproduction of course materials (i.e. slides, exam questions, videos) and sharing them outside of the course is strictly prohibited. However, we encourage you to keep copies of course materials for your personal and academic use.
 - Digital copies of course materials are posted on the VLE Course site. It is the student's responsibility to print materials if instructed, or if they prefer printed copies.
 - Video/voice recording or photography of any kind of lectures and lab activities is NOT allowed.
 - Any form of replication/copying of examinations and other course activities or its distribution is NOT allowed and will be sanctioned based on implementing rules reflected in the UPCN Catalogue of Information/Student Handbook/UP Manual.



Course Outline

I. Introduction to Human Body

- A. Definition of Anatomy and Physiology
 - A.1. Relationship between Anatomy and Physiology
- B. Structural Organization and Body System
 - B.1. Levels of Body Organizations
- C. Characteristics of Living Human Organism
- D. Control of Homeostasis
- E. Language of Anatomy
 - E.1. Anatomical Position
 - E.2. Directional Terms
 - E.3. Body Regions, Cavities & Planes

II. Cells and Tissues

- A. Cells
 - A.1. The Cellular Level of Organization
 - 1.1 Parts of a Cell
 - 1.2 The Plasma Membrane
 - 1.3 Transport across the Plasma Membrane
 - 1.4 Cytoplasm
 - 1.5 Nucleus
 - 1.6 Protein Synthesis
 - 1.7 Cell Division
- B. Tissues
 - B.1 Types of Tissues and Their Origins
 - B.2 Cell Junctions
 - B.3 Epithelial Tissue
 - B.4 Connective Tissue
 - B.5 Muscular Tissue
 - B.6 Nervous Tissue
 - B.7 Membranes
 - B.8 Excitable cells
 - B.9 Development of Cells and Tissues

III. Integumentary System

- A. Structures of the Skin
- B. Accessory Structure of the Skin
- C. Functions of the Skin
- D. Types of Skin
- E. Maintaining Homeostasis Skin Wound Healing
- F. Development of Integumentary System

IV. Skeletal System

- A. Bone Tissue
 - A.1. Functions of the Bone and Skeletal System
 - A.2 Structure of Bone
 - A.3 Histology of Bone Tissue
 - A.4. Blood and Nerve Supply of Bone
 - A.5 Bone Formation



- A.6 Bone Growth
- A.7 Bone and Homeostasis
- A.8 Exercise and Bone Tissue
- A.9 Development of the Skeletal System
- B. Axial Skeleton
 - B.1 Division of the Skeletal System
 - B.2 Types of Bones
 - B.3 Bone Surface Markings
 - B.4 Skull
 - B.5 Hyoid Bone
 - B.6 Vertebral Column
 - B.7 Thorax
- C. Appendicular Skeleton
 - C.1 Pectoral (Shoulder) Girdle
 - C.2 Upper Limb
 - C.3 Pelvic (Hip) Girdle
 - C.4 Comparison of Female and Male
 - C.5 Comparison of Pectoral and Pelvic Girdles
 - C.6 Lower Limb
- D. Types of Joints
 - D.1 Joint Classifications
 - D.2 Fibrous Joints
 - D.3 Cartilaginous Joints
 - D.4 Synovial Joints
 - D.5 Types of Movements at Synovial Joints
 - D.6 Selected Joints of the Body
 - D.7 Factors affecting Contact and Range of Motion at Synovial Joints
- V. Muscular System
 - A. Muscular Tissue and its types
 - B. Microscopic and Gross Anatomy of Skeletal Muscle
 - C. Function of Muscular System
 - D. Contraction and Relaxation of Skeletal Muscles
 - E. Principal Skeletal Muscles
 - F. Muscle Movements, Roles, and Names
 - G. Development of the Muscular System
 - D. Sites of IM Injections
- VI. Control Systems of the Human Body
 - A. Nervous Tissue
 - A.1 Overview of the Nervous System
 - A.2. Histology of Nervous Tissue
 - A.3 Electrical Signals in Neurons
 - A.4 Signal Transmission at Synapses
 - A.5 Neurotransmitters
 - A.6 Neural Circuits
 - B. Spinal Cord and Spinal Nerves
 - B.1 Spinal Cord Anatomy
 - B.2 Spinal Cord Physiology



- B.3 Spinal Nerves
- C. Brain and Cranial Nerves
 - C.1 Brain Organization, Protection, and Nourishment
 - C.2 The Brain Stem
 - C.3 The Cerebellum
 - C.4 The Diencephalon
 - C.5 The Cerebrum
 - C.6 Cerebral Cortex Areas and Functions
 - C.7 Cranial Nerves
 - C.8 Developmental Aspect of the Nervous System
- D. Autonomic and Sensory Nervous System
 - D.1 Sensory
 - D.1.1 Sensation
 - D.1.2 Somatic Sensations
 - D.1.3 Somatic Sensory Pathways
 - D.1.4 Somatic Motor Pathways
 - D.1.5 Integrative Functions of the Cerebrum
 - D.2 Autonomic
 - D.2.1 Comparison of Somatic and Autonomic Nervous Systems
 - D.2.2 Anatomy of Autonomic Motor Pathways
 - D.2.3 ANS Neurotransmitters and Receptors
 - D.2.4 Physiological Effects of the ANS
 - D.2.5 Integration and Control of Autonomic Functions
- E. Special Senses
 - E.1 Olfaction
 - E.2 Gustation
 - E.3 Vision
 - E.4 Hearing and Equilibrium
 - E.5 Developmental Aspect of the Eyes and Ears
- VII. Endocrine System
 - A. Comparison of the Nervous and Endocrine Systems
 - B. Endocrine Glands
 - C. Activity and Mechanisms of Hormone Action
 - D. Control of Hormone Secretion
 - E. Major Endocrine Organs
 - F. Stress Response
 - G. Development Aspect of Endocrine System
- VIII. Respiratory System
 - A. Anatomy of the Upper and Lower Respiratory Systems
 - B. Transport and Exchange of Oxygen and Carbon Dioxide
 - C. Pulmonary Ventilation
 - D. Control of Respiration
 - E. Exercise and Respiratory
 - F. Lung Volumes and Capacities
 - G. Development of the Respiratory System
- XI. Cardiovascular System



- A. Blood
 - A.1. Functions and Properties of Blood
 - A.2. Formation and Components of Blood
 - A.3. Blood Groups and Blood Types
- B. Heart
 - B.1. Anatomy of the Hear
 - B.2. Circulation of Blood
 - B.3. Cardiac Cycle
 - B.4. Cardiac Muscle Tissue and Cardiac Conduction System
- C. Blood Vessel
 - C.1 Structure and Function of Blood Vessel
 - C.2. Factors affecting blood Flow
 - C.3. Circulatory Routes
 - C.3.1 Systemic Circulation
 - C.3.2 Pulmonic Circulation
 - C.3.3 Fetal Circulation
 - C.4. Capillary Exchange
- X. Lymphatic System and Immunity
 - A. Lymphatic Organs and Tissues
 - B. Lymphatic Vessel and Lymph Circulation
 - C. Concept of Immunity
 - C.1 Innate Immunity
 - C.2 Adaptive Immunity
 - C.3 Cell-Mediated Immunity
 - C.4 Antibody-Mediated Immunity
 - D. Self-recognition and Self-tolerance
 - E. Stress and Immunity
- XI. The Digestive System
 - A. Anatomy of the Digestive System
 - A.1 Organs of the Alimentary Canal
 - A.2 Accessory Digestive Organs
 - B. Functions of the Digestive Systems
 - B.1. Overview of Gastrointestinal Processes and Controls
 - B.2. Activities Occurring in the Mouth, Pharynx and Esophagus
 - B.3 Activities of the Stomach
 - B.4 Activities of the Small Intestine
 - B.5 Activities of the Large Intestine
 - C. Metabolism
 - C.1 Carbohydrate, Fat, and Protein Metabolism
 - C. 2 The Central Role of the Liver
 - C.3 Body Energy Balance
 - D. Nutrition
 - E. Development of the Digestive System and Metabolism
- XII. The Urinary System
 - A. Kidneys
 - A.1 Location and Structure



- A.2 Nephrons
- A.3 Urine Formation and Characteristics
- B. Ureters, Urinary Bladder, and Urethra
- C. Fluids, Electrolyte, and Acid-Base Balance
- D. Development of the Urinary System

XIII. The Reproductive System

- A. Male reproductive system
- B. Female reproductive system
 - B.1 Female reproductive cycle
- C. Development of the reproductive system

Lecture Schedule

Week	Topic	FIC	Activity
Week 1 Aug 22, 2023 3-4PM	Orientation	KBBaccay	Synchronous
Week 2 Aug 29, 2023 1-3PM	Organization of the Human Body Cells and Tissues	KBBaccay	Asynchronous Lecture Video Presentation about the topic Video on Movements Online Discussion/ Discussion Forum Completion of Interactive exercises/ activities Posttest
Week 2 Sep 1, 2023	Integumentary System	MAHernandez	Asynchronous Lecture Video Presentation about the topic Online Discussion/ Discussion forum Completion of Interactive exercises/ activities Posttest
Week 3 Sep 5, 2023	Skeletal System	AHernandez	Asynchronous Lecture Video Presentation about the topic Online Discussion/ Discussion forum Completion of Interactive exercises/ activities Posttest
Week 3 Sep 8, 2023	Muscular System	JGAldaba	Asynchronous Lecture Video Presentation about the topic Video on Movements Online Discussion/ Discussion Forum



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			Completion of Interactive exercises/ activities Posttest
Week 5 Sep 19, 2023	First long Exam 1-3 PM	ALL	Face-to-face
Week 6 Sep 26, 2023	Control Systems of Human Body Nervous Tissue Spinal Cord and Spinal Nerves Brain and Cranial Nerves Sensory, Motor and Integrative System Special Senses	JGAldaba	Face-to-face
Week 7 Oct 3, 2023	Endocrine System	KBBaccay	Face-to-face
Week 8 Oct 10, 2023	Respiratory System	JGAldaba	Face-to-face
Week 9 Oct 17, 2023	Academic Break		
Week 10 Oct 24, 2023	Cardiovascular System Blood	JGAldaba	Face-to-face
Week 11 Oct 31, 2023	Second long exam 1-3 PM	ALL	Face-to-face
Week 12 Nov 7, 2023	Cardiovascular System: Heart and Blood Vessel	JGAldaba	Face-to-face
Week 13 Nov 14, 2023	Lymphatic System	MAHernandez	Face-to-face
Week 14 Nov 21, 2023	Digestive System and Metabolism	MAHernandez	Face-to-face



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Week 15 Nov 28, 2023	Urinary System Reproductive System	KBBaccay	Face-to-face
Week 16 Dec 5, 2023	Third Long Exam 1-3 PM	ALL	Face-to-Face
Week 17 Dec 12, 2023	Final Exam 1-3 PM	ALL	Face-to-Face
Jan 5, 2024	Removal Exam	ALL	Face-to-Face

Laboratory Schedule

Week	Topic/Activity	FIC
Week 4 Sep 12, 2023	Orientation Introduction to Human Body A. Levels. of Organization B. Anatomical Terms, Body Regions, Cavities, Planes The Microscope A. Parts B. Video on how to use Microscope Cells and Tissues A. Membranes Transport B. Cell Division C. Protein Synthesis D. Energy Production	KBBaccay JAlidaba ABPeralta
Week 4 Sep 15, 2023	Integumentary System A. Structures of the Skin B. Accessory Structures of the skin C. Functions of the Skin D. Skin Glands Skeletal System A. Types and functions B. Bone Formation C. Process of Locomotion	KBBaccay MAHernandez JAlidaba



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Week 5 Sep 19, 2023 3-5 PM	Muscular System A. Muscle Tissue B. Muscle Physiology	KBBaccay MAHernandez JAlidaba
Week 5 Sep 22, 2023	1 st Laboratory Exam	KBBaccay MAHernandez JAlidaba
Week 6 Sep 29, 2023	Nervous System Sensory, Motor, and Integrative System	KBBaccay MAHernandez JAlidaba
Week 7 Oct 6, 2023	Endocrine System A. Structure and functions of the organs of the endocrine system B. Hormones and their functions	KBBaccay MAHernandez JAlidaba
Week 8 Oct 13, 2023	Respiratory System A. Respiratory system structures and function B. Mechanism of respiration C. Chemical and nervous control of respiration/factors affecting respiratory rate and dept D. Physiologic processes involved in gas exchange	KBBaccay MAHernandez JAlidaba
Week 9 Oct 20, 2023	Academic Break	
Week 10 Oct 27, 2023	Cardiovascular System: Blood	KBBaccay MAHernandez JAlidaba
Week 11 Nov 3, 2023	2 nd Laboratory Exam	MAHernandez JAlidaba
Week 12 Nov 10, 2023	Cardiovascular System Blood Vessel Heart Cardiac cycle, cardiac output, heart rate, stroke volume Structure and functions of arteries, veins, capillaries	KBBaccay MAHernandez JAlidaba
Week 13 Nov 17, 2023	Lymphatic System and Immunity A. Functions and Composition of Lymphatic System B. Lymphatic Organs and Tissues and their Functions C. Immunity	KBBaccay MAHernandez JAlidaba
Week 14 Nov 21, 2023	Digestive System & Nutrition and Metabolism A. Structures and Functions B. Digestive Process	KBBaccay MAHernandez JAlidaba



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Week 15 Dec 1, 2022	Urinary System A. Structures and functions of the components of the urinary system B. Fluid and Electrolytes Reproductive System A. Structures and functions of the reproductive system B. Differences and male and female reproductive organs C. Reproductive processes	KBBaccay MAHernandez JAldaba
Week 16 Dec 8, 2023	3 rd Laboratory Exam	KBBaccay JAldaba ABPeralta
Week 17 Dec 15, 2023	Removal Exam	KBBaccay JAldaba ABPeralta