JEFFERSON COLLEGE

COURSE SYLLABUS

PTA105

Anatomy and Physiology II for Physical Therapist Assistants

4 Credit Hours

Revised by:
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PTA105 Anatomy and Physiology II for Physical Therapist Assistants

I. CATALOGUE DESCRIPTION

A. Prerequisite: PTA100 Anatomy and Physiology I for Physical Therapist Assistants, or BIO211 Anatomy and Physiology I with a grade of "C" or better.
Please Note: Physical Therapist Assistant program requires a grade of "B" or better in PTA100 Anatomy and Physiology I for Health Professions or BIO211 Anatomy and Physiology I for programmatic admission.

B. Credit hour award: 4

C. Description: This course is a continuation of PTA100 Anatomy and Physiology I for Physical Therapist Assistants with emphasis on the sensory, nervous, endocrine, circulatory, respiratory, lymphatic, digestive, and genitourinary systems. This course will also present additional information on metabolism, energy, fluid and electrolyte balance, and the acid-base balance within the body and how each works to maintain homeostasis. Laboratory time is required. (F, S)

II. EXPECTED LEARNING OUTCOMES AND ASSESSMENT MEASURES

Expected Learning Outcomes	Assessment Measures
Describe the function of each organ system.	Written Assignments Summative Written Examinations Lab Activity or Examination
Contrast the composition of tissues of the organs that make up the nervous, endocrine, lymphatic, digestive, circulatory, respiratory, and genitourinary systems.	Summative Written Examinations Quizzes Classroom Discussion Written Assignments Lab Activity or Examination
Demonstrate the ability to correlate gross structures of all studied systems with surface anatomy landmarks.	Classroom Discussion/Activity Lab Activity or Examination
Describe the function of cells and cellular components of the nervous, endocrine, digestive, lymphatic, circulatory, respiratory, and genitourinary system structures.	Summative Written Examinations Quizzes Classroom Discussion Written Assignments Lab Activity or Examination
Demonstrate the ability to correlate gross central, peripheral, and autonomic nervous system structures with surface anatomy landmarks.	Classroom Discussion Lab Activity or Examination

Identify changes in the nervous, endocrine, digestive, lymphatic, circulatory, respiratory, and genitourinary systems across the lifespan.	Summative Written Examinations Quizzes Classroom Discussion Written Assignments
Explain how the circulatory and respiratory systems function together.	Classroom Discussion Written Assignments Summative Written Examinations Lab Activity or Examination
Describe the role of hormones in various bodily functions.	Summative Written Examinations Quizzes Classroom Discussion Written assignments Lab Activity or Examination
Describe factors that regulate basal metabolic rate.	Summative Written Examinations Quizzes Classroom Discussion
Discuss the importance of the acid-base balance for maintenance of homeostasis.	Summative Written Examinations Quizzes Classroom Discussion Lab Activity or Examination
Describe the various mechanisms the body uses for immunity.	Summative Written Examinations Quizzes Classroom Discussion Lab Activity or Examination

III. OUTLINE OF TOPICS

A. Neural Tissue
   1. Anatomical Divisions
   2. Functional Divisions
   3. Neurons
   4. Transmembrane Potential
   5. Action Potential
   6. Synaptic Activity
   7. Neurotransmitters
   8. Excitatory and Inhibitory Stimuli

B. Spinal Cord, Spinal Nerves and Spinal Reflexes
   1. Central Nervous System
   2. Peripheral Nervous System
   3. Spinal Cord
      a. Gray Matter
      b. White Matter
      c. Spinal Nerves

4. Reflexes

C. The Brain and Cranial Nerves
   1. The Brain
   2. Medulla Oblongata
   3. The Pons
   4. The Cerebellum
   5. The Midbrain
   6. The Diencephalon
   7. The Limbic System
   8. The Cerebrum
   9. Cranial Reflexes

D. Sensory Pathways and The Somatic Nervous System

E. The Autonomic Nervous System and Higher-Order Functions

F. The Special Senses
   1. Sense of Smell
   2. Sense of Taste
   3. Vision
   4. Hearing

G. The Endocrine System
   1. Homeostasis
   2. Hormones
   3. Pituitary Gland
   4. Thyroid Gland
   5. Four Parathyroid Glands
   6. Adrenal Glands
   7. Pancreas
   8. Organs with Secondary Endocrine Functions
   9. Role of Exercise in Diabetes

H. Blood
   1. Plasma
   2. Red Blood Cells
   3. Blood Types
   4. White Blood Cells
   5. Platelets
   6. Homeostasis

I. The Heart
   1. Structure and Function
   2. Conducting System
   3. Cardiac Cycle
   4. Cardiodynamics

a. Cardiac Output
b. Heart Rate
c. Stroke Volume

5. Effects of Exercise on the Heart

J. Blood Vessels and Circulation
1. Arteries and Arterioles
2. Capillaries
3. Venules and Veins
4. Capillary Exchange
5. Cardiovascular Regulatory Mechanisms
6. Physiological Stress
7. Pulmonary and Systemic Circuits

K. The Lymphatic System and Immunity
1. Lymphatic Vessels and Lymphocytes
2. Lymphoid Tissues and Organs
3. Innate Defenses
4. Adaptive Defenses
5. T Cells
6. B Cells
7. Immunological Competence
a. Immune Disorders
b. Stress and the Immune Response

L. The Respiratory System
1. Upper Respiratory System
2. Larynx
3. Trachea and Primary Bronchi
4. The Lungs
5. Gaseous Exchange
6. Pulmonary Ventilation
7. Oxygen and Carbon Dioxide Transport
8. Control of Respiration

M. The Digestive System
1. The Oral Cavity
2. The Pharynx
3. The Esophagus
4. The Stomach
5. The Small Intestine
6. The Large Intestine
7. Absorption and Use of Nutrients

N. Metabolism and Energy
1. Carbohydrate Metabolism
2. Lipid Metabolism

3. Protein Catabolism
4. Adequate Nutrition
5. Metabolic Rate

O. The Urinary System
1. Kidneys and Nephrons
2. Glomerular Filtration Rate
3. Antidiuretic Hormone and Aldosterone
4. Urine

P. Fluid, Electrolyte and Acid-Base Balance
1. Regulation of Fluids and Electrolytes
2. Hydrostatic and Osmotic Pressures
3. Sodium, Potassium, Calcium, and Chloride Balance
4. pH Control
5. Respiratory Acidosis/Alkalosis
6. Metabolic Acidosis/Alkalosis

IV. METHODS OF INSTRUCTION

A. Lecture

B. Textbook readings

C. Supplemental handouts

D. Active learning in the classroom setting

E. Case studies

F. Hands-on interaction during laboratory portion of course in which the students use microscopes, handle bones, etc.

V. REQUIRED TEXTBOOKS

A. One year subscription to Anatomy and Physiology Online through Acrobatiq

B. Marieb, E., and Mitchell, S. *Human Anatomy & Physiology Laboratory Manual* (current edition). Boston, MA: Pearson Education, Inc.

VI. REQUIRED MATERIALS

A. A computer with internet access and basic software

B. Course homepage available through Blackboard

C. Binder, paper, pens, pencils with erasers

VII. SUPPLEMENTAL REFERENCES

A. Class handouts

B. Library Resources
   1. Supplemental texts
      a. Seiger, C. *Fundamentals of Anatomy & Physiology Study Guide* (current edition). San Francisco, CA: Pearson Education, Inc.
      b. Netter, F. H. *Atlas of Human Anatomy* (current edition). Philadelphia, PA: Saunders-Elsevier.
      c. Martini, F., Ober, W., and Nath, J. *Visual Anatomy and Physiology* (current edition). San Francisco, CA: Pearson Education, Inc.
   2. Databases
   3. Periodicals
   4. Videos

C. Internet Resources
   1. On-line references
      a. anatomyarcade.com
      b. bbc.co.uk/science/humanbody/body

VIII. METHOD OF EVALUATION

A. Summative Written Examinations and Quizzes: 40%

B. Lab Activity or Examination: 30%

C. Written Assignments: 25%

D. Attendance and Classroom Discussion: 5%

E. Grading Scale:
   A=90-100%
   B=80-89.9%
   C=70-79.9%
   D=60-69.9%
   F=under 60%

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Library: phone 636-797-3000, ext. 3169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook. (See College website, http:/www.jeffco.edu).

XI. ATTENDANCE STATEMENT

Regular and punctual attendance is expected of all students. Any one of these four options may result in the student being removed from the class and an administrative withdrawal being processed: (1) Student fails to begin class; (2) Student ceases participation for at least two consecutive weeks; (3) Student misses 15 percent or more of the coursework; and/or (4) Student misses 15 percent or more of the course as defined by the instructor. Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.

XII. OUTSIDE OF CLASS ACADEMICALLY RELATED ACTIVITIES

The U.S. Department of Education mandates that students be made aware of expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically related activities such as reading, studying, and completing assignments. Specifically, time spent on academically related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.