



ANATOMY AND PHYSIOLOGY (N3)
First Semester, Academic Year 2022-2023

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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 to describe anatomical structures, 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)

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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.7 Nervous Tissue
 - B.8 Membranes
 - B.9 Excitable cells
 - B.10. 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 Divisions 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
 - H. D. Sites of IM Injections
- VI. Control Systems of 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 System
 - 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 Nervous and Endocrine System
 - 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 Upper and Lower Respiratory System



- 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 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 Heart
 - 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

Course Materials

- Pre-recorded Videos
- Supplementary Videos
- Prescribe textbooks/open educational resources (links)
- Laboratory e-Manual

Study Schedule (Lecture)

Synchronous/Asynchronous (Friday, 8 AM-12 NN)

Week	Topic	FIC	Activity
Week 1 Sep 9, 2022	Orientation Organization of the Human Body Cells and Tissues	KBBaccay JAldaba ABPeralta	Synchronous Video Presentation on overview of Human Body, Polls/Survey Synchronous Lecture Online discussions/forums Completion of Interactive exercises/activities Posttest
Week 2 Sep 16, 2022	Integumentary System Skeletal System	ABPeralta	Posttest Synchronous Lecture Video Presentation about the topic Online Discussion/ Discussion forum Completion of Interactive exercises/activities



Week 3 Sep 23, 2022	Muscular System	JGAldaba	Posttest Synchronous Lecture Video Presentation about the topic Video on Movements Online Discussion/ Discussion Forum Completion of Interactive exercises/ activities
Week 4 Sep 30, 2022	First long Exam 9-11AM	JAldaba ABPeralta	Synchronous
Week 5 Oct 7, 2022	Control Systems of Human Body Nervous Tissue Spinal Cord and Spinal Nerves Brain and Cranial Nerves Sensory, Motor and Integrative System Special Senses	JGAldaba	Posttest Synchronous Lecture Video Presentation about the topic Online Discussion/ Discussion forum Completion of Interactive exercises/ activities
Week 6 Oct 14, 2022	Endocrine System	KBBaccay	Pre-lecture evaluation Posttest Synchronous Lecture Video Presentation about the topic Online discussion/ discussion forum Completion of Interactive exercises/ activities
Week 7 Oct 21, 2022	Academic Break		
Week 8 Oct 28, 2022	Respiratory System Cardiovascular System Blood	JGAldaba	Posttest Synchronous Lecture Video Presentation about the topic Online Discussion/ discussion forum Completion of Interactive exercises/ activities
Week 9	Second long exam	KBBaccay	Synchronous



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Nov 4, 2022	9-11 AM	JAlidaba ABPeralta	
Week 10 Nov 11, 2022	Cardiovascular System: Heart Blood Vessel	JGAlidaba	Posttest Synchronous Lecture Video Presentation about the topic Online Discussion/ discussion forum Completion of Interactive exercises/ activities
Week 11 Nov 18, 2022	Lymphatic System	KBBaccay	Posttest Synchronous Lecture Video Presentation about the topic Online Discussion/discussion forum Completion of Interactive exercises/ activities
Week 12 Nov 25, 2022	Digestive System and Metabolism	ABPeralta	Posttest Synchronous Lecture Video Presentation about the topic Online Discussion Completion of Interactive exercises/ activities
Week 13 Dec 2, 2022	Urinary System Reproductive System	KBBaccay	Pretest/ Posttest Synchronous Lecture Video Presentation about the topic Online Discussion Completion of Interactive exercises/ activities
Week 14 Dec 9, 2022	Third Long Exam 9-11 AM	KBBaccay JAlidaba ABPeralta	Synchronous
Week 15 Dec 16, 2022	Final Exam 9-11 AM	KBBaccay JAlidaba ABPeralta	Synchronous



Week 16 Jan 6, 2023	Removal Exam	KBBaccay JAldaba ABPeralta	Synchronous
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Study Schedule (Laboratory)

Synchronous/Asynchronous (Friday 1-4PM)

Week	Topic/Activity	FIC	Deadline of submission
Week 1 Sep 9, 2022	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 JAldaba ABPeralta	Sep 10, 2022
Week 2 Sep 16, 2022	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 JAldaba ABPeralta	Sep 16, 2022
Week 3 Sep 16, 2022	Muscular System A. Muscle Tissue B. Muscle Physiology	KBBaccay JAldaba ABPeralta	Sep 16, 2022
Week 4	FEEDBACK/CONSULTATION	KBBaccay	



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Sep 30, 2022		JAlidaba ABPeralta	
Week 5 Oct 7, 2022	Nervous System Sensory, Motor and Integrative System	KBBaccay JAlidaba ABPeralta	Oct 7, 2022
Week 6 Oct 14, 2022	Endocrine System A. Structure and functions of the organs of the endocrine system B. Hormones and their functions	KBBaccay JAlidaba ABPeralta	Oct 14, 2022
Week 7 Oct 21, 2022	Academic Break		
Week 8 Oct 28, 2022	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 Cardiovascular System: Blood	KBBaccay JAlidaba ABPeralta	Oct 21, 2022
Week 9 Nov 4, 202	FEEDBACK/CONSULTATION	KBBaccay JAlidaba ABPeralta	
Week 10 Nov 11, 2022	Cardiovascular System Blood Vessel Heart Cardiac cycle, cardiac output, heart rate, stroke volume	KBBaccay JAlidaba ABPeralta	Nov 11, 2022



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	Structure and functions of arteries, veins, capillaries		
Week 11 Nov 18, 2022	Lymphatic System and Immunity A. Functions and Composition of Lymphatic System B. Lymphatic Organs and Tissues and their Functions C. Immunity	KBBaccay JAldaba ABPeralta	Nov 18, 2022
Week 12 Nov 18, 2022	Digestive System & Nutrition and Metabolism A. Structures and Functions B. Digestive Process	KBBaccay JAldaba ABPeralta	
Week 13 Dec 2, 2022	Urinary System A. Structures and functions of the components of the urinary system B. Fluid and Electrolytes C. Reproductive System D. Structures and functions of the reproductive system E. Differences and male and female reproductive organs F. Reproductive processes	KBBaccay JAldaba ABPeralta	Dec 2, 2022
Week 14 Dec 9, 2022	FEEDBACK/CONSULTATION	KBBaccay JAldaba ABPeralta	

Course Requirements:

Lecture

- 3 Long exams
- 1 Final Exam

Laboratory



Completion and Submission of Laboratory Worksheets

Evaluation Criteria:

Long Exams (3)	50%
Participation/Posttest	10 %
Final Exam	20%
Laboratory e-Manual	20%

General Guidelines/House Rules

The mode of instructional delivery will be purely remote. Course materials will be available to students through VLE two days before the schedule to allow students who want to read, study, and accomplish the activities ahead of schedule.

Teaching and learning will be a mix of synchronous and asynchronous activities.

Lecture

- Synchronous lecture is scheduled every Friday morning either pre-recorded or live. Supplemental/featured videos should be viewed within the allotted time for the course.
- All students are expected to be prepared for every session. Read in advance the topics to be tackled for every session. There will be pre-lecture activities every session before the lecture. With this, all students are urged to participate in online meetings via teleconference application (Zoom) for the last hour of every session. This will also be allotted for consultation/feedback. Should a student miss the online meeting, the student must inform the faculty through email or VLE chat.
- Students are encouraged to log in 15 minutes before the start of the online meeting to avoid delays during the session.
- The remaining hours of the session will be dedicated to the completion of activities done asynchronously.
- As a form of formative assessment, post-lecture quizzes, and follow-up questions will be provided after each material. Outputs from the online discussion and answers to the posttests must be submitted within the time allotted for the course.

Laboratory

- Laboratory classes will be conducted every Friday. Students are divided into 3 sections with assigned faculty.
- All students are requested to join the online meeting for the first 30 minutes. This will be allotted for instructions and clarifications. Students are encouraged to log in 15 minutes before the online meeting.



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- All laboratory activities should be completed and submitted within the day. All submissions will only be accepted until 12mn of Friday.

Exams

- For the lecture, there will be three long examinations and one final exam will be given. All examinations will be delivered online.
- **NO MAKE-UP EXAMS** will be given for any missed lecture exam.