

George Mason University
College of Education and Human Development
Kinesiology

KINE 310 DL2 - Exercise Physiology I
3 Credits, Fall 2016
Online

Faculty

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Prerequisites/Corequisites

BIOL 124, BIOL 125, ATEP 300, Coreq. 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

Not Applicable.

Course Delivery Method

This course will be delivered online using 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 29th 8:00am.

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:
 - [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/]

Expectations

- Course Week: Because asynchronous courses do not have a "fixed" meeting day, our week will start on Monday, and finish on Sunday.
- 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 2 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

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 are 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 (KSA's):

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	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	Lecture
1.1.20	Knowledge of the characteristics of fast and slow twitch	Lecture
1.1.21	Knowledge of the sliding filament theory of muscle	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	Lecture
	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	Lecture
1.8.4	Knowledge of the effects of diet, exercise and behavior modification as methods for modifying body	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	
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 edition)*. Human Kinetics.

Course Performance Evaluation

Students are expected to submit all assignments on time in the manner outlined by the instructor on Blackboard.

• Assignments and Examinations

- **Exams and Final Exam** (*Objectives 1, 2, 3 & 4*) There will be **3** exams and a final exam (**4** 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 exams; 120 minutes for the final exam).
- **Discussion Boards & Research Article:** There will be 11 discussion boards (10pts each) throughout semester for a total 100 pts with 10 extra credit points possible if do all 11. Discussion Boards open on first day of week on syllabus (Monday 8am and close/are due at 11:59 on last day 11:59pm on Sundays).
- **Research Paper** (*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 topic should be related to one of the major topic areas: cardiorespiratory response/training, resistance response/training, energy substrates/systems or fueling of exercise. The literature review should be 4-6 pages (typed, double-spaced, 12 pt font no more than 1 inch margins). A **minimum of 5** 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.

• Course Performance Evaluation Weighting:

Assignment	Points/ Percentage
Exam 1	50 / 10%
Exam 2	50 / 10%
Exam 3	50 / 10%

Final Exam – Cumulative	125 /25%
Discussion Boards	100 / 20%
Research Paper	125 / 25%

- **Grading Policies**

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	

Professional Dispositions

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

GMU Policies and Resources for Students

Policies

- Students must adhere to the guidelines of the University Honor Code (see <http://oai.gmu.edu/the-mason-honor-code/>).
- 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 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 <http://ods.gmu.edu/>).
- Students must follow the university policy stating that all sound emitting devices shall be silenced during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to Tk20 should be directed to tk20help@gmu.edu or <https://cehd.gmu.edu/api/tk20>. Questions or concerns regarding use of Blackboard should be directed to <http://coursessupport.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/>).

- 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 Office of Student Support staff helps students negotiate life situations by connecting them with appropriate campus and off-campus resources. Students in need of these services may contact the office by phone (703-993-5376). Concerned students, faculty and staff may also make a referral to express concern for the safety or well-being of a Mason student or the community by going to <http://studentsupport.gmu.edu/>, and the OSS staff will follow up with the student.

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

Class Schedule:

DATE			TOPIC	READINGS/ ASSIGNMENT
Week 1	Aug -Sep	29-4	Review Course Syllabus Structure and Function Skeletal Muscle	Syllabus Chapters 1
Week 2	Sep	5-11	Neural Control Muscles Endocrine System and Exercise	Chapter 3 & 4
Week 3	Sep	12-18	Energy Substrates & Systems Energy Expenditure	Chapter 2 & 5
Week 4	Sep	19-25	<i>Exam # 1 Chapter 1-5</i>	Complete Exam between: 12:00am Sep 21-Sep 24 11:59pm
Week 5	Sep-Oct	26-2	Cardiovascular System and Respiratory System	Chapter 6 & 7
Week 6	Oct	3- 9	Cardiorespiratory Response to Exercise Principles of Exercise Training	Chapter 8 &9

Week 7	Oct	10-16	Adaptations to Aerobic/Anaerobic, & Resistance Training	Chapter 10&11
Week 8	Oct	17-23	<i>Exam #2 Chapter 6-11</i>	Complete Exam 2 between 12:00am Oct 19 –Oct 22 11:59pm
Week 9	Oct	24-30	Environmental Influences on Exercise	Chapter 12 & 13
Week 10	Oct-Nov	31-6	Training for Sport	Chapter 14
Week 11	Nov	7-13	Body Composition & Nutrition for Sport Ergogenic Aids	Chapter 15 & 16
Week 12	Nov	14 – 20	<i>Exam #3 Chapter 12-16</i>	Exam 3 Complete between 12:00am Nov 16 th and 11:59pm Nov 19 th
Week 13	Nov	21-27	<i>Thanksgiving Break- Enjoy holiday with families/friends and utilize time to complete research paper due upon return.</i>	Turn Research Paper by 8:00am Nov 28 (Blackboard Only)
Week 14	Nov-Dec	28-4	Children And Aging	Chapter 17 & 18
Week 15	Dec	5-11	Exercise Prescription for Healthy Population Sex Differences	Chapter 19 & 20
Week 16	Dec	13-17	<i>Final Exam: Timed Exam and have to open and complete within hours. The exam is due Dec 17th 11:59pm and will</i>	

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

Assessment Rubric(s):

Not Applicable