

GEORGE MASON UNIVERSITY  
School of Recreation, Health, and Tourism

KINES 310-DL3: Exercise Physiology I (3)  
Fall 2015

DAY/TIME:	Online Education	LOCATION:	Online Education
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**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 (not “real time”) 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 the first day of class at 8:00AM.

**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**

- *Log-in Frequency:* Students must actively check the course Blackboard site and their GMU email for communications from the instructor. Please check daily (M-F) during the academic session.

- *Participation:* Students are expected to actively engage in all course activities throughout the semester, including viewing of all course materials, completing course activities and assignments, and participating in course discussions and group interactions.
- *Technical Competence:* 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
- *Technical Issues:* Students should expect that they may experience some technical difficulties at some point in the semester and should, therefore, budget their time and submission of assignments accordingly. **Late work will not be accepted based on individual technical issues.**
- *Workload:* Expect to log in to the course daily 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 CLASS SCHEDULE section of the syllabus; students 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. No exceptions will be granted.**

## 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

## 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):

KSA	Description	Lecture
	<b>GENERAL POPULATION/CORE: EXERCISE PHYSIOLOGY AND RELATED EXERCISE SCIENCE</b>	
1.1.9	Ability to describe the systems for the production of energy.	Lecture
1.1.13	Knowledge of the heart rate, stroke volume, cardiac output, blood pressure, and oxygen consumption responses to exercise.	Lecture
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.	Lecture
1.1.19	Knowledge of the structure and function of the skeletal muscle fiber.	Lecture
1.1.20	Knowledge of the characteristics of fast and slow twitch muscle fibers.	Lecture
1.1.21	Knowledge of the sliding filament theory of muscle contraction.	Lecture
1.1.22	Knowledge of twitch, summation, and tetanus with respect to muscle contraction.	Lecture

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.	Lecture
1.1.27	Knowledge of blood pressure responses associated with acute exercise, including changes in body position.	Lecture
1.1.31	Knowledge of how the principles of specificity and progressive overload relate to the components of exercise programming.	Lecture
	<b>GENERAL POPULATION/CORE: NUTRITION AND WEIGHT</b>	
1.8.1	Knowledge of the role of carbohydrates, fats, and proteins as fuels for aerobic and anaerobic metabolism.	Lecture
1.8.4	Knowledge of the effects of diet, exercise and behavior modification as methods for modifying body composition.	Lecture
1.8.7	Knowledge of the importance of maintaining normal hydration before, during, and after exercise.	Lecture
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).	Lecture
	<b>GENERAL POPULATION/CORE: SAFETY, INJURY PREVENTION, AND EMERGENCY</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.	Lecture

## CORRESPONDANCE

The primary method of communication for this course is email. Emails must originate from a George Mason email account and be in a professional format (i.e. emails should not look like a text message!) and be properly addressed and signed by the student. Emails with no text in the body will not be acknowledged. Emails will be answered as soon as possible during normal business hours Monday – Friday.

## REQUIRED READINGS

Kennedy, W.L., Wilmore, J.H., Costill, D.L. (2015) *Physiology of Sport and Exercise (5th edition)*. Human Kinetics.

## EVALUATION

This course will be graded as follows:

Assignment	Percentage
Exam 1	20%
Exam 2	20%
Final Exam	20%
Homework Assignments	10%
Research Paper	15%
Quizzes	10%
Professionalism	5%

## 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 2 Exams and a Final Exam (3 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\***

**ALL** exams will be timed. Once you start the exam you must complete it within a set amount of time (90 minutes for mid-term exams; 120 minutes for the final exam). No late exams will be accepted.

### **Homework Assignments & Quizzes**

(*Objectives 1, 4 & 5*)

Regular homework will be assigned. There will be 5 total HW assignments and 5 quizzes. No late homework assignments or quizzes 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.

### **Professionalism** (*Course 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 professionalism generally comprises the following components:

**Communication** – When communicating with the instructor and classmates, either face-to-face or via the assigned George Mason University email address, students should address the other person appropriately, use appropriate language and maintain a pleasant demeanor.

**Participation** – Participate in class discussions and activities. Demonstrate that you have an interest in the subject matter.

**Responsibility/Accountability** – 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.

**Self-Improvement/Self-awareness** – 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.

## TENTATIVE COURSE SCHEDULE

DATE			TOPIC	READINGS/ASSIGNMENTS DUE
Week 1	AUG	31-1	<i>Read:</i> Syllabus, Introduction, & CH 1 <i>Study PowerPoint slides: CH 1</i> Introduction to Exercise Physiology	Read Syllabus, Intro & CH 1
Week 1	SEP	2-6	<i>Read:</i> CH 2 <i>Study PowerPoint slides: CH 2</i> Structure & Function of Exercising Muscle	1) Read CH 2 2) Complete <b>Quiz #1</b> by <b>5 PM on Tues SEP 8</b>
Week 2	SEP	8-9	<i>Read:</i> CH 3 <i>Study PowerPoint slides: CH3</i> Neural Control of Exercising Muscle	Read CH 3
Week 2	SEP	10-13	<i>Read:</i> CH 4 <i>Study PowerPoint slides: CH4</i> Hormonal Control During Exercise	1) Read CH 4 2) Complete <b>HW #1</b> by <b>5 PM on Mon SEP 14</b>
Week 3	SEP	14-16	<i>Read:</i> CH 5 <i>Study PowerPoint slides: CH5</i> Energy Expenditure & Fatigue	1) Read CH 5 2) <b>Study for Exam #1</b>
Week 3	SEP	17-20	<b>EXAM #1</b>	Complete <b>Exam #1</b> by <b>5 PM on Mon SEP 21</b>
Week 4	SEP	21-23	<b>LIBRARY ASSIGNMENT</b>	1) Complete <b>HW #2</b> by <b>5PM Mon SEP 28</b> 2) <b>Select Research Paper Topic - due as part of HW #2</b>
Week 4	SEP	24-27	<i>Read:</i> CH 6 <i>Study PowerPoint slides: CH6</i> The Cardiovascular System & Its Control	Read CH 6
Week 5	SEP	28-30	<i>Read:</i> CH 7 <i>Study PowerPoint slides: CH7</i> The Respiratory System & Its Regulation	Read CH 7
Week 5	OCT	1-4	<i>Read:</i> CH 8 <i>Study PowerPoint slides: CH8</i> Cardiorespiratory Responses to Acute Exercise	1) Read CH 8 2) Complete <b>Quiz #2</b> by <b>5 PM Mon OCT 5</b>
Week 6	OCT	5-7	<i>Read:</i> CH 9 <i>Study PowerPoint slides: CH 9</i> Principles of Exercise Training	Read CH 9

Week 6	OCT	8-11	<i>Read:</i> CH 10 <i>Study PowerPoint slides: CH10</i> Adaptations to Resistance Training	1) Read CH 10 2) Complete HW #3 by 5 PM <b>Mon OCT 13 (Preliminary list of Research Paper References)</b>
Week 7	OCT	13-14	<i>Read:</i> CH 11 <i>Study PowerPoint slides: CH 11</i> Adaptations to Aerobic & Anaerobic Training	Read CH 11
Week 7	OCT	15-18	<i>Read:</i> CH 12 <i>Study PowerPoint slides: CH 12</i> Exercise in Hot & Cold Environments	1) Read CH 12 2) Complete Quiz #3 by 5 PM <b>Mon OCT 19</b>
Week 8	OCT	19-21	<i>Read:</i> CH 13 <i>Study PowerPoint slides: CH 13</i> Exercise at Altitude	1) Read CH 13 2) Study for Exam #2
Week 8	OCT	22-25	<b>EXAM #2</b>	<b>Complete Exam #2 by 5 PM Mon OCT 26</b>
Week 9	OCT	26-28	<i>Practical Assignment (HW #4)</i>	Complete HW #4 by 5PM <b>Mon NOV 4</b>
Week 9	OCT	29-1	<i>Read:</i> CH 14 <i>Study PowerPoint slides: CH 14</i> Training for Sport	1) Read CH 14 2) Work on Research Paper – <b>due by 5PM Mon NOV</b>
Week 10	NOV	2-4	<i>Read:</i> CH 15 <i>Study PowerPoint slides: CH 15</i> Body Composition & Nutrition for Sport	Read CH 15
Week 10	NOV	5-8	<i>Read:</i> CH 16 <i>Study PowerPoint slides: CH 16</i> Ergogenic Aids in Sport	1) Read CH 16 2) Complete Quiz #4 by 5 PM <b>Mon NOV 9</b>
Week 11	NOV	9-11	<i>Read:</i> CH 17 <i>Study PowerPoint slides: CH 17</i> Children & Adolescents in Sport & Exercise	Read CH 17
Week 11	NOV	12-15	<i>Read:</i> CH 18 <i>Study PowerPoint slides: CH 18</i> Aging in Sport & Exercise	1) Read CH 18 2) Work on Research Paper – <b>due by 5PM Mon DEC 4</b>
Week 12	NOV	16-18	<i>Read:</i> CH 19 <i>Study PowerPoint slides: CH 19</i> Sex Differences in Sport & Exercise	Read CH 19
Week 12	NOV	19-22	<i>Read:</i> CH 20 <i>Study PowerPoint slides: CH 20</i> Prescriptions of Exercise of Health & Fitness	1) Read CH 20 2) Complete HW #5 due by 5PM <b>Mon NOV 23</b>

<b>Week 13</b>	NOV	23-24	<b>Read:</b> CH 21 <b>Study PowerPoint slides: CH 21</b> Cardiovascular Disease & Physical Activity	1) Read CH 21 2) <b>Finalize Research Paper – due by 5PM Mon DEC 4</b>
<b>Week 13</b>	NOV	25-29	<b>THANKSGIVING RECESS</b>	
<b>Week 14</b>	NOV	30-2	<b>Read:</b> CH 22 <b>Study PowerPoint slides: CH 22</b> Prescriptions of Exercise of Health & Fitness	Read CH 22
<b>Week 14</b>	DEC	3-6	<b>Submit Research Paper</b>	1) <b>Submit Research Paper by 5PM Fri DEC 6</b> 2) Read Supplemental Reading #1
<b>Week 15</b>	DEC	7-9	<b>Read:</b> Supplemental Reading #2	1) Read Supplemental Reading #2 2) Complete <b>Quiz #5</b> by <b>5PM Mon DEC 7</b>
<b>Week 15</b>	DEC	10-12	Review all Textbook Chapters, PPTs, Supplemental Readings, Quizzes, & HW Assignments	<b>Review for cumulative Final Exam</b>
<b>Week 16</b>	DEC	14-16	Tentative Reading Days – Not Yet Assigned	<b>Study for Final Exam!</b>
<b>Week 16</b>	DEC	17-18	Final Exam – Will be available at 5 AM on Wed DEC 16	<b>Complete Final Exam by 5 pm Fri DEC 18</b>

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

### *Student Expectations*

- Students must adhere to the guidelines of the George Mason University Honor Code [See <http://oai.gmu.edu/the-mason-honor-code-2>]
- 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.

