

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 252

Course Title: Human Anatomy and Physiology II

Reason for initiating, revising, or canceling:

This course guide is modified for regular updating.


Hervin E. Jacinto

8/14/2012

Proposer

Date

Dr. Alfredo De Torres

8/14/2012

Department Chair

Date

Barbara K. Merfalen

8.14.12

Dean of Academic Programs and Services

Date

Northern Marianas College Course Guide

Course: BI 252 Human Anatomy and Physiology II

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 II is the second course of a two-course sequence of studies.
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 second part of a two-semester sequence covering human anatomy and physiology at the biochemical, cellular, microscopic, tissue, and organ levels. This course is designed for those entering professional health care fields, although enrollment is open to all students. Laboratory and field trips are required. Prerequisite: BI 251. English Placement Level: EN 202. Math Placement Level: MA 132. (Offered Fall and Spring)
 - E. **Degree or Certificate Requirements Met by Course**

A grade of "C" or better satisfies:

 1. The NMC General Education requirement for biological science;
 2. An elective course requirement; and
 3. A requirement for the Nursing Degree Program.

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F. Course Activities and Design

Course activities include lecture, discussion, homework assignments, laboratory investigations and reports, peer presentations, tests and quizzes, field trips, projects, and research papers.

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

Prerequisite(s): BI 251

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, and 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 The Cardiovascular System: The Blood
 - 1.1 Comparison of extra-cellular fluids
 - 1.2 Functions and characteristics of the blood
 - 1.3 Components of the blood

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- 1.4 Blood cells
- 1.5 Platelets and blood clotting
- 1.6 Blood groups and blood types
- 1.7 Disorders and homeostatic imbalances

- 2.0 The Cardiovascular System: The Heart
 - 2.1 Overview of circulation
 - 2.2 Heart anatomy
 - 2.3 The cardiac cycle and regulation of heartbeat
 - 2.4 Heart disorders and effects of aging

- 3.0 The Cardiovascular System: Blood Vessels and Hemodynamics
 - 3.1 Types of blood vessels
 - 3.2 Capillary exchange
 - 3.3 Physiology and control of blood flow
 - 3.4 Circulatory routes

- 4.0 The Lymphatic System: Resistance to Disease and Immunity
 - 4.1 Lymphatic vessels and lymph circulation
 - 4.2 Lymphatic tissues and their functions
 - 4.3 Nonspecific resistance to disease
 - 4.4 Immunity and classification of immunity
 - 4.5 Antibodies and formation of antibodies
 - 4.6 Autoimmune disease, aging and other disorders

- 5.0 The Respiratory System
 - 5.1 Respiratory system structures
 - 5.2 Pulmonary ventilation and lung capacity
 - 5.3 Gas exchange
 - 5.4 Control of respiration
 - 5.5 Disorders and Aging

- 6.0 The Digestive System
 - 6.1 Digestive system anatomy
 - 6.2 Enzymes and other chemical substances
 - 6.3 Absorption and assimilation of nutrients
 - 6.4 Elimination of undigested material
 - 6.5 Reabsorption of water
 - 6.6 Disorders and Aging

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- 7.0 Metabolism, Nutrition and Temperature Regulation
 - 7.1 Anabolism and catabolism
 - 7.2 Maintenance of body temperature, energy production
 - 7.3 Metabolism of carbohydrates, lipids and proteins
 - 7.4 Basic concepts of nutrition and Energy
 - 7.5 Individual dietary analysis by computer program
 - 7.6 Body Temperature Regulation

- 8.0 The Urinary System
 - 8.1 Anatomy of the urinary system
 - 8.2 Renal physiology
 - 8.3 Production of urine and homeostasis
 - 8.4 Control of urinary function
 - 8.5 Disorders and effects of aging

- 9.0 Maintenance of Homeostasis
 - 9.1 Fluid balance and homeostasis
 - 9.2 Electrolytes
 - 9.3 Acid-base balance and maintenance of pH

- 10.0 The Reproductive System
 - 10.1 Male reproductive anatomy
 - 10.2 Female reproductive anatomy
 - 10.3 Female reproductive cycle
 - 10.4 Methods of birth control
 - 10.5 Effects of Aging

- 11.0 Prenatal Development
 - 11.1 Pregnancy
 - 11.2 Embryonic development
 - 11.3 Gestation
 - 11.4 Parturition
 - 11.5 Adjustments of the infant at birth

- 12.0 Inheritance and Genetics, Life Span
 - 12.1 Basic concepts of Mendelian genetics
 - 12.2 Sex-linked inheritance
 - 12.3 Hereditary disease and genetic counseling

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8. Instructional Goals

This course will introduce students to:

- 1.0 The anatomy and physiology of the circulatory system and heart; lymphatic system; respiratory system; digestive system; urinary system; male and female reproductive system;
- 2.0 Fetal and postnatal circulation;
- 3.0 The regulation of heartbeat and blood pressure;
- 4.0 Gas and material exchange through capillaries;
- 5.0 Heart and cardiovascular disorders and effects of aging;
- 6.0 Various types of immunity, the role of antibodies and resistance to disease, and disorders related to the immune system;
- 7.0 Respiratory disorders and the effects of aging;
- 8.0 Enzyme function and the specificity of enzymes in digestion;
- 9.0 The distinction between anabolism and catabolism;
- 10.0 Metabolism of organic compounds and energy production;
- 11.0 Important classes of nutrients and their functions;
- 12.0 Basic nutritional concepts and dietary analysis;
- 13.0 Metabolic disorders and diseases of the digestive system;
- 14.0 Role of personal food choices to health and wellness;
- 15.0 pH and the homeostatic role of buffers in the body's acid-base balance;
- 16.0 Disorders of the urinary system and the effects of aging;
- 17.0 Puberty and associated changes in humans;

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- 18.0 The female reproductive cycle and menstruation, menopause and aging;
- 19.0 Methods of birth control, fertilization, embryonic development of humans, fetal development and nutrition, parturition and changes at birth, and causes of birth defects; and
- 20.0 Concepts of Mendelian genetics and the Punnett square, sex-linked inheritance, sex linked disorders, and hereditary diseases and the role of genetic counselors.

9. Student Learning Outcomes

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

- 1.0 Recognize the anatomical structures, explain physiological functions, and recognize and explain the principle of homeostasis applied to the cardiovascular system;
- 2.0 Recognize the anatomical structures, explain physiological functions, and recognize and explain the principle of homeostasis applied to the lymphatic system;
- 3.0 Recognize the anatomical structures, explain physiological functions, and recognize and explain the principle of homeostasis applied to the respiratory system;
- 4.0 Recognize the anatomical structures, explain physiological functions, and recognize and explain the principle of homeostasis applied to the digestive system;
- 5.0 Recognize the anatomical structures, explain physiological functions, and recognize and explain the principle of homeostasis applied to the urinary system; and
- 6.0 Recognize the anatomical structures, explain physiological functions, and recognize and explain the principle of homeostasis applied to the reproductive system.

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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.