George Mason University
College of Education and Human Development
Kinesiology

KINE 310 DL5 – Exercise Physiology I
3 Credits, Fall 2016

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

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 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 **August 29, 2016**.

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/enus/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 FOUR 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

Upon completion of this course, students will have met the following 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 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: 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	
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. ISBN-13: 978-0736094092.

Course Performance Evaluation

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

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

There will be **4** mid-term 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.

Quizzes *(Objectives 1, 2, 3, & 4)*

There will be **4** quizzes during the semester. The format of the quizzes will be multiple choice, true/false, and fill in the blank questions. The quizzes will provide an indication of how well you are prepared for the upcoming exam. **IMPORTANT** – the quizzes will be timed. Once you start a quiz you must complete within a set amount of time. The amount of time you have to complete each quiz will be provided in the quiz instructions.

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.

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:
Attendance – 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 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.
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.

- **Course Performance Evaluation Weighting**

This course will be graded on a point system, with a total of 1000 possible points.

Assignment	**Percentage/Points**
Exam 1	10% / 100
Exam 2	10% / 100
Exam 3	10% / 100
Exam 4	10% / 100
Final Exam	20% / 200
Homework Assignments	10% / 100
Research Paper and Presentation	15% / 150
Quizzes	10% / 100
Professionalism	5% / 50

- **Grading Policies**

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/).

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/.

KINE 310 Class Schedule Fall 2016
Assignments are due by 11:55 pm on the date stated below.
Exams will open from 8:00 am on the opening day until 11:55 pm on the last day.

Week		Chapter	Topic(s)	Assignment(s)
No.	Date			
1	8/29-9/4	1 & 2	Structure & Function of Exercising Muscle and Fuel for Exercise	Syllabus Contract: 8/31 Quiz 1: 9/4
2	9/6*-9/11	3	9/5: Labor Day No School Neural Control of Exercising Muscle	HW 1: 9/11
3	9/12-9/18		**Exam 1** **9/15-9/17**	
4	9/19-9/25	4	Hormonal Control During Exercise	Quiz 2: 9/25 HW 2: 9/25
5	9/26-10/2	5	Energy Expenditure and Fatigue	HW 3: 10/2
6	10/3-10/9		**Exam 2** **10/6-10/8**	Research Paper Selections: 10/9
7	10/11*-10/16	6 -8	10/10: Columbus Day No School The Cardiovascular System, The Respiratory System, Cardiorespiratory Responses	Quiz 3: 10/16 HW 4: 10/16
8	10/17-10/23	9-11	Principles of Exercise, Adaptations to Aerobic and Anaerobic Training	HW 5: 10/23
9	10/24-10/30		**Exam 3** **11/10-11/12**	
10	10/31-11/6	12 & 13	Exercise in Hot, Cold, and Altitude	Quiz 4: 11/6 HW 6: 11/6
11	11/7-11/13	14-16	Training for Sport, Body Composition and Nutrition, Ergogenic Aids	HW 7: 11/13
12	11/14-11/20		**Exam 4** **12/8-12/10**	
13	11/21-11/22*		11/23-11/27 Thanksgiving Break	Research Paper and PPT: 11/22
14	11/28-12/4	17-19	Children and Adolescents, Aging, and Sex Differences in Sport and Exercise	HW 8: 12/4
15	12/5-12/10*	20-22	Exercise Prescription, CV Disease, Obesity, Diabetes, and Physical Activity	
16			**FINAL EXAM** Available Thurs 12/15 8:00 am – Sat 12/17 11:55 pm	

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

Assessment Rubric(s)

Rubrics for each assignment can be found attached to the assignment descriptions within Blackboard.