

**George Mason University**  
**College of Education and Human Development**  
Kinesiology  
KINE 310— Exercise Physiology I  
3 Credits, Summer 2021  
KJH 132/Asynchronous ONline

**Faculty**

Name: Dr. Debra Stroiney  
Office hours: By Appointment  
Office location: KJH 201D  
Office phone: 703-993-7075  
Email address: dstroine@gmu.edu

**PREREQUISITES**

Undergraduate level BIOL 124 minimum grade of C and undergraduate level BIOL 125 minimum grade of C.  
Co-requisite of KINE 200.

**UNIVERSITY CATALOG COURSE DESCRIPTION**

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

**COURSE OVERVIEW**

This course provides a theoretical basis for understanding the body's physiological responses to exercise. Specifically, the course investigates how the support systems of the body (respiratory, cardiovascular, muscular, etc.) function, in cooperation with human energy production to insure that energy is provided for exercise. Emphasis will be placed upon the practical application of exercise physiology principles to coaching, teaching, and other physical training practices.

**COURSE DELIVERY**

Course Delivery Method This course will be delivered in a hybrid format with 50% of the class being online using asynchronous format via the Blackboard learning management system (LMS) housed in the MyMason portal. The other 50% of the class being in person.. 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 May 17, 2021.

Under no circumstances, may candidates/students participate in online class sessions (either by phone or Internet) while operating motor vehicles. Further, as expected in a face-to-face class meeting, such online participation requires undivided attention to course content and communication.

Technical Requirements

To participate in this course, students will need to satisfy the following technical requirements:

- High-speed Internet access with a standard up-to-date browser, either Internet Explorer or Mozilla Firefox is required (note: Opera and Safari are not compatible with Blackboard).
- Students must maintain 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 course requirements.
- The following software plug-ins for PCs and Macs, respectively, are available for free download: [Add or delete options, as desire.]
  - Adobe Acrobat Reader: <https://get.adobe.com/reader/>

- Windows Media Player: <https://windows.microsoft.com/en-us/windows/downloads/windows-media-player/>
- Apple Quick Time Player: [www.apple.com/quicktime/download/](http://www.apple.com/quicktime/download/) Expectations

#### Expectations:

- **Course Week:** Our course week will begin on Monday and end on Thursday. Although no scheduled meetings will occur on Friday, Saturday or Sunday you may need these days to complete assignments or prepare for lecture.
- **Log-in Frequency:** Students must actively check the course Blackboard site and their GMU email for communications from the instructor, class discussions, and/or access to course materials at least 3 times per week.
- **Participation:** Students are expected to actively engage in all course activities throughout the semester, which includes viewing 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 who are struggling with technical components of the course are expected to seek assistance from the instructor and/or College or University technical services.
- **Technical Issues:** Students should anticipate some technical difficulties during the semester and should, therefore, budget their time accordingly. Late work will not be accepted based on individual technical issues.
- **Workload:** Please be aware that this course is not self-paced. Students are expected to meet specific deadlines and due dates listed in the Class Schedule section of this syllabus. It is the student's responsibility to keep track of the weekly course schedule of topics, readings, activities and assignments due.
- **Instructor Support:** Students may schedule a one-on-one meeting to discuss course requirements, content or other course-related issues. Those unable to come to a Mason campus can meet with the instructor via telephone or web conference. Students should email the instructor to schedule a one-on-one session, including their preferred meeting method and suggested dates/times.
- **Netiquette:** The course environment is a collaborative space. Experience shows that even an innocent remark typed in the online environment can be misconstrued. Students must always re-read their responses carefully before posting them, so as others do not consider them as personal offenses. Be positive in your approach with others and diplomatic in selecting your words. Remember that you are not competing with classmates, but sharing information and learning from others. All faculty are similarly expected to be respectful in all communications.
- **Accommodations:** Online learners who require effective accommodations to insure accessibility must be registered with George Mason University office of disability services.

#### **LEARNING OBJECTIVES**

At the completion of the course, students should be able to:

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.

### PROFESSIONAL/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, Lab or Both
	<b>GENERAL POPULATION/CORE: EXERCISE PHYSIOLOGY AND RELATED EXERCISE</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	Lecture
1.1.20	Knowledge of the characteristics of fast and slow twitch muscle	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.	Lecture
	<b>GENERAL POPULATION/CORE: PATIENT MANAGEMENT AND MEDICATIONS</b>	
1.5.2	Knowledge of the effects of the following substances on the exercise response such as antihistamines, tranquilizers, alcohol, diet pills, cold tablets, caffeine, and nicotine.	
	<b>GENERAL POPULATION/CORE: NUTRITION AND WEIGHT MANAGEMENT</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
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### REQUIRED TEXTS/READINGS

Kenney, W.L., Wilmore, J.H., Costill, D.L. (2015) *Physiology of Sport and Exercise (6th edition)*. Human Kinetics. ISBN-13: 9781450477673.

### SUPPLEMENTARY MATERIAL

Supplementary materials will be used in class and posted on Blackboard.

### COURSE PERFORMANCE EVALUATION

Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard, Tk20, hard copy).

### Evaluation

	Quantity	Points	Total
Participation/Assig (9)	9	30	270
Quizzes	5	50	250
Group Presentation	1	100	100
			620

### Description of Evaluation

**Participation & Assignments:** During our face to face meetings we will have planned activities and discussions. You will be graded on your participation and completion of these activities and associated assignments.

**Quizzes:** Will be multiple choice, true/false, and fill in the blank. They will be given during our face to face class time. They will cover two chapters at a time from both the lecture and book.

**Final Exam:** The final exam will be cumulative. The format will be multiple choice, true/false, and fill in the blank questions. The final exam will be online and timed, you will have 120 minutes to complete it.

### **Group Presentation:**

In groups of 2, you will prepare a poster presentation reviewing the demands of a Summer Olympic Sport of your choosing. <https://www.olympic.org/sports>. Content should include:

- The contribution of and importance of the energy systems
- The amount of training time needed for change and what physiological changes are occurring during this time. Including all the key systems: musculoskeletal, cardiovascular and neurological.
- Typical physiological data needing to be collected for these athletes when assessing their fitness and performance level. What does that information tell us about the systems listed above?
- A rubric will be provided on Blackboard.

### **Grading Scale**

<b>A+</b>	<b>4.0</b>	<b>=</b>	<b>97 &amp; Above</b>
<b>A</b>	<b>4.0</b>	<b>=</b>	<b>93.0 - 96.9%</b>
<b>A-</b>	<b>3.7</b>	<b>=</b>	<b>90.0 – 92.9%</b>
<b>B+</b>	<b>3.3</b>	<b>=</b>	<b>87.0 – 89.9%</b>
<b>B</b>	<b>3.0</b>	<b>=</b>	<b>83.0 – 86.9%</b>
<b>B-</b>	<b>2.7</b>	<b>=</b>	<b>80.0 – 82.9%</b>
<b>C+</b>	<b>2.3</b>	<b>=</b>	<b>77.0 – 79.9%</b>
<b>C</b>	<b>2.0</b>	<b>=</b>	<b>73.0 – 76.9%</b>
<b>C-</b>	<b>1.7</b>	<b>=</b>	<b>70.0 – 72.9%</b>
<b>D</b>	<b>1.0</b>	<b>=</b>	<b>60.0 – 69.9%</b>
<b>F</b>	<b>0.0</b>	<b>=</b>	<b>0.0 – 59.9%</b>

**Do I round up?** I only round up if your grade is over the xx.9%. Please do not email me at the end of the semester asking if I will round up your grade or for extra credit. Put your best effort into the assignments and quizzes during the semester.

### **Make-up Policy**

- For every day an assignment is late a drop in one letter grade will be applied. (Ex: An assignment that is one day late will start at a grade of a B+, 2 days late a C+, etc....)
- Exams which are due to unexcused absences will not be allowed a make-up exam.
- Make-up exams and assignments will only be offered for those who possess a University sanctioned excuse or doctor's note.

### **PROFESSIONAL DISPOSITIONS**

See <https://cehd.gmu.edu/students/policies-procedures/>

Students are held to the standards of the George Mason University Honor Code. You are expected to attend all class sections, actively participate in class discussions, complete in-class exercises and fulfill all assignments. Make-up tests, quizzes, assignments, or other grades will be granted for excused absences only. Excused absences include: serious illness, official university excused absences and extenuating circumstances. It is the student's responsibility to contact the instructor in order to obtain the make-up work.

### **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: <http://cehd.gmu.edu/values/>.

### **GMU POLICIES AND RESOURCES FOR STUDENTS**

*Policies*

*Policies*

- Students must adhere to the guidelines of the Mason Honor Code (see <https://catalog.gmu.edu/policies/honor-code-system/> ).
- Students must follow the university policy for Responsible Use of Computing (see <https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>).

- Students are responsible for the content of university communications sent to their Mason 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 with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor (see <https://ds.gmu.edu/>).
- Students must silence all sound emitting devices during class unless otherwise authorized by the instructor.

#### *Campus Resources*

- Support for submission of assignments to Tk20 should be directed to [tk20help@gmu.edu](mailto:tk20help@gmu.edu) or <https://cehd.gmu.edu/aero/tk20>. Questions or concerns regarding use of Blackboard should be directed to <https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/>.
- For information on student support resources on campus, see <https://ctfe.gmu.edu/teaching/student-support-resources-on-campus>

#### **Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking:**

As a faculty member, I am designated as a “Responsible Employee,” and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason’s Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason’s confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason’s Title IX Coordinator by calling 703-993-8730, or emailing [titleix@gmu.edu](mailto:titleix@gmu.edu).

**For additional information on the College of Education and Human Development, please visit our website <https://cehd.gmu.edu/students/> .**

*Note: 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 SCHEDULE

<b><u>Online &amp; Class Schedule</u></b>			
Week 1	5/17	Online: Read the syllabus, introduction to course video. Online lecture Ch. 1	Read Ch. 1
Week 1	5/18	F2F: Discussion, Activity Ch. 1	
Week 1	5/19	Online Lecture Slides – Ch. 2 Energy Systems	Read Ch. 2
Week 1	5/20	F2F: Discussion, Activity, Ch. 2	Read Ch. 3
Week 2	5/24	Online Lecture Slides – Ch. 3 Nervous System	
Week 2	5/25	<b>Quiz 1: Ch. 1 &amp; 2</b> F2F: Discussion, Activity, Ch. 3	Read Ch. 5
Week 2	5/26	Online Lecture Slides – Ch. 5 Energy Exp. & Fatigue	
Week 2	5/27	F2F: Discussion, Activity, Ch. 5	Read Ch. 6 & 7
Week 3	5/31	Online Lecture Slides – Ch. 6 & 7 Cardiovascular & Respiratory systems	
Week 3	6/1	<b>Quiz 2: Ch. 3 &amp; 5</b> F2F: Discussion, Activity, Ch. 6 & 7	Read Ch. 8
Week 3	6/2	Online Lecture Slides – Ch. 8 Cardiorespiratory responses to Acute Exs.	
Week 3	6/3	Quiz 3: Ch. F2F: Discussion, Activity, Ch. 8	Read Ch. 10
Week 4	6/7	Online Lecture Slides – Chapter 10 Adaptations to Resistance Training	
Week 4	6/8	<b>Quiz 3: Ch. 6, 7, 8</b> F2F: Discussion, Activity Ch. 10	Read Ch. 11
Week 4	6/9	Online Lecture Slides – Chapter 11: Adaptations to Aerobic & Anaerobic Training	
Week 4	6/10	F2F: Discussion, Activity Ch. 11	Read Ch. 12 & 13
Week 5	6/14	Online Lecture Slides – Ch. 12 & 13 Hot, Cold, Altitude	
Week 5	6/15	<b>Quiz 4: Ch. 10 &amp; 11</b> F2F: Discussion, Activity Ch. 12 & 13	
Week 5	6/16	<b>Quiz 5: Ch. 12 &amp; 13 – To be completed online</b>	
Week 5	6/17	<b>Poster Presentations</b>	