

HHP 430

Exercise Physiology



Image from: <http://www.dsu.edu/majors-programs/exercise-science.aspx>

taught by:

Kathe A. Gabel, PhD, RD, CSSD
Department of Health and Human Performance

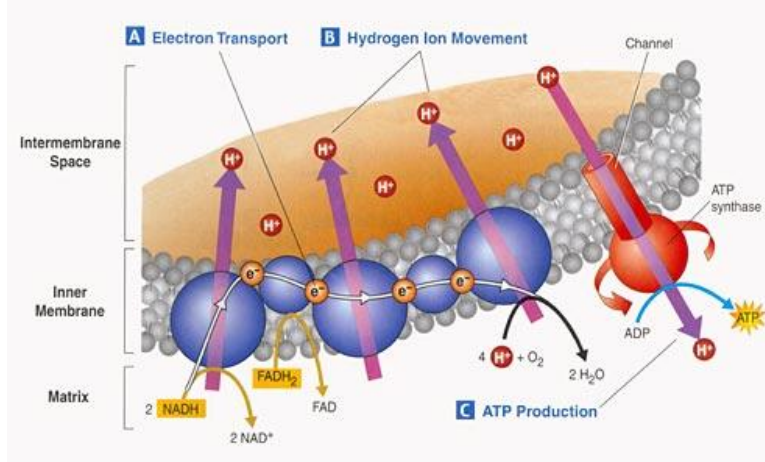


Image from: <http://fhs-bio-wiki.pbworks.com/w/page/12145766/ETC>

Spring Semester, 2012
College of Allied Health Professions
Montana State University – Billings

MSU – Billings
College of Allied Health Professions
Department of Health and Human Performance
Spring, 2012

Course Rubric & Title: HHP 430 Exercise Physiology
Instructor: Kathe A. Gabel, PhD, RD, CSSD
Office/Hours: PE 117, MW 9:00 – 10:00 a.m., by apptmt

Phone: 406-657-2927
E-mail: kgabel@msubillings.edu

Class Times: TR 8:40 – 10:10 a.m.
Location: PE 121

Required Text: Plowman, S.A., Smith, D.L. (2011). Exercise Physiology for Health, Fitness, and Performance, 3rd Ed. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins.

Required Course Packet: Gabel, K.A., (Spring, 2012) *Course Materials for HHP 430*. MSU-Billings Bookstore.

Catalog Description: HHP 430 Exercise Physiology, 3 cr.
Prerequisite: HHP 100 – Foundations in Exercise Science
Highly recommended prerequisite: Anatomy and Physiology

The course provides students the opportunity to study the physiological fundamentals needed to understand skilled movement. The course focuses on the responses of the human body to exercise with emphasis on professional interventions in various education, health promotion, and human performance settings. Various body systems (i.e. respiratory, circulatory, musculoskeletal, endocrine) are studied to understand the adaptations associated with involvement in physical fitness, sport, and healthy lifestyle activities.

Course Goals:

Upon successful course completion, you will be able to:

1. demonstrate knowledge & comprehension of physiological principles of human movement.
2. demonstrate professional and critical thinking in the application of exercise physiology principles to instruction, supervision and oversight of people engaged in recreational, sport, fitness, health promotional and educational activities.

Course Content:

Course topics are organized in an Introduction and 4 modules:

- Metabolic system
- Cardiovascular-Respiratory system
- Neuromuscular-Skeletal system
- Neuroendocrine-Immune system

Please see specific course topics listed in your **Overview of Course Content** and tentative **Semester Schedule**.

Class Policies:

Your conduct is to be consistent with the Code of Student Conduct in the current MSU-B Student Handbook. This can also be found on-line: <http://www.msubillings.edu/stuaff/StudentHandbook.pdf>

A student will fail this course if he or she participates in academic dishonesty, i.e. cheating, plagiarism, dishonesty, inappropriate use of electronic devices, or any violation of expectations listed in the MSU-B Student Handbook.

At this level of your education, you are expected to demonstrate professionalism in all behaviors, i.e. respect for others, presentation & completion of projects, respect for diverse opinions, depth of inquiry, punctuality and participation in class discussions and activities.

For your reference:

Code of Student Conduct for MSU-B Students:

“1. Academic Misconduct

A. Academic misconduct includes all acts of dishonesty in any academically related matter and any knowing or intentional help or attempt to help, or conspiracy to help, another student commit an act of academic dishonesty. Academic dishonesty includes, but is not limited to, each of the following acts when performed in any type of academic or academically-related matter, exercise, or activity.

1. Cheating - using or attempting to use unauthorized materials, information, study aids, or computer-related information.

2. Plagiarism - representing the words, data, works, ideas, computer program or output, or anything not generated in an authorized fashion as one’s own.

3. Fabrication - presenting as genuine any invented or falsified citation or material.

4. Misrepresentation - falsifying, altering, or misstating the contents of documents or other materials related to academic matters, including schedules, prerequisites, transcripts, and/or misrepresenting personal identification (collusion) in an online course, which includes, but is not limited to, another person completing course requirements.

B. When academic dishonesty occurs or is alleged to have occurred, the instructor has the right and obligation to take appropriate action, which may include a verbal or written reprimand or warning, a grade of “F” (failure) for the assignment or test involved or a grade of “F” for the course. The instructor may also refer the incident for possible institutional adjudication, as outlined in **Part IX, B, 4**. If a student wishes to appeal his/her grade, he/she must follow the **Code of Conduct** appeal guidelines outlined in **Part IV, L**.

C. When misconduct of a behavioral nature occurs in the classroom, the instructor has the right and obligation to take appropriate action which may include a verbal or written reprimand or warning that the behavior may be in violation of the **Code of Student Conduct Part IX, B, 2, F (Actions Against Persons or Groups, 4. Disorderly conduct or behavior)**. Furthermore, failure to comply with a request to cease the disorderly conduct may result in an additional violation **Part IX, B, 2, P** (Failure to comply with Lawful Directions of University Officials). In such case that disorderly behavior continues in the classroom, the instructor may elect to refer the incident for institutional adjudication, as outlined in **Part IX, B, 4**.”

Class Attendance: Attendance to each class is expected. Any missed information is your responsibility.

Class Accommodations: **Students with Disabilities:**

MSU Billings is committed to providing equal access. If you anticipate barriers related to the format or requirements of this course, please meet with me so that we can discuss ways to ensure your full participation in the course. If you determine that disability-related accommodations are necessary, please contact Disability Support Services (657-2283; located in the Academic Support Center). We can then plan how best to coordinate your accommodations.

Course Evaluation: Grades will be assigned according to the following criteria

Grade	Percent	Points
A	93 – 100	465 – 500
A-	90 – 92	450 – 464
B+	87 – 89	435 – 449
B	83 – 86	415 – 434
B-	80 – 82	400 – 414
C+	77 – 79	385 – 399
C	73 – 76	365 – 384
C-	70 – 72	350 – 364
D+	67 – 69	335 – 349
D	63 – 66	315 – 334
D-	60 – 62	300 – 314
F	<60	<300

Evaluative Components:	Exam 1	100 points
	Exam 2	100
	Exam 3	100
	Exam 4	100
	Research Summary	25
	Service Learning Project	75
	Total	500 points



Image from: <http://office.microsoft.com>

HHP 430 – Exercise Physiology

Overview of Course Content

Welcome! And Introduction

Exercise physiology as a science
Research as part of class
Exercise modality, intensity and duration
Basic terminology of exercise, testing, and training
Training principles
Selye's Theory of Stress

Module One: Metabolic System

How your body produces energy: Biochemical pathways and hormones
Fuel utilization at rest and during exercise
Anaerobic metabolism
Aerobic metabolism

Module Two: Cardiovascular-Respiratory System

Respiratory control during exercise
Respiratory adaptation to exercise and training
Cardiovascular control during exercise
Cardiovascular adaptation to exercise and training

Module Three: Neuromuscular-Skeletal System

Relationship among the skeletal, neural and muscular systems
Muscular contraction and movement
Muscular training principles

Module Four: Neuroendocrine-Immune System

Effect of exercise on immune system



**HHP 430 – Exercise Physiology
Tentative Semester Outline and Reading Assignments**

Day	Lecture Topic	Reading Assignment	Exam Topics
12.1.12 Session 1	Welcome! Introduction Basic terminology	Ch. 1 and 5	Terminology Exercise principles Selye's Theory of Stress
17.1.12 Session 2	Energy Production Biochemical pathways 1	Ch. 2	ATP, glycolysis, Krebs cycle, ETC and oxidative phosphorylation Lipolysis, beta oxidation and oxidative deamination and transamination
19.1.12 Session 3	Biochemical pathways 2	Ch. 2 & 21	Glycogenolysis, gluconeogenesis, and ketoacidosis Glucose transporter carrier proteins (GLUT) Hormones
24.1.12 Session 4	Anaerobic Metabolism	Ch. 3	ATP-PC
26.1.12 Session 5	Lactate Basics	Ch. 3	Lactate metabolism
31.1.12 Session 6	Lactate Research	Course materials	Lactate metabolism
2.2.12	Exam 1	Ch. 1 – 3, 5 & 21	Previously listed topics

7.2.12 Session 7	Aerobic Metabolism	Ch. 4	Oxygen consumption Carbon dioxide production Metabolic Equivalent (MET)
9.2.12 Session 8	Respiration Basics	Ch. 9	Mechanics of breathing Regulation of breathing Oxyhemoglobin Dissociation Curve
14.2.12 Session 9	Cardiovascular Basics	Ch. 11 *Research Summary* Due	Mechanics of circulation Blood pressure Blood flow
16.2.12 Session 9 continued	Cardiovascular Basics	Ch. 11	Field tests to estimate VO _{2max}
21.2.12 Session 10	Cardiovascular Response Assessment	Ch. 13	Exercise prescriptions Adaptations to training
23.2.12	Exam 2	Ch. 4, 9, 11 & 13	Previously listed topics
28.2.12 Session 11	Skeletal Basics	Ch. 16	Composition Assessment of skeletal system Adaptations to exercise
1.3.12 Session 12	Neuromuscular Aspects of Movement	Ch. 20 & 21	Nervous system basics Receptors & Spindles
5 – 9.3.12	Spring Break	No class	

13.3.12 Session 12 continued	Neuromuscular Aspects of Movement	Ch. 20 & 21	Flexibility Balance
15.3.12 Session 13	Muscular Contraction	Ch. 17	Anatomy Muscle fibers Sliding Filament theory
20.3.12	Muscular Fatigue and Assessment	Ch. 18 & 19	Classification of contractions Muscular fatigue and soreness
22.3.12	Exam 3	Ch. 16, 17, 20, & 21	Previously listed topics
27.3.12 Session 14	Muscular Fatigue and Assessment	Ch. 18 & 19	DOMS Rhabdomyolysis Laboratory and Field Methods
29.3.12	Mini-break	No Class	
3.4.12	Exercise and the Immune System	Ch. 22	Immune system basics OTS
5.4.12 Session 14 continued	Exercise and the Immune System	Ch. 22	Immune system basics OTS
10.4.12 Session 15	<i>WellCheck</i> Preparation		
12.4.12 Session 15 continued	<i>WellCheck</i> <i>Wellness Fair</i> Main Campus		Bone Density Blood pressure Flexibility

17.4.12 Session 16	Thermoregulation	Ch. 14	Temperature regulation Heat illness Hypothermia
19.4.12	Course Evaluation And Course Review	*WellCheck paper* Due	
23.12.11	Final Exam – 8:00 – 9:50 a.m.	Ch. 14, 18, 19 & 22	Previously listed topics

