

**Northern Marianas College**  
**CURRICULUM ACTION REQUEST**

**Effective Semester / Session:** Spring 2012

**Type of Action:**

- New
- Modification
- Move to Inactive (Stop Out)
- Cancellation

**Course Alpha and Number:** BI 251

**Course Title:** Human Anatomy and Physiology I

**Reason for initiating, revising, or canceling:**

This course guide is modified for regular updating.

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Hervin E. Jacinto

8/14/2012

Proposer

Date

Dr. Alfredo De Torres

8/14/12

Department Chair

Date

Barbara K. Merfalen

8.14.12

Dean of Academic Programs and Services

Date

# Northern Marianas College

## Course Guide

Course: BI 251 Human Anatomy and Physiology I

### 1. Department

Sciences, Mathematics, Health and Athletics

### 2. Purpose

The purpose of this course is to provide students in nursing and health care programs with knowledge of human anatomy and physiology. Human Anatomy and Physiology I is the first semester of a two-semester sequence of courses in human anatomy and physiology.

### 3. Description

#### A. Required/Recommended Textbook(s) and Related Materials

Required:

Marieb, Elaine, and Katja Hoehn. *Human Anatomy & Physiology*.  
10th ed. San Francisco, CA: Benjamin-Cummings Publishing Co.,  
2010. (text and study guide)

Readability level: Grade 14

#### B. Contact Hours

1. **Lecture:** 3 hours per week / 45 hours per semester
2. **Lab:** 3 contact hours per week / 45 per semester
3. **Other:**

#### C. Credits

1. **Number:** 4
2. **Type:** Regular degree credits

#### D. Catalogue Course Description

This is the first part of a two-semester course covering human anatomy and physiology at the biochemical, cellular, microscopic, tissue and organism levels. In this course, all body systems are presented, discussed and integrated with one another. This course is designed for those entering the professional health care field although enrollment is open to all students. Laboratory and field trips are required. Prerequisites: BI 101 and CH 124. English Placement Level: EN 202. Math Placement Level: MA 132. (Offered Fall)

#### E. Degree or Certificate Requirements Met by Course

This course serves as an elective course requirement, a biological science requirement in general education, and a requirement for the Nursing Degree Program.

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### F. Course Activities and Design

The activities in this course include lecture, discussions, homework assignments, laboratory investigations including dissection, tests, quizzes, field trips, projects or research papers, and peer presentations.

### 4. Course Prerequisite(s); Concurrent Course Enrollment; Required English/Mathematics Placement Level(s)

Prerequisite(s): BI 101, CH 124

English Placement Level: EN 202

Math Placement Level: MA 132

### 5. Estimated Cost of Course; Instructional Resources Needed

Cost to the Student: Tuition for a 4-credit course, lab fee, cost of textbook, study guide, and lab manual.

Cost to the College: Instructor's salary; science lab/classroom.

Instructional resources needed for this course include replacement of expendable lab supplies, biology lab equipment appropriate for the course, library reference materials.

### 6. Method of Evaluation

Student grades will be based on the regular letter grade system as described below:

A: Excellent – grade points: 4.0;

B: Above average – grade points: 3.0;

C: Average – grade points: 2.0;

D: Below average – grade points: 1.0;

F: Failure – grade points: 0.0.

NMC's grading and attendance policies will be followed.

### 7. Course Outline

This is a topical outline and does not necessarily indicate the sequence in which the material will be presented.

- 1.0 An Introduction to the Human Body
  - 1.1 Anatomy and physiology defined
  - 1.2 Levels of structural organization

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- 1.3 Concept of homeostasis
- 1.4 Anatomical terms
- 1.5 Planes and sections
- 1.6 Body cavities
- 1.7 Abdominopelvic regions and quadrants
  
- 2.0 The Chemical Level of Organization
  - 2.1 Chemical compounds and life processes
  - 2.2 Inorganic compounds important to life
  - 2.3 Classes of organic compounds important to life
  
- 3.0 The Tissue Level of Organization
  - 3.1 Types of tissues and their origins
  - 3.2 Cell junctions
  - 3.3 Epithelial tissue
  - 3.4 Connective tissue
  - 3.5 Membranes
  - 3.6 Muscle tissue
  - 3.7 Nervous tissue
  - 3.8 Tissue repair
  
- 4.0 The Integumentary System
  - 4.1 Skin structure and layers
  - 4.2 Epidermal derivatives
  - 4.3 The skin and homeostasis, wound healing
  
- 5.0 Bone Tissue
  - 5.1 Structure and functions of bone tissue
  - 5.2 Bone growth
  - 5.3 Bone homeostasis, healing of bone
  
- 6.0 The Skeletal System
  - 6.1 Skull
  - 6.2 Vertebral column
  - 6.3 Thorax
  
- 7.0 The Appendicular Skeleton
  - 7.1 Pectoral girdle and upper limb
  - 7.2 Pelvic girdle and lower limb
  - 7.3 Differences between male and female skeletons

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- 8.0 Articulations
  - 8.1 Classification of joints by structure and by function
  - 8.2 Joint and skeletal disorders
  - 8.3 Treatment of skeletal disorders
  
- 9.0 Muscle Tissue
  - 9.1 Type of muscle tissue and their functions
  - 9.2 Structure of skeletal muscle
  - 9.3 Theory of muscle contraction
  - 9.4 Control of muscle contraction
  - 9.5 Muscle metabolism
  - 9.6 Cardiac muscle
  - 9.7 Smooth muscle
  - 9.8 Muscular disorders
  
- 10.0 The Muscular System
  - 10.1 Identification of skeletal muscles
  - 10.2 Movements and muscle contraction
  - 10.3 Injuries to the muscular system
  
- 11.0 Nervous Tissue
  - 11.1 Nervous system divisions
  - 11.2 Structure of neurons
  - 11.3 Action potential and transmission of nerve impulses
  - 11.4 Neurotransmitters
  - 11.5 Disorders of the nervous system
  
- 12.0 The Nervous System
  - 12.1 Spinal cord and spinal nerves
  - 12.2 Anatomy and functions of the brain
  - 12.3 Cranial nerves
  - 12.4 Somatic, motor and integrative systems
  - 12.5 The autonomic nervous system
  
- 13.0 The Special Senses
  - 13.1 Olfactory (smell)
  - 13.2 Gustatory (taste)
  - 13.3 Vision
  - 13.4 Auditory sensations and equilibrium
  - 13.5 Other senses

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**Course:** BI 251 Human Anatomy and Physiology I

- 14.0 The Endocrine System
  - 14.1 Comparison of nervous and hormonal control
  - 14.2 Endocrine glands and classes of hormones
  - 14.3 Mechanisms of hormone action
  - 14.4 Hormonal disorders

## 8. Instructional Goals

This course will introduce students to:

- 1.0 The difference between “anatomy” and “physiology”;
- 2.0 The levels of structural organization;
- 3.0 Important anatomical terms used in describing structures and their locations;
- 4.0 “Homeostasis” and imbalances / disorders at all levels and all systems;
- 5.0 Review basic concepts in chemistry and the importance of the major classes of biochemical compounds;
- 6.0 Structure and functions of skin;
- 7.0 Structure and functions of bone and the human skeleton from a skeletal model;
- 8.0 Articulations and lever types of joints in the body;
- 9.0 Classes of muscle tissue and the “sliding filament” concept of muscle contraction;
- 10.0 Skeletal muscles in anatomical models as representing the human body;
- 11.0 Nerve structures and functions in production and propagation of impulses;
- 12.0 Divisions of the nervous system and their functions;
- 13.0 Kinds and effects of neurotransmitters;

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- 14.0 Structures of autonomic, sympathetic and parasympathetic nerves;
- 15.0 Structures and functions of major parts of the brain;
- 16.0 Special sense organs on models and specimens;
- 17.0 Laboratory experiments on sensation;
- 18.0 Glands and hormones of the endocrine system;
- 19.0 Nervous system control and endocrine control in homeostasis; and
- 20.0 Use of laboratory instruments and equipment.

### 9. Student Learning Outcomes

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

- 1.0 Develop a vocabulary of appropriate terminology to effectively communicate information related to human anatomy and physiology;
- 2.0 Recognize the anatomical structures and explain the physiological functions of body systems;
- 3.0 Recognize and explain the interrelationships within and between anatomical and physiological systems of the human body;
- 4.0 Synthesize ideas to make a connection between knowledge of anatomy and physiology and real-world situations, including healthy lifestyle decisions and homeostatic imbalances;
- 5.0 Recognize and explain the principle of homeostasis and the use of feedback loops to control physiological systems in the human body;
- 6.0 Demonstrate laboratory procedures used to examine anatomical structures and evaluate physiological functions of each organ system;
- 7.0 Recognize the anatomical structures, explain physiological functions, and recognize and explain the principle of homeostasis applied to the integumentary system;

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- 8.0 Recognize the anatomical structures, explain physiological functions, and recognize and explain the principle of homeostasis applied to the skeletal system;
- 9.0 Recognize the anatomical structures, explain physiological functions, and recognize and explain the principle of homeostasis applied to the muscular system;
- 10.0 Recognize the anatomical structures, explain physiological functions, and recognize and explain the principle of homeostasis applied to the nervous system; and
- 11.0 Recognize the anatomical structures, explain physiological functions, and recognize and explain the principle of homeostasis applied to the endocrine system.

### 10. **Assessment Measures**

Assessment of student learning may include, but not be limited to, the following:

- 1.0 Quizzes, mid-term test, final exams
- 2.0 Laboratory activities and reports
- 3.0 Research papers and projects
- 4.0 All work done in the course is given equal importance and the final semester grade is an average of all grades earned through the semester.