

UNIVERSITY OF NORTH ALABAMA
DEPARTMENT OF HEALTH, PHYSICAL EDUCATION AND RECREATION

COURSE NUMBER: HPE 353W
COURSE TITLE: Physiology of Exercise
SEMESTER HOURS: 3 credit hours
PREREQUISITES: Bio 241 or Bio 242
REVISED: January 2011

Physiology of Exercise

CATALOG DESCRIPTION: Emphasis on the effects of exercise on the anatomical structures and physiological functions in humans during acute and chronic physical activity. In addition to exercise responses, the impact of environmental conditions, dietary and nutritional ergogenics, basic energy system and its regulation, and training responses, considerations for specific populations including children, females, and the active aging adult will be covered.

TEXT: Wilmore, J. H., and Costill, D. L. (2008). *Physiology of Sport and Exercise*, 4th Ed. Human Kinetics, Champaign, Illinois.

SPECIAL FEE: Students enrolled in this course will be required to pay a special fee of \$30 to cover the cost of equipment usage and laboratory supplies.

COURSE OBJECTIVES: At the completion of this course the student will be able to demonstrate:

- Knowledge of methods of energy production and explain under what conditions each method of energy production contributes to physical activity.
- Knowledge of the derivation of lactic acid and its role in exercise metabolism.
- Knowledge of the concept of VO₂ and factors influencing VO₂ and VO₂ max.
- Knowledge of the various factors proposed to contribute to fatigue and the mechanisms of action for each factor.
- Knowledge of blood flow through the cardiovascular system including major organs/tissues and vessels.
- Knowledge of gas exchange (oxygen and carbon dioxide) between atmospheric air and its relevance to the aerobic production of ATP.
- Knowledge of the biological, biochemical and mechanical components involved in muscle contraction.
- Knowledge of the biological, physiological and biochemical adaptations to different types of training.
- Knowledge of the mechanisms of action of various ergogenic aids.
- Knowledge of how the body responds to acute and chronic thermal stress.

PROFESSIONAL STANDARDS AND ASSESSMENT: Content included in this course fulfill Alabama Physical Education Knowledge and Ability Standard 290-3-3-33:

- (2) (a) 1.VII Physiological principles of physical activity including biological sciences pertaining to the structure and function of the human body, human movement, and wellness (exercise, nutrition, and health-related fitness).

Content of this course links with UNA College of Education Conceptual Framework References 1, 2.

Standard Code	Standard	Assessment	Instrument
290-3-3-.33(2)(a)1.(vii)	Physiological principles of physical activity including biological sciences pertaining to the structure and function of the human body, human movement, and wellness (exercise, nutrition, and health-related fitness).	Exam	Grading scale

COURSE CONTENT:

- Enzymes, energy, metabolism, lactate
- Oxygen consumption and exercise/sport performance
- Muscle structure and function
- Central and peripheral factors contributing to fatigue
- Cardiovascular and respiratory physiology
- Adaptations to training
- Ergogenic aids
- Thermoregulation and environmental physiology

COURSE ACTIVITIES:

Lectures/discussions

Reading and critical analysis of professional research articles

Laboratory experiences

Written exams

GRADING PROCEDURE:

Three 100 point exams will be given including the final. Each will be weighted equally with the average of all exams accounting for 90% of the course grade. The remaining 10% of the course grade will come from the research paper submitted for completion of the course. This will be submitted through Livetext. Students having ≤ 1 absence and no 'lates' may drop their lowest exam grade (the remaining exams will be averaged to account for 90% of course grade). Only in class, written exams are eligible for exemption for those meeting requirements (i.e. no lab based exams/assignments or assignments completed through Livetext can be dropped). Completion of the research paper and submission through Livetext is required for successful completion of the course.

The student's final grade for this course will be determined according to the following scale:

A 100-90%

B 89-80%

C 79-70%

D 69-60%

F $\leq$ 59%

ATTENDANCE POLICY:

Attendance is taken every class meeting. Students are permitted the equivalent of 2 weeks of classes as “free” absences (4 days for a T/Th course, 6 days for a M/W/F course) without their course grade being altered. Each absence beyond this number (beginning with the 5th or 7th absence), the student’s course grade will be reduced 5 points per absence. Only absences due to documented university travel or documented legal obligations do not count toward this policy. Students should only use ‘free’ absences in emergencies. Students missing class are responsible for acquiring all missed notes, materials, and assignments. Absence is not a legitimate excuse for not submitting assignments on time or taking exams. Students should obtain contact information from two (2) other students for the purpose of keeping up to date in class. Students arriving after attendance is taken are considered ‘late’. Students arriving late are responsible for ensuring they are counted ‘late’ and not ‘absent’ for that class period because being late disrupts class.

MAKE-UP POLICY: Make up work is permissible only in the case of excused absences and should be scheduled on a one on one basis with the professor. In cases when the students know beforehand they will miss (i.e. scheduled university travel), they should meet with the professor BEFORE the date(s) they will miss to arrange for making up missed work.

PERSONAL TECHNOLOGY POLICY: Use of cell phones or other electronic devices will not be allowed in class without prior instructor approval. Phones should be off or in silent mode. There is no reason for a student to have to send or address calls or messages during class. If the student has extenuating circumstances and needs to be available for an emergency, permission should be secured from the course instructor before class begins. The first time a cell phone rings in class may be attributed to poor judgment. If this occurs a second time the person who brought the phone to class will be dismissed from class for the day and counted absent and receive a grade of zero (0) for the day’s class work. This cell phone policy applies to all classes including exams and presentations.

ACCOMMODATION STATEMENT: In accordance with the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973, the University offers reasonable accommodations to students with eligible documented learning, physical and/or psychological disabilities. Under Title II of the Americans with Disabilities Act (ADA) of 1990, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Amendment Act of 2008, a disability is defined as a physical or mental impairment that substantially limits one or more major life activities as compared to an average person in the population. It is the responsibility of the student to contact Disability Support Services to initiate the process to develop an accommodation plan. The accommodation plan will not be applied retroactively. Appropriate, reasonable accommodations will be made to allow each student to meet course requirements, but

no fundamental or substantial alteration of academic standards will be made. Students needing assistance should contact Disability Support Services (256-765-4214).

ACADEMIC HONESTY:

Students of the university academic community are expected to adhere to commonly accepted standards of academic honesty. Allegations of academic dishonesty can reflect poorly on the scholarly reputation of the University including students, faculty and graduates. Individuals who elect to commit acts of academic dishonesty such as cheating, plagiarism, or misrepresentation will be subject to appropriate disciplinary action in accordance with university policy.

Incidents of possible student academic dishonesty will be addressed in accordance with the following guidelines:

1. The instructor is responsible for investigating and documenting any incident of alleged academic dishonesty that occurs under the instructor's purview.
2. If the instructor finds the allegation of academic dishonesty to have merit, then the instructor, after a documented conference with the student, will develop a plan for disciplinary action. If the student agrees to this plan, then both instructor and student will sign the agreement. The faculty member will forward a copy of the signed agreement to the Office of Student Conduct for record-keeping purposes.
3. If the student disagrees with the instructor's proposed plan for disciplinary action and wishes to take further action, he/she is responsible for scheduling a meeting with the chair of the department where the course is housed to appeal the proposed disciplinary plan. The department chair shall mediate the matter and seek a satisfactory judgment acceptable to the faculty member based on meetings with all parties. If a resolution is reached, the disposition of the case will be forwarded to the Office of Student Conduct. If a resolution at the departmental level is not reached and the student wishes to take further action, he/she is responsible for scheduling a meeting with the dean of the college where the course is housed to appeal the proposed disciplinary plan. The college dean shall mediate the matter and seek a satisfactory judgment acceptable to the faculty member based on meetings with all parties. If a resolution is reached, the disposition of the case will be forwarded to the Office of Student Conduct. If a resolution at the college level is not reached and the student wishes to take further action, he/she is responsible for scheduling a meeting with the Vice President for Academic Affairs and Provost (VPAA/P) to appeal the proposed disciplinary plan. The VPAA/P shall mediate the matter and seek a satisfactory judgment acceptable to the faculty member based on meetings with all parties. After reviewing all documentation, the VPAA/P may, at his/her discretion, choose either to affirm the proposed action, to refer the case to the Office of Student Conduct for further review, or to dismiss the matter depending on the merits of the case. The final disposition of the case will be disseminated to appropriate parties, including the Office of Student Conduct.
4. If a student is allowed academic progression but demonstrates a repeated pattern of academic dishonesty, the VPAA/P may, after consultation with the

Office of Student Conduct, assign additional penalties to the student, including removal from the University.