**GEORGE MASON UNIVERSITY**

School of Recreation, Health and Tourism

**EFHP 610: Advanced Exercise Physiology (3)**

Monday: 4:30 – 7:10 PM

Fall 2009

Professor: Dr. Jason Winchester

Office: Room 208A Bull Run Hall (Prince William Campus)

Office Hours: Monday: 3:15 – 4:15 PM & Thursday: 10:40 – 11:40 AM

Email: [**jwinches@gmu.edu**](mailto:jwinches@gmu.edu)

Office Phone: (703) 993 – 3247 – If you cannot reach me there, send an e-mail *directly to my Mason account* (not via Blackboard) and I will get back to you ASAP. I rarely check my office voice mail, so e-mail is definitely your best bet if I do not answer the phone.

**Class Location:**

Prince William Campus, Room 246 Bull Run Hall

Prerequisites:

Full admittance to EFHP graduate program or permission of instructor

**Course Description:**

Lecture, demonstration, and seminar experiences in applying research findings to understanding physiological function and effects of exercise on people.

**Objectives:**

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

1. Obtain a workable theoretical knowledge relative to the human's physiologic responses to and capacity for exercise
2. Apply the principles of exercise physiology to help themselves and others achieve optimum work performance
3. Provide intelligent and factual answers related to the effects of work on the human body
4. Attain knowledge toward understanding current topics in the practice of exercise physiology
5. Demonstrate the ability critically review current research and link findings with those discussed in class

**Course Overview:**

The material for the lecture portion of this class will be presented in lecture/discussion format. All class lectures are available in PowerPoint 2007 format, and are found on BLACKBOARD. Assessment will include 2 take home examinations and a comprehensive literature review, details of which are outlined later in this syllabus.

**Required Readings:**

# Brooks, Fahey, and Baldwin. (2004) *Exercise Physiology: Human Bioenergetics and Its Applications*. McGraw- Hill. ISBN-10: 0072556420

**Class Policies:**

* Attendance is not required but is considered imperative for success in this class. The student is responsible for any information presented, discussed and assigned in class regardless of whether or not the student was present. Make-up tests, quizzes, assignments, or other grades will be granted for excused absences only:
* serious illness (doctor’s note required)
* official university excused absences (with proper documentation **and** prior notification)
* extenuating circumstances (PRIOR approval should be obtained or direct contact made with the instructor **within 24 hours** of the event)
* Please be aware that any student who does not attend during the initial drop/add phase and has not communicated with me is subject to being administratively dropped from the roster. Roll will be taken up until the last day to add a class only and will not be used in grade calculation.
* When contacting the instructor in reference to class issues via e-mail or other method (for example a note in my mail box or on my office door), if you do not receive confirmation that I have received your message, project, etc., within a reasonable time period (***2 work days***), then I did not get it! **In other words, if you do not hear back from me, please follow up to make sure we are communicating effectively!**
* I do not check or respond to my work e-mail on weekends or holidays. In other words, if you write me an e-mail on Friday night, don’t expect to hear back until sometime on Monday.
* Please check Blackboard e-mail account prior to coming to class. If I am ill or there is a change in the class location, materials required, or meeting time, I will send an e-mail out via blackboard to all of your Mason student accounts.
* Students are always encouraged to come to office hours in order to ask additional questions on the material.
* All students are expected to conduct their work for this class as spelled out in the George Mason University Honor Code. All exams and class projects are subject to evaluation under plagiarism detection software such as “Turn It In” or “SafeAssign”.
* Student employment does not take priority over academic obligations. I recognize that many students need to work in order to meet living expenses, however, there are distinct guidelines for students in terms of the number of credit hours which should be attempted based on how many hours per week a student has outside employment. For additional information on this subject, please see the GMU student handbook.

**Evaluation:**

MID-TERM AND FINAL EXAMS:

There will be two examinations as part of student evaluation. Both exams will be in written format and will be take home exams. Exams will be written in Microsoft Word compatible software in Times New Roman 12 pt. font and should be double spaced. The exam will be given out during mid-term week and during finals week. Students will obtain the exam by e-mailing the professor and requesting that the exam be sent between Monday and Wednesday of mid-term or finals week. At that time, I will e-mail the exam to the student and the student will have exactly 48 hours from the time stamp on my outgoing e-mail to complete and return the exam (hard copy – no electronic versions) for grading.

The test is open book, notes, etc. IT IS NOT HOWEVER "OPEN OTHER PERSON"! I expect that each person works on the test without contacting any other person. When grading exams, if I find answers that read very similar to another's answers or cover very similar content with very similar interpretation, I will suspect that those individuals somehow collaborated on the test (either with each other or with a third party). I will seek independent opinions from other faculty members to see if they concur with my observation. If this happens, an independent arbitrator and I will confront those persons. If under oral examination these individuals cannot satisfactory answer additional questions related to the course material, I will undertake procedures to ensure that those individuals will not receive credit for this course or maintain their standing in our graduate programs. In addition, please remember that all work is subject to evaluation via plagiarism detection software. Students should cite sources for their answers in APA format and are encouraged to be as thorough and complete as possible on each and every question.

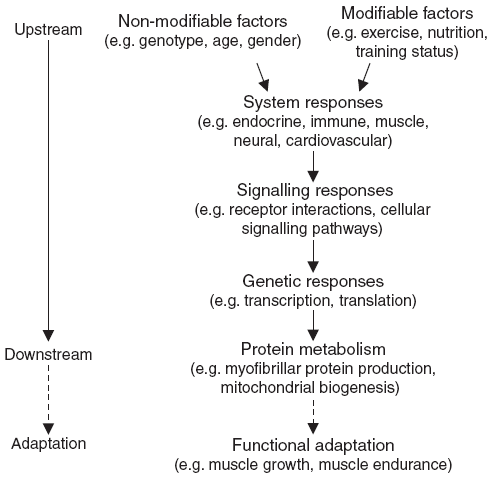
It is permissible to talk to the professor concerning the exams during your 48 hour period. Additional office hours will be scheduled as needed during both mid-term and finals week and students are encouraged to discuss any questions that they may have on the exam during that time.

EXAM PICKUP:

For privacy reason, students are not allowed to pick up exams for other students without my having prior written permission from the student who’s exam is being collected. If you have extenuating circumstances and wish to e-mail me permission prior to handing back exams, I will be more than happy to allow the person designated in your letter to pick up your exam.

TERM PAPER

There will be one written project due by the last day of class of the semester. Students will write a literature review detailing the relationships noted on the following model:



Students will use this model to explain the relationship between choices (students will pick one type of stimulus) made in an individual exercise program or session and the resultant adaptations noted in one of the trainable characteristics of strength, power, endurance, local muscular endurance, speed, balance, hypertrophy, etc. given the non-modifiable factors (student will choose scenario with instructor approval). Students are expected to draw links between the responses noted in each stage of this model and between the initial stage (stimulus) and each subsequent stage of the model as well as the final stage (functional adaptation) and each previous stage of the model. Students are expected to develop a case strongly supported by peer-reviewed literature throughout their project. Please be aware, most exercise stimuli affect multiple systems, induce multiple signaling responses, etc. A complete discussion of how one particular exercise stimulus affects the body in the stages noted in the model leading to a response in a trainable characteristic is expected. Students should spend significant time discussing the importance of these processes in choosing which exercise stimuli to apply in a given situation and how understanding processes such as cellular signaling and resultant response can assist the exercise professional in making more appropriate decisions.

Students will provide the professor an outline of their project no later than mid-term week. All topics and outlines must be approved by the professor in order for the project to count. Late projects will not be accepted without a university approved excuse and where possible, prior approval.

CLASS DISCUSSION:

There will be 15 points possible for students who do an exceptional job of participating in class discussion. Discussion points will be allocated at the sole discretion of the professor and students cannot earn points when they are not in class.

POINTS POSSIBLE BREAKDOWN:

Mid-term take home exam = 50 points

Final take home exam = 50 Points

Literature review = 50 points

Class discussion = 15 points

* TOTAL POINTS POSSIBLE: = 165 Points

GRADING SCALE:

Student’s letter grade is based on the individual point score converted into a percentage grade. Based upon the student’s class performance the following letter grades will be assigned:

98 – 100 % = A+

93 – 97.99 % = A Distinguished Mastery of Material

90 – 92.99% = A-

87 – 89.99 % = B+

83 – 86.99 % = B Good Mastery of Material

80 – 82.99 % = B-

77 – 79.99 % = C+

73 – 76.99 % = C Acceptable Mastery of Material

70 – 72.99 % = C-

60 – 69.99 % = D Minimally Acceptable

< 60 % = F Unacceptable

GRADING PROCEDURES:

An example of a C grade for an exam *could* be, knowing the basic tenants of a concept discussed in class and basic competency with practical exercises such that it is evident that the person has read the material but has poor understanding. An A grade on an exam could be having a complete understanding of all material to a level of detail that goes beyond memorization of the notes, and a demonstrated ability to make extensions of the material to several different exercise and work situations.

An example of a C grade on an assignment *could* be providing the minimum information required and having an acceptable format with acceptable grammatical structure. An example of an A grade on an assignment would be providing all information required, presenting information in a logical and professional manner, writing in a clear and grammatically correct fashion, use of correct citation methods, use of appropriate sources for citation, use of proper units of measurement such as SI units, and a well thought out/logical interpretation/discussion of results and information.

Please remember, a C is average, an A is exceptional. Your work will be graded accordingly.

GRADING CONCERNS:

Students who feel there is a grading error or who wish to gain greater knowledge as to why a particular grade was earned on a homework assignment have one week following the date papers are handed back to the class to express their concerns. Following that one-week period, all homework grades are set and will not be altered. Students are encouraged to come and look at their grade on the final exam prior to submission of final grades via Patriot Web. After submission is complete, no grade alterations will be made so please come by during office hours of finals week if you have concerns.

NO STUDENT WILL BE THOUGH OF ANY DIFFERENTLY OR PUNISHED IN ANY WAY FOR BRINGING A POTENTIAL GRADE CONCERN TO MY ATTENTION. I want all students to walk away with an understanding of why you earned the grade that you did. In addition, I want to make sure that any potential mistakes in grading on my part are taken care of immediately. I encourage ALL students to take advantage of opportunities to discuss their grades with me throughout the semester.

**Assumption of risk:**

As with any activity there is an assumed risk while participating. We will do all we can to provide a safe environment; however, you are ultimately responsible for your well-being. The university will not be held liable for any injuries that occur. Any student who has a documented medical condition, (e.g. Asthma, Hypertension, Cardiac Condition, etc.), or any injury that may preclude participation in a specific activity should inform the instructor immediately. Arrangements will be made with an alternate activity for your participation.

**Final comments:**

If a student does not understand an assignment, what is expected of him/her, or is having difficulty mastering the material/skills covered as a part of this class, **I am available to help**! I have an “open door” policy and students are always encouraged to call or e-mail me for an appointment, or to just come by my office at any time. I will be more than happy to assist any student whom is having difficulty and requests help, or who just wants to dig deeper into the class material. Please let me know if you are having any difficulty at all and do not wait until you are past the point of no return to seek help. Many students in the past could have had better grades had they come and talked with me earlier rather than later upon recognition that there was a problem. ***I can’t help you if I don’t know there is a problem!***

**The instructor reserves the right to make changes to the course syllabus and/or schedule at any time. Students will always be informed of any changes made.**

**Tentative course outline – topics which *may* be discussed:**

**\*** *Actual topics covered will depend on class progress throughout the semester*

* The Limits of Human Performance
* Bioenergetics
* The Maintenance of ATP Homeostasis in Energetics and Human Movement Basics of Metabolism
* Glycogenolysis and Glycolysis in Muscle: The Cellular Degradation of Sugar and Carbohydrate to Pyruvate and Lactate
* Cellular Oxidation of Pyruvate and Lactate
* Lipid Metabolism
* Metabolism of Proteins and Amino Acids
* Neural-Endocrine Control of Metabolism: Blood Glucose Homeostasis During Exercise
* Metabolic Response to Exercise: Lactate Metabolism During Exercise and Recovery, Excess Postexercise O2 Consumption (EPOC), O2 Deficit, O2 Debt, and the "Anaerobic Threshold"
* The Why of Pulmonary Ventilation
* The How of Ventilation
* Ventilation as a Limiting Factor in Aerobic Performance at Sea Level
* The Heart
* Circulation and Its Control
* Cardiovascular Dynamics During Exercise
* Skeletal Muscle Structure and Contractile Properties
* Neurons, Motor Unit Recruitment, and Integrative Control of Movement
* Principles of Skeletal Muscle Adaptations
* Muscle Strength, Power, and Flexibility
* Principles of Endurance Conditioning
* Exercise in the Heat and Cold
* Exercise, Atmospheric Pressure, Air Pollution, and Travel
* Cardiovascular Diseases and Exercise
* Obesity, Body Composition, and Exercise
* Exercise, Disease, and Disability
* Exercise Testing and Prescription
* Nutrition and Athletic Performance
* Ergogenic Aids
* Gender Differences in Physical Performance
* Growth and Development
* Aging and Exercise
* Fatigue During Muscular Exercise

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| GMU RHT Logo (without date) | * All students are held to the standards of the George Mason University Honor Code [See http://www.gmu.edu/catalog/apolicies/#Anchor12] * University policy states that all sound emitting devices shall be turned off during class unless otherwise authorized by the professor * Students with disabilities who seek accommodations in a course must be registered with the Disability Resource Center (DRC) and inform the instructor , in writing, at the beginning of the semester [See www.gmu.edu/student/drc] * For additional School of Recreation, Health, and Tourism information, please visit the website at http://rht.gmu.edu |