

PHED 4603

APPLIED EXERCISE PHYSIOLOGY

Semester Hours 3

Semester/Year:

Instructor:

Office Location:

Office Hours:

Telephone:

E-mail:

Fax:

COURSE DESCRIPTION

Prerequisite: Admission to Teacher Education; PHED 2604 or equivalent

This class focuses on the physiological responses and adaptations of the human body during exercise. An in-depth analysis of the responses of the respiratory and circulatory systems to exercise is a major focus. Applied activities include data collection and analysis of a variety of physiological processes related to exercise.

CONCEPTUAL FRAMEWORK

The conceptual framework of the College of Education at the University of West Georgia forms the basis on which programs, courses, experiences, and outcomes are created. By incorporating the theme “Developing Educators for School Improvement”, the College assumes responsibility for preparing educators who can positively influence school improvement through altering classrooms, schools, and school systems (transformational systemic change). Ten descriptors (decision makers, leaders, lifelong learners, adaptive, collaborative, culturally sensitive, empathetic, knowledgeable, proactive, and reflective) are integral components of the conceptual framework and provide the basis for developing educators who are prepared to improve schools through strategic change. National principles (INTASC), propositions (NBPTS), and standards (Learned Societies) are also incorporated as criteria against which candidates are measured.

The mission of the College of Education is to develop educators who are prepared to function effectively in diverse educational settings with competencies that are instrumental to planning, implementing, assessing, and re-evaluating existing or proposed practices. This course’s

objectives are related directly to the conceptual framework and appropriate descriptors, principles or propositions, and Learned Society standards are identified for each objective. Class activities and assessments that align with course objectives, course content, and the conceptual framework are identified in a separate section of the course syllabus.

COURSE OBJECTIVES

Students will:

1. list the nutrients and describe their relationship to human performance with regard to energy production, measurement, and expenditure
(*Adaptive; Decision Making; Knowledgeable; Leadership; Lifelong Learning; Reflective; INTASC 1,5; PSC 4,14*)
(McArdle, Katch, & Katch, 2007; Plowman & Smith, 2008; Powers & Howley, 2007);
2. review the structure and function of the pulmonary, circulatory, skeletal, neural, and endocrine systems, discuss their interaction with human performance, and employ these principles through applied laboratory experiences
(*Adaptive; Decision Making; Knowledgeable; Leadership; Lifelong Learning; Reflective; INTASC 1,5; PSC 4,14*)
(McArdle, Katch, & Katch, 2007; Plowman & Smith, 2008; Powers & Howley, 2007);
3. explain the impact of environmental stress, such as altitude, temperature, and pressure, on performance during exercise
(*Adaptive; Decision Making; Knowledgeable; Leadership; Lifelong Learning; Reflective; INTASC 1,5; PSC 4,14*)
(McArdle, Katch, & Katch, 2007; Plowman & Smith, 2008; Powers & Howley, 2007);
4. explain methods for assessing body composition, the causes of obesity, and methods of weight control and employ these principles through applied laboratory experiences
(*Adaptive; Decision Making; Knowledgeable; Leadership; Lifelong Learning; Reflective; INTASC 1,5; PSC 4,14*)
(McArdle, Katch, & Katch, 2007; Plowman & Smith, 2008; Powers & Howley, 2007);
and
5. describe the role of physical activity in health and aging
(*Adaptive; Decision Making; Knowledgeable; Leadership; Lifelong Learning; Reflective; INTASC 1,5; PSC 4,14*)
(McArdle, Katch, & Katch, 2007; Plowman & Smith, 2008; Powers & Howley, 2007).

TEXTS, READINGS, AND INSTRUCTIONAL RESOURCES**Required Text**

Powers, S. K., & Howley, E. T. (2007). *Exercise physiology: Theory and application to fitness and performance* (6th ed.). New York: McGraw-Hill.

References

American College of Sports Medicine (2006). *ACSM's metabolic calculations handbook*. Baltimore: Lippincott, Williams & Wilkins.

American College of Sports Medicine (2005). *Guidelines for exercise testing and prescription* (7th ed.). Baltimore: Lippincott, Williams & Wilkins.

American College of Sports Medicine (2000). *Resource manual for guidelines for exercise testing and prescription* (2nd ed.). Philadelphia: Lea & Febiger.

Baechle, T. R. (editor) (2000). *Essentials of strength training and conditioning* (2nd ed.). Champaign, IL: Human Kinetics.

deVries, H. A., & Housh, T. J. (1994). *Physiology of exercise: For physical education, athletics and exercise science* (5th ed.). Madison, WI: Brown & Benchmark.

Enoka, R. M. (2002). *Neuromechanical basis of kinesiology* (3rd ed.). Champaign, IL: Human Kinetics.

Housh, T. J., Housh, D. J., & Devries, H. A. (2006). *Applied exercise & sport physiology* (2nd ed.). Scottsdale, AZ: Holcomb Hathaway.

McArdle, W. D., Katch, F. I., & Katch, V. L. (2007). *Exercise physiology: Energy, nutrition and human performance* (6th ed.). Baltimore: Williams & Wilkins.

McComas, A. J. (1996). *Skeletal muscle: Form and function*. Champaign, IL: Human Kinetics.

Neiman, D. C. (2007). *Exercise testing and prescription* (6th ed.). New York: McGraw-Hill.

Plowman, S. A., & Smith, D. L. (2008). *Exercise physiology for health, fitness, and performance* (2nd ed.). Baltimore: Lippincott, Williams, & Wilkins.

Robergs, R. A., & Keteyian, S. J. (2003). *Fundamentals of exercise physiology for fitness, performance, and health* (2nd ed.). New York: McGraw-Hill.

Silverthorn, D. U. (2004). *Human physiology: An integrated approach* (3rd ed.). Boston: Pearson.

Watkins, J. (1999). *Structure and function of the musculoskeletal system*. Champaign, IL: Human Kinetics.

Wilmore, J. H., & Costill, D. L. (1999). *Physiology of sport and exercise* (2nd ed.). Champaign, IL: Human Kinetics.

ASSIGNMENTS, EVALUATION PROCEDURES, AND GRADING POLICY

Link to Conceptual Framework. The primary goals of this course are as follows: 1) demonstrate an understanding of the basic terminology of the discipline; 2) demonstrate an understanding of the sources and mechanisms of energy production, measurement, and expenditure; 3) demonstrate an understanding of aerobic and anaerobic energy systems and develop training routines for each; and 4) explain work performance under environmental stress such as high altitude, thermal stress, and underwater diving. At the completion of this course, students will have demonstrated achievement in the following areas *decision making*: choosing solutions to performance scenarios (**Assignment 1**) *leadership*: taking responsibility for ongoing inquiry (**All Assignments**), *lifelong learning*: studying the various components and applications of exercise physiology (**All Assignments**); *knowledgeable*: drawing on acquired knowledge and demonstrating understanding (**All Assignments**); *adaptive*: implementing exercise physiology principles to learning situations and modifying these principles when necessary (**Assignment 1**); and *reflective*: engaging in ongoing, continuous reflection of the primary principles in the field of exercise physiology (**Assignment 1**).

Assignments

1. Applied Activities (100 points total)

There will be a series of laboratory activities throughout this course. These activities are specifically designed to apply the scientific principles covered in class lecture and discussion. Students will be required to upload some of these activities to Foliotek for evaluation.

Course objectives: 1, 2, 3, 4, 5

2. Exams (100 points each)

There will be three exams throughout the semester. The exams will cover assigned readings and class lecture and discussion topics. The exams will encompass material covered to that point in the semester. Questions will consist of multiple choice, true or false, or short answer.

Course objectives: 1, 2, 3, 4, 5

3. Quizzes and Other Activities (10 points each)

There will be five quizzes (some announced and some unannounced) and ten activities throughout the semester. These activities will be directly related to the current topics be covered during that section of the semester.

Course objectives: 1, 2, 3, 4, 5

4. Journal Article Reviews (25 points each)

Students will be required to choose (with the permission of the instructor) two journal articles related to applied exercise physiology and provide an abstract of the findings of the study.

Course objectives: 2, 3, 4, 5

GRADING POLICY

A = 90-100%	540-600 points
B = 80-89%	480-539 points
C = 70-79%	420-479 points
D = 60-69%	360-419 points
F = below 60%	below 360 points

CLASS POLICIES**Attendance**

Students are expected to attend and fully participate in all class meetings, arrive on time and remain until the discussion for that class period is complete. Absences will be excused with appropriate written documentation for the following reasons:

- a. Death or major illness in a student's immediate family;
- b. Participation in legal proceedings or administrative procedures that require a student's presence;
- c. Religious holy day;
- d. Illness that is too severe or contagious for the student to attend class (as determined by a physician);
- e. Required participation in military duties;
- f. Mandatory admission interviews for professional or graduate school which cannot be rescheduled; or
- g. Official representation of the University of West Georgia (athletic team, debate team, etc.).

E-mail

University of West Georgia students are provided a MyUWG e-mail account. The University considers this account to be an official means of communication between the University and the student. The purpose of the official use of the student e-mail account is to provide an effective means of communicating important University related information to UWG students in a timely manner. It is the student's responsibility to check his or her email.

Professional Disposition

The student is expected to demonstrate professional dispositions in all courses, field experiences, and other settings in which the student represents the university. Professional dispositions include but are not limited to attitude, dress, language, collegiality, preparedness, and punctuality. Professional disposition assessments are a significant part of the student's permanent file and will be used to determine the student's progress and continuation in the program. In addition, disposition assessments will help determine whether a student is ready to enter the internship experience.

All students seeking teaching certification through the Department of Physical Education and Recreation will be reviewed by all instructional faculty members during the thirteenth (13th) week of fall and spring semesters regarding their professional dispositions. Additional reviews will be conducted as needed. This holistic evaluation will determine students' continuation in the certification program.

Foliotek

This course will require students to save course assignments. The course assignments will be uploaded to the student's electronic portfolio (foliotek).

Work Credit

No material prepared to meet requirements in one course may be used to fulfill the requirements in another course without prior permission of the instructor.

Americans with Disabilities Statement (ADA)

The ADA is a federal anti-discrimination statute that provides comprehensive civil rights for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of his/her disabilities. If you believe you have a disability requiring an accommodation, please contact the Disability Services Office in Room 272 of the Student Development Center located in Parker Hall. The phone number is (678) 839-6428, and the fax number is (678) 839-6429.

Academic Integrity and Honor Code Pledge

At the University of West Georgia we believe that academic and personal integrity are based upon honesty, trust, fairness, respect, and responsibility. Students at West Georgia assume responsibility for upholding the honor code. West Georgia students pledge to refrain from engaging in acts that do not maintain academic and personal integrity. These include, but are not limited to, plagiarism, cheating, fabrication, aid of academic dishonesty, lying, bribery, or threats, and stealing.

Pledge:

Having read the Honor Code for UWG, I understand and accept my responsibility to uphold the values and beliefs described and to conduct myself in a manner that will reflect the values of the institution in such a way as to respect the rights of all UWG community members. As a West Georgia student, I will represent myself truthfully and complete all academic assignments honestly. I understand that if I violate this code, I will accept the penalties imposed,

should I be found guilty of violations through processes due me as a university community member. These penalties may include expulsion from the University. I also recognize that my responsibility includes willingness to confront members of the University community if I feel there has been a violation of the Honor Code.

**If plagiarism or another act of academic dishonesty occurs, a grade of zero will be given for the course assignment and, if further actions are warranted, the misconduct will be dealt with in accordance with the academic misconduct policy as stated in *The Student Handbook*, the *Undergraduate Catalog* and *Graduate Catalog*.

CLASS OUTLINE

Week	Topic	Chapter
1	Internal Control	2
2	Bioenergetics	3
3	Metabolism	4
4	Energy, Exam 1	5
5	Circulatory Adaptations	9
6	Respiration	10
7	Acid-base Balance	11
8	Nervous System Control	7
9	Skeletal System Control, Exam 2	8
10	Physiology of Training	13
11	Performance Factors	19
12	Evaluation Tests	20
13	Performance Training	21
14	Temperature Regulation and Environmental Conditions	12 & 24
15	Nutrition and Ergogenic Aids	23 & 25
16	Final Exam	