

GEORGE MASON UNIVERSITY  
School of Recreation, Health, and Tourism  
Division of Health and Human Performance  
KINE 310 – DL2 — Exercise Physiology I (3)  
Fall 2014

|                  |                             |                |                       |
|------------------|-----------------------------|----------------|-----------------------|
| INSTRUCTOR:      | Peter Melanson, MS, Adjunct | EMAIL ADDRESS: | pmelanso@gmu.edu      |
| OFFICE LOCATION: | Online – E-Mail             | PHONE NUMBER:  | 919-753-6654          |
| OFFICE HOURS:    | By Appointment              | FAX NUMBER:    | 703-993-8888          |
| DEPT. WEBSITE:   | RHT.gmu.edu                 | CLASS WEBSITE: | mymasonportal.gmu.edu |

#### PREREQUISITES/COREQUISITES

BIOL 124, BIOL 125, ATEP 300, Coreq. KINE 200

#### COURSE DESCRIPTION

Introduces students to the physiologic, neuroendocrine, and biochemical changes of the human body that are associated with exercise and work.

#### DELIVERY METHOD:

This course will be delivered online using an “asynchronous” format via the Blackboard learning management system (LMS) housed in the MyMason portal. You will log in to the Blackboard course site using your Mason email name (everything before “@masonlive.gmu.edu) and email password. The course site will be available on Monday August 25 at 12:01am EST.

#### TECHNICAL REQUIREMENTS

To participate in this course, students will need the following resources:

- High-speed Internet access with a standard up-to-date browser, either Internet Explorer or Mozilla Firefox. Opera and Safari are **not** compatible with Blackboard;
- Consistent and reliable access to their GMU email and Blackboard, as these are the official methods of communication for this course
- Students may be asked to create logins and passwords on supplemental websites and/or to download trial software to their computer or tablet as part of the course requirements.
- The following software plug-ins for Pcs and Macs respectively, available for free downloading by clicking on the link next to each plug-
  - Adobe Acrobat Reader: <http://get.adobe.com/reader/>
  - Windows Media Player: <http://windows.microsoft.com/en-US/windows/downloads/windows-media-player>
  - Apple QuickTime Player: [www.apple.com/quicktime/download/](http://www.apple.com/quicktime/download/)
- A headset microphone for use with the Blackboard Collaborate web conferencing tool

#### EXPECTATIONS

- **Course Week:** Because online courses do not have a “fixed” meeting day, our week will **start on Monday August 25 at 12:01am EST and finish on Monday December 15th at 11:59pm EST.**

- Students must actively check the course Blackboard site and their GMU email for communications from the instructor, at a minimum this should be **6 times per week**.
- Students are expected to actively engage in all course activities throughout the semester, which include viewing of all course materials, completing course activities and assignments, and participating in course discussions and group interactions.
- Students are expected to demonstrate competence in the use of all course technology. Students are expected to seek assistance if they are struggling with technical components of the course.
- Students should expect that they could experience some technical difficulties at some point in the semester and should, therefore, budget their time accordingly. Late work will not be accepted based on individual technical issues.
- **Workload:** Expect to log in to this course **at least SIX times a week** to read announcements, participate in the discussions, and work on course materials. Remember, this course is **not** self-paced. There are **specific deadlines** and **due dates** listed in the **COURSE SCHEDULE** section of this syllabus to which you are expected to adhere. It is the student's responsibility to keep track of the weekly course schedule of topics, readings, activities and assignments due.
- **Advising:** If you would like to schedule a one-on-one meeting to discuss course requirements, content or other course-related issues, and you are unable to come to the Mason campus, we can meet via telephone or web conference. Send me an email to schedule your one-on-one session and include your preferred meeting method and suggested dates/times.
- **Netiquette:** Our goal is to be **collaborative**, not combative. Experience shows that even an innocent remark in the online environment can be misconstrued. I suggest that you always re-read your responses carefully before you post them to encourage others from taking them as personal attacks. **Be positive in your approach to others and diplomatic with your words.** I will do the same. Remember, you are not competing with each other but sharing information and learning from one another as well as from the instructor.

## COURSE OBJECTIVES

Upon successful completion of this course students will:

1. Have a theoretical knowledge regarding the physiological responses and capacity for exercise by the human body.
2. Be able to differentiate the physiological metabolic processes that govern human movement and apply each of these processes to physical performance.
3. Be able to compare and contrast the physiological principles of the support systems of the body and appraise how each system is affected by and adapts to exercise.
4. Demonstrate the ability to make recommendations regarding exercise programs based on basic exercise physiology knowledge.
5. Attain knowledge of current issues in exercise physiology research and be able to critically evaluate published literature

## REQUIRED READINGS

Kennedy, W.L., Wilmore, J.H., Costill, D.L. (2012) *Physiology of Sport and Exercise (5th edition)*. Human Kinetics.

## EVALUATION

This course will be graded on a percentage system.

| Assignment                      | Percentages |
|---------------------------------|-------------|
| Exam #1                         | 10%         |
| Exam #2                         | 10%         |
| Exam #3                         | 10%         |
| Exam #4                         | 10%         |
| Final Exam                      | 20%         |
| Homework Assignments            | 15%         |
| Research Paper and Presentation | 15%         |
| Professionalism                 | 10%         |
| <b>Total</b>                    | <b>100%</b> |

## Grading Scale

|              |              |              |             |
|--------------|--------------|--------------|-------------|
| A = 94 – 100 | B+ = 88 – 89 | C+ = 78 – 79 | D = 60 – 69 |
| A- = 90 – 93 | B = 84 – 87  | C = 74 – 77  | F = 0 – 59  |
|              | B- = 80 – 83 | C- = 70 – 73 |             |

## Exams and Final Exam (Objectives 1, 2, 3 & 4)

There will be **4** exams and a final exam (**5** total exams). The final exam will be cumulative. The format for all exams will be multiple choice, true/false, and fill in the blank questions. **IMPORTANT** – the exams will be timed. Once you start the exam you must complete within a set amount of time (90 minutes for mid-term exams; 120 minutes for the final exam).

## Homework Assignments (Objectives 1, 4 & 5)

Regular homework will be assigned. There will be **8** total HW assignments. No late homework assignments will be accepted. All homework assignments must be submitted on Blackboard.

## Research Paper and Presentation (Objective 5)

Students will be required to submit a research paper. The research paper will be a literature review of a specific topic in the field of exercise physiology. The literature review must summarize the **major** papers related to the topic chosen. The literature review should be 4-6 pages (typed, double-spaced, 12 pt font). A **minimum of 10** references must be used. The paper should be formatted using APA guidelines. A more detailed description of the research paper requirements will be made available on Blackboard. Additionally, students must create a 8-10 minute PowerPoint presentation of their research paper. Students will be required to record audio of them presenting the presentation using the built in audio recording in the PowerPoint software. Directions as to how to perform this will be given if needed. The research paper and presentation must be submitted on Blackboard.

## TENTATIVE COURSE SCHEDULE

| DATE   |        |       | TOPIC   | READINGS/ASSIGNMENT DUE  |
|--------|--------|-------|---|--|
| Week 1 | August | 25-27 | <b>Read:</b> Syllabus<br><b>Study PowerPoint slides:</b> Introduction to Exercise Physiology, Macronutrients and Micronutrients | Read Chapter 15 pp 367-391   |
| Week 1 | August | 28-30 | Study for Quiz; Start HW #1; Continue reviewing materials (Readings, PPT, & supplemental materials) for Exam #1                 | <b>Complete Quiz</b> on Respondus Lockdown Browser <b>Due</b> by 5 pm on Saturday, August 30th |

| DATE   |                   |       | TOPIC   | READINGS/ASSIGNMENT DUE  |
|--------|-------------------|-------|---|--|
| Week 2 | September         | 1 – 3 | <b>Read/Listen/Watch:</b> Supplement Materials on Blackboard for Exam #1; Read Book; Work on HW #1  |  |
| Week 2 | September         | 4 - 6 | <b>Study PowerPoint slides:</b> Optimum Nutrition for Exercise; Ergogenic Aids to Performance   | 1) Read Chapter 16<br>2) HW #1 <b>Due</b> by 5 pm on Saturday, September 6th                                       |
| Week 3 | September         | 8-10  | Review for Exam #1, Work on HW #2   |  |
| Week 3 | September         | 11-13 | <b>Exam #1</b>  | 1) Exam 1 completed by 5 pm on Saturday, September 13th<br>2) <b>HW #2 Due</b> by 5 pm on Saturday, September 13th |
| Week 4 | September         | 15-17 | <b>Study PowerPoint slides:</b> Fundamentals of Human Energy Transfer During Exercise;  | Read Chapter 2   |
| Week 4 | September         | 18-20 | <b>Read/Listen/Watch:</b> Supplement Materials on Blackboard for Exam #2; Read Book; Work on HW #3  |  |
| Week 5 | September         | 22-24 | <b>Study PowerPoint slides:</b> Measuring and Evaluating Human Energy – Generating Capacities During Exercise; Energy Expenditure During Rest and Physical Activity | 1) Read Chapter 5<br>2) HW#3 <b>Due</b> by 5 pm on Wednesday, September 24th                                       |
| Week 5 | September         | 25-27 | Review for Exam #2, Work on HW #4   |  |
| Week 6 | September/October | 29-1  | <b>Exam #2</b> completed by 5 pm on Wednesday October 1 <sup>st</sup>   | HW #4 D <b>Due</b> by 5 pm on Wednesday, October 1 <sup>st</sup>   |
| Week 6 | October           | 2 – 4 | Research paper/PowerPoint project topic selection; Work on HW #5  | Research paper/PowerPoint topics Selections <b>due</b> by 5PM on Saturday, October 4 <sup>th</sup>                 |
| Week 7 | October           | 6 – 8 | <b>Study PowerPoint slides:</b> The Cardiovascular System and Exercise  | Read Chapter 6<br>Read Chapter 8 pp 181-196<br>HW #5 <b>due</b> by 5PM on Wednesday, October 8th                   |
| Week 7 | October           | 9 –11 | <b>Read/Listen/Watch:</b> Supplement Materials on Blackboard for Exam #3; Read Book; Work on HW #6  |  |
| Week 8 | October           | 13-15 | <b>Study PowerPoint slides:</b> The Respiratory System and Exercise   | Read Chapter 7<br>Read Chapter 8 pp 196-203<br>HW #6 <b>due</b> by 5PM on Wednesday, October 15th                  |
| Week 8 | October           | 16-18 | <b>Read/Listen/Watch:</b> Supplement Materials on Blackboard for Exam #3; Read Book; Work on HW #7  |  |
| Week 9 | October           | 20-22 | <b>Study PowerPoint slides:</b> The Neuromuscular System  | Read Chapter 1<br>Read Chapter 3   |

| DATE    |                      |       | TOPIC   | READINGS/ASSIGNMENT DUE  |
|---------|----------------------|-------|---|--|
| Week 9  | October              | 23-25 | <b>Read/Listen/Watch:</b> Supplement Materials on Blackboard for Exam #3; Read Book;                                      |  |
| Week 10 | October              | 27-29 | <b>Study PowerPoint slides:</b> The Endocrine System - Hormones, Exercise and Training                                    | Read Chapter 4<br>HW #7 <b>Due</b> by 5 pm on Wednesday, October 29 <sup>th</sup>  |
| Week 10 | October/<br>November | 31-1  | Review for Exam #3  |  |
| Week 11 | November             | 3 – 5 | <b>Exam #3</b>  | Exam #3 <b>completed</b> by 5 pm on Wednesday, November 5 <sup>th</sup>  |
| Week 11 | November             | 6 – 8 | <b>Study PowerPoint slides:</b> Exercise Training and Adaptations   | Read Chapters 9,10,11,12,13  |
| Week 12 | November             | 10-12 | <b>Read/Listen/Watch:</b> Supplement Materials on Blackboard for Exam #4; Read Book; Work on HW #8                        |  |
| Week 12 | November             | 13-15 | <b>Study PowerPoint slides:</b> Body Composition, Obesity, Children, Aging and Obesity                                    | Read Chapters 15 pp355-366<br>Read Chapters 17, 18, 22<br>HW #8 <b>Due</b> by 5 pm on Wednesday, November 15 <sup>th</sup> |
| Week 13 | November             | 17-19 | <b>Study PowerPoint slides:</b> Sex Differences; Prescription of Exercise for Health&Fitness; CV Disease Prevention       | Read Chapters 19, 20, 21   |
| Week 13 | November             | 20-22 | Finish Research paper and PowerPoint presentation   |  |
| Week 14 | November             | 24-26 | <b>Turn in Research paper and PowerPoint presentation; Study for Exam #4</b>  | Research/PowerPoint project is <b>due</b> by 5PM on Wednesday, November 26 <sup>th</sup>                                   |
| Week 14 | November             | 27-29 | Thanksgiving Recess - 26 <sup>th</sup> - 30 <sup>th</sup>   |  |
| Week 15 | December             | 1 – 3 | <b>Exam #4</b>  | Exam #4 <b>completed</b> by 5 pm on Wednesday, October 3 <sup>rd</sup>   |
| Week 15 | December             | 4 – 6 | Study for Final   |  |
| Week 16 | December             | 8 -10 | Reading Days – Study for FINAL EXAM – 100 Questions on ALL PowerPoint slides, Readings, Supplemental Materials, and HW    |  |
| Week 16 | December             | 11-13 | Study for Final   |  |
| Week 17 | December             | 15    | FINAL EXAM Monday the 15 <sup>th</sup> – 100 Questions on ALL PowerPoint slides, Readings, Supplemental Materials, and HW | Final Exam <b>completed</b> by 5 pm on Monday, December 15 <sup>th</sup>   |

*Note: Faculty reserves the right to alter the schedule as necessary.*

**Professionalism** 10% of Final Grade (Objectives 1,2,3,4 & 5)

Kinesiology students are expected to behave in a professional manner. Depending upon the setting

professionalism may appear different, but typically consists of similar components. For undergraduate Kinesiology students in a classroom setting and the online learning professionalism generally comprises the following components:

**Attendance and Participation (0% of Professionalism Grade)** – Show up on time to class and pay attention. If you cannot attend a class for a legitimate reason please notify the instructor ahead of time. If you have to unexpectedly miss a class/**Assignment** due to something out of your control, contact the instructor within 24 hours to notify them what happened and to see if there is anything you need to do to make up your absence.

**Attendance and Participation Evaluation:** Since this is an online class with no scheduled meeting times attendance will not count towards the professionalism grade. You are expected to participate in class discussions and activities (discussion boards, blogs, etc.)

**Communication (25% of Professionalism Grade)** – When communicating with the instructor and classmates, either face-to-face or via email, students should address the other person appropriately, use appropriate language and maintain a pleasant demeanor.

*Example email with instructor:*

Dr. *Instructor Last Name*,

I have a question regarding....

Regards,  
Student's Name

*Example in-person interaction with instructor:*

Student: Professor (*instructor's last name*) I have a question regarding....

Professor: (Student's name) I would be happy to help you. What is your question?

Student: My question is.....

Professor: The answer to that question is...

Student: Professor (*instructor's last name*) thank you for your time and availability to answer my questions.

**Communication Evaluation:** All students will start with 25%. For every instance in which the student does not use proper communication 5% will be deducted from 25%. All incidents will be documented by the instructor. The Professor reserves the right to not answer emails and questions in person, if the student does not appropriately address the Professor.

**Responsibility/Accountability/ Honesty/Integrity (50% of Professionalism Grade)** – Professionals take responsibility for their actions and are accountable. This can occur at multiple levels but generally consists of completing assignments on time, submitting work that is of the appropriate quality, honoring commitments and owning up to mistakes.

**Honesty/Integrity** - Students are expected to be honest with the instructor, classmates and themselves. Professionals keep their word when committing to something and act in an ethical manner. See George Mason University policy for further guidance.

**Responsibility/Accountability/ Honesty/Integrity Evaluation:** All students will start with 50%. For every instance in which the student is irresponsibility, not accountable for their actions, dishonest or fail to act in an ethical manner 10% will be deducted from 50%. All incidents will be documented by the instructor.

**Self-Improvement/Self-awareness (25% of Professionalism Grade)** – One should be aware of their strengths/weaknesses and constantly seek to improve. Professionals regularly seek out opportunities to increase their knowledge and improve their current skill set.

**Self-Improvement/Self-awareness Evaluation** : For every instance in which the student does not take advantage of an opportunity to increase their knowledge in the subject area of the class and/or their personal skill set 5% will be deducted from 25%. All incidents will be documented by the instructor.

#### ACCREDITATION STANDARDS

This course meets the Commission on Accreditation of Allied Health Education Programs (CAAHEP) requirements and covers the following American College of Sports Medicine's Knowledge-Skills-Abilities (KSA's):

| <b>KSA</b> | <b>Description</b>  | <b>Lecture</b>         |
|------------|---|------------------------|
|            | <b>GENERAL POPULATION/CORE:<br/>EXERCISE PHYSIOLOGY AND RELATED EXERCISE SCIENCE</b>  |                        |
| 1.1.9      | Ability to describe the systems for the production of energy.   | Week 4                 |
| 1.1.13     | Knowledge of the heart rate, stroke volume, cardiac output, blood pressure, and oxygen consumption responses to exercise.   | Week 5, 6 & 7          |
| 1.1.17     | Knowledge of the physiological adaptations that occur at rest and during submaximal and maximal exercise following chronic aerobic and anaerobic exercise training.   | Week 8,10,11           |
| 1.1.19     | Knowledge of the structure and function of the skeletal muscle fiber.   | Week 9                 |
| 1.1.20     | Knowledge of the characteristics of fast and slow twitch muscle fibers.   | Week 4 & 9             |
| 1.1.21     | Knowledge of the sliding filament theory of muscle contraction.   | Week 9                 |
| 1.1.22     | Knowledge of twitch, summation, and tetanus with respect to muscle contraction.   | Week 1,9               |
| 1.1.26     | Knowledge of the response of the following variables to acute static and dynamic exercise: heart rate, stroke volume, cardiac output, pulmonary ventilation, tidal volume, respiratory rate, and arteriovenous oxygen difference. | Week 6,7,8             |
| 1.1.27     | Knowledge of blood pressure responses associated with acute exercise, including changes in body position.   | Week 6,7,8             |
| 1.1.31     | Knowledge of how the principles of specificity and progressive overload relate to the components of exercise programming.   | Week 9,11,12,13        |
|            | <b>GENERAL POPULATION/CORE:<br/>NUTRITION AND WEIGHT MANAGEMENT</b>   |                        |
| 1.8.1      | Knowledge of the role of carbohydrates, fats, and proteins as fuels for aerobic and anaerobic metabolism.   | Week 1,2,3,4, 10,11,12 |
| 1.8.4      | Knowledge of the effects of diet, exercise and behavior modification as methods for modifying body composition.   | Week 11,12,13 & 14     |
| 1.8.7      | Knowledge of the importance of maintaining normal hydration before, during, and after exercise.   | Week 1, 2,3,11         |
| 1.8.14     | Knowledge of common nutritional ergogenic aids, the purported mechanism of action, and any risk and/or benefits (e.g., carbohydrates, protein/amino acids, vitamins, minerals, herbal products, creatine, steroids, caffeine).    | Week 1 & 2             |
|            | <b>GENERAL POPULATION/CORE:<br/>SAFETY, INJURY PREVENTION, AND EMERGENCY PROCEDURES</b>   |                        |
| 1.10.6     | Knowledge of the effects of temperature, humidity, altitude, and pollution on the physiological response to exercise and the ability to modify the exercise prescription to accommodate for these environmental conditions.       | Week 1,2 &11           |

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### *Student Expectations*

- Students must adhere to the guidelines of the George Mason University Honor Code [See <http://oai.gmu.edu/the-mason-honor-code/>].
- Students with disabilities who seek accommodations in a course must be registered with the George Mason University Office of Disability Services (ODS) and inform their instructor, in writing, at the beginning of the semester [See <http://ods.gmu.edu/>].
- Students must follow the university policy for Responsible Use of Computing [See <http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>].
- Students are responsible for the content of university communications sent to their George Mason University email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.
- Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.

### *Campus Resources*

- The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance [See <http://caps.gmu.edu/>].
- The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing [See <http://writingcenter.gmu.edu/>].
- For additional information on the College of Education and Human Development, School of Recreation, Health, and Tourism, please visit our website [See <http://rht.gmu.edu>].

**PROFESSIONAL BEHAVIOR:** Students are expected to exhibit professional behaviors and dispositions at all times.

**CORE VALUES COMMITMENT:** The College of Education and Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles.