George Mason University
College of Education and Human Development
Kinesiology

KINE 310.DL2– Exercise Physiology I
3 Credits, Fall 2020
Online

Faculty

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Prerequisites/Corequisites
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 ensure 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 Method
This course will be delivered online (76% or more) using [select either a synchronous or an asynchronous] format via Blackboard Learning Management system (LMS) housed in the MyMason portal. You will log in to the Blackboard (Bb) course site using your Mason email name (everything before @masonlive.gmu.edu) and email password. The course site will be available on Monday August 24, 2020.

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 standard up-to-date browsers. To get a list of Blackboard's supported browsers see: https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#supported-browsers

  To get a list of supported operation systems on different devices see: https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#tested-devices-and-operating-systems

- 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 will need a headset microphone for use with the Blackboard Collaborate web conferencing tool.
- 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
        - Adobe Acrobat Reader: https://get.adobe.com/reader/
        - Windows Media Player: https://support.microsoft.com/en-us/help/14209/get-windows-media-player
        - Apple Quick Time Player: www.apple.com/quicktime/download/

Expectations

- Course Week:
  Because asynchronous courses do not have a "fixed" meeting day, our week will start on Monday, and finish on Saturday.
  There will be optional times during the week to go over material via Zoom or Webex.

- 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 Disability Services.

Learner Outcomes or Objectives

This course is designed to enable students to do the following:

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 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

Upon completion of this course, students will have met the following professional standards:

KSA	Description	Lecture, Lab or Both
	GENERAL POPULATION/CORE: EXERCISE PHYSIOLOGY AND RELATED EXERCISE SCIENCE	
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
	GENERAL POPULATION/CORE: PATIENT MANAGEMENT AND MEDICATIONS	
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.	
	GENERAL POPULATION/CORE: NUTRITION AND WEIGHT MANAGEMENT	
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
	GENERAL POPULATION/CORE: SAFETY, INJURY PREVENTION, AND EMERGENCY PROCEDURES	
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

Required Texts
Kenney, W.L., Wilmore, J.H., Costill, D.L. (2015) *Physiology of Sport and Exercise (6th or 7th edition)*. Human Kinetics. ISBN-13: 9781450477673.

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 Type	Points	Total
Assignments (3)	5	15
Topic Quizzes (10)	2	20
Exams (4)	10	40
Research Article Project	10	10
Final Project	15	15
		100

- **Assignments and/or Examinations**

Assignments — There will be 3 assignments throughout the semester. These will be based on material covered for each of the exams.

Topic Quizzes — There will be 11 total quizzes based on each topic covered throughout the semester. The lowest quiz grade will be dropped and only 10 will be counted towards the final grade.

Exams — There will be 4 exams throughout the semester. The final exam will be cumulative.

Research Article Project — You will pick an article from a list provided on blackboard and do a critique on the article following a guide that will be provided to you.

Final Project — You will be assigned a group and a sport to complete this project. Using material covered in this course, you will analyze the sport and the needs of athletes that participate in it. During the semester there will be "check-ins" to ensure you are moving along in the project.

- **Grading**

A	**93.0 -- 96.9%**
A-	**90.0 – 92.9%**
B+	**87.0 – 89.9%**

B	**83.0 – 86.9%**
B-	**80.0 – 82.9%**
C+	**77.0 – 79.9%**
C	**73.0 – 76.9%**
C-	**70.0 – 72.9%**
D	**60.0 – 69.9%**
F	**0.0 – 59.9%**

Make-up Policy

- For every day an assignment is late 10% will be reduced from the grade received.
- Exams missed 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.

Emails/Questions about grades

- Please wait 24 hours to email questions about grading. I will not reply to any emails sent within this time period.
- If you wish to question/dispute a grade, you must do so within one week of the grade being posted. Any questions/disputes after this time period will not be considered. Please do so in a professional manner.

Professional Dispositions

See https://cehd.gmu.edu/students/polices-procedures/

Class Schedule

Date	Topic	Assignments
Week 1 8/24-8/29	Syllabus & Intro Chapter 1: Structure and function of the exercising muscle	Chapter 1 Quiz Due 8/29 at 11:59 pm
Week 2 8/31-9/5	Chapter 3: Neural control of exercising muscle	Chapter 3 Quiz Due 9/5 at 11:59 pm
Week 3 9/7-9/12	Chapter 2: Bioenergetics and muscle metabolism	Chapter 2 Quiz Due 9/21 at 11:59 pm
Week 4 9/14-9/19	Chapter 5: Energy expenditure, fatigue, and muscle soreness	Chapter 4 Quiz Due 9/16 at 11:59 pm

Week 5 9/21-9/26	**Exam 1** Final Project Check-in 1- Due 9/26 at 11:59 pm	Assignment 1 Due Due 9/26 at 11:59 pm
Week 6 9/28-10/3	Chapter 6: Cardiovascular system and its control	Chapter 6 Quiz Due 10/3 at 11:59 pm
Week 7 10/5-10/10	Chapter 7: Respiratory system and its regulations	Chapter 7 Quiz Due 10/7 at 11:59 pm
Week 8 10/12-10/17	Chapter 8: Cardiorespiratory response to acute exercise	Chapter 8 Quiz Due 10/17 at 11:59 pm
Week 9 10/19-10/24	**Exam 2** Final Project Check-in 2- Due 10/24 at 11:59 pm	Assignment 2 Due 10/24 at 11:59 pm
Week 10 10/26-10/31	Chapter 10: Adaptations to resistance training	Chapter 10 Quiz Due 10/31 at 11:59 pm
Week 11 11/2-11/7	Chapter 11: Adaptations to Aerobic and Anaerobic Training	Chapter 11 Quiz Due 11/4 at 11:59 pm
Week 12 11/9-11/14	Chapter 12: Exercise in hot & cold environment	Chapter 12 Quiz Due 11/14 at 11:59 pm
Week 13 11/16-11/21	Chapter 13: Exercise at altitude	Chapter 13 Quiz Due 11/21 at 11:59 pm
Week 14 11/23-11/28	**Exam 3** Final Project Check-in 3- Due 11/28 at 11:59 pm	Assignment 3 Due 11/28 at 11:59 pm
Week 15 11/30-12/5	**Article Project- Due 12/2 at 11:59 pm** **Final Project Presentation**	
Week 16 12/7-12/12	**Final Exam- 12/12 at 11:59 pm**	

Note: Faculty reserves the right to alter the schedule as necessary, with notification to students.

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

- 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/).

Campus Resources

- Support for submission of assignments to Tk20 should be directed to 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.

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