KINE 3415: Physiology of Exercise
Fall 2020

Instructor Information

Instructor(s)
David M. Keller, Ph.D.
Teaching Assistant
Britton Woolsey

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Office Hours
By appointment

Course Information

Section Information
KINE 3415-002

Time and Place of Class Meetings
Lecture: T-Th, 11-12:20pm (online through CANVAS)
Lab: Maverick Activity Center 223 (times vary based on section)

Important Notice:
As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course.

Description of Course Content
The classroom and laboratory experiences of this course are intended to provide the student with an opportunity to discuss, observe and become aware of the acute and chronic responses of the human body to physical activity. Mechanisms of neuromuscular, respiratory, cardiovascular, and metabolic control and adaptation during and following activity will be studied.

Student Learning Outcomes
Upon successful completion of this course, the student should have achieved the following:
1. Developed an understanding of the immediate and long-term responses of the systems of the body to physical activity
2. Developed an understanding of the body’s physiological abilities and limitations
3. Developed an understanding of the research processes and limitations, procedures and interpretation of physical performance measurement
4. Familiarization with the physiological basis of physical training and the practical application of these techniques to teaching and coaching
**Required Textbooks and Other Course Materials**

Physiology of Exercise Laboratory Manual: The University of Texas at Arlington, Spring 2020, B. C. McKeown (available at UTA Bookstore)

**Descriptions of major assignments and examinations**
The major assignments include Lab Experiences, Quizzes, Exams and a Research Paper. Exams will consist of a combination of multiple-choice questions, short-answer & long-answer questions and questions which may require illustrations (e.g., figures and diagrams) to support answers. The lab assignments are outlined in the required Lab Manual.

Research Paper: In order to enhance and supplement the learning experience of this course, each student is expected to complete an original research paper. The research paper can be on any topic of interest to the student, but must be relevant to exercise physiology and is subject to the discretion of the instructor. **Completion of a research paper is required in order to successfully pass this course. If you do not complete the research paper, you will receive a letter grade of “I” (if your grade would otherwise not calculate as an “F,” irrespective of the grade for the research paper assignment).**

The research paper must be submitted by the deadline in order to receive credit (submitted via CANVAS)

Submission of unoriginal and/or poor-quality work (including, but not limited to, content copied from another author or student’s work, content used by the student in previous courses, paraphrased/summarized content without correct attribution/citation, etc.) will result in automatic “zero.”

**Technology Requirements**
As both the lecture and lab will consist of “online” components, you will need to have adequate computer access to Canvas, Teams, Respondus Lockdown (LockDown Browser, including a webcam). You can access tutorials on these tools by clicking on the “Get Started” Box on your Canvas Homepage.

**Grading Information**

**Grading:**

Examinations (65%, below)
- **Exam 1: Metabolism** (20%)
- **Exam 2: Neuromuscular** (15%)
- **Exam 3: Body Composition** (5%)
- **Exam 4: Respiratory** (10%)
- **Exam 5: Cardiovascular** (15%)

Quizzes (10%)

Laboratory Experiences (15%, below)
- **Laboratory Experiences** (10%)
- **Laboratory Attendance** (5%)

Research Paper (10%)

**Overall Grade**
- A = 89.5-100
- B = 79.5 – 89.4
- C = 69.5-79.4
- D = 59.5 – 69.4
- F = 59.4 and below
### Summary of Knowledge & Skills to be Gained

| Knowledge of how heart rate, blood pressure and oxygen consumption responses change with adaptation to chronic exercise training. |
| Knowledge of the physiological adaptations associated with strength training. |
| Knowledge of the physiological principles related to warm-up and cool-down. |
| Knowledge of the common theories of muscle fatigue and delayed onset muscle soreness (DOMS) |
| Knowledge of exercise physiology including the role of aerobic and anaerobic metabolism, muscle physiology, cardiovascular physiology, and respiratory physiology at rest and during exercise. In addition, demonstrate an understanding of the components of physical fitness, the effects of aerobic and strength and/or resistance training on the fitness components and the effects of chronic disease |
| Knowledge of the physiological adaptations that occur at rest and during submaximal and maximal exercise following chronic aerobic and anaerobic exercise training. |
| Knowledge of the differences in Cardiorespiratory response to acute graded exercise between conditioned and unconditioned individuals. |
| Knowledge of the structure of the skeletal muscle fiber and the basic mechanism of contraction. |
| Knowledge of the characteristics of fast and slow twitch fibers |
| Knowledge of the sliding filament theory of muscle contraction. |
| Knowledge of twitch, summation, and tetanus with respect to muscle contraction. |
| Knowledge of the basic properties of cardiac muscle and the normal pathways of conduction in the heart. |
| Knowledge of the response of the following variables to acute exercise: heart rate, stroke volume, cardiac output, pulmonary ventilation, tidal volume, respiratory rate and arteriovenous oxygen difference. |
| Knowledge of and ability to describe the implications of ventilatory threshold (anaerobic threshold) as it relates to exercise training and cardiorespiratory assessment. |
| Knowledge of and ability to describe the physiological adaptations of the respiratory system that occur at rest and during submaximal and maximal exercise following chronic aerobic and anaerobic training. |
| Knowledge of the pathophysiology of atherosclerosis and how this process is influenced by physical activity. |
| Knowledge of the atherosclerotic process, the factors involved in its genesis and progression, and the potential role of exercise training in treatment. |
| Skill to measure pulse rate accurately both at rest and during exercise. |
| Ability to list the effects of temperature, humidity, altitude, and pollution on the physiological response to exercise. |
| Ability to define aerobic and anaerobic metabolism. |
| Ability to define muscular fatigue as it relates to task, intensity, duration and the accumulative effects of exercise. |

### Make-up Exams:

There will be no make-up opportunities for examinations or quizzes unless the absence was due to a university-approved excuse. If the absence is due to either a university activity or non-university excused absence (e.g. illness) you must 1) notify me by phone or email prior to the day that you will miss if you wish to make up any work missed and 2) provide documentation for the absence, presented to the instructor at the next class appearance, BEFORE class begins.

All make-up examinations and quizzes will be administered by arrangement. If you have to miss a lecture or laboratory session, you are responsible for obtaining notes from another student. This is important, as considerable material included in examinations will be presented during class sessions.
It is anticipated that all assignments will be completed by the due date and given to the instructor that day, at the beginning of class (as announced by the instructor, in class). If an excused absence creates a situation where the assignment cannot be turned in on the due date, the assignment is due in class on the next class date (following the excused absence). Thereafter, a 20% per day (not class date) reduction will be applied to the grade for that assignment.

**Policy on missing on campus labs:** The Kinesiology Department deems the four on campus labs as necessary for success in our program; therefore, attendance is mandatory. Nonattendance will result in a zero for that lab and cannot be made up. We have implemented additional safety requirements and precautions, in addition to the campus guidelines, to maximize safety while ensuring opportunities to meet course objectives.

**Expectations of Quality**
Quality of written assignments will be enhanced by following correct writing techniques which will include, but is not limited to, correct spelling, sentence structure, paragraph usage, capital letters, punctuation and noun-verb agreement. All written work including exams, quizzes, laboratory assignments and papers will be evaluated according to these rules of writing with the incorrect parts appropriately noted. Each final assessment will reflect a one-fourth point decrement in evaluation per incorrect notation.

**Cheating on lecture and lab assignments Is Not Tolerated.** Cheating will result in a zero being given to all parties involved regardless of the intent. You will be written up for Academic Dishonesty. The file will then be forwarded to the Office of Student Conduct for disciplinary action. If you wish to contest the cheating incident you will need to contact the Office of Student Conduct. Cheating includes, but is not limited to: copying from others or providing to others lab graphs and answers or copying off data in lab that you did not obtain.

**Expectations for “Out-of-Class” Study**
A general rule of thumb for every credit hour earned at a Carnegie Institution of Higher Education is a student should spend 3 hours per week studying outside of class. Hence, a 3-credit course might have a minimum expectation of 9 hours of reading, study, etc. Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 9 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

**Departmental Lectures**
There will be two departmental lectures throughout the semester: 1) **The Anderson Sport Performance Lecture** and 2) **The Barry McKeown Research Lecture**. Lectures are scheduled during the UTA “Enrichment Hour” (12:00pm on Monday or Wednesday) and attendance to both departmental lectures are required 100 point laboratory assignments. Attendance for the entire designated duration and note-taking are expected for all lectures and will be described in lecture and/or lab. An alternate assignment will be provided for those with scheduling conflicts (must be confirmed prior to the scheduled lectures).

**Extra Credit Opportunities**
Extra credit opportunities will be provided throughout the semester. Information about extra credit will be announced in class and posted to CANVAS.

**Grade Grievances**
The student has one calendar year from the date a course grade is assigned to initiate a grievance. The normal academic channels are 1) Complete the “Grade Grievance” form*, 2) if warranted, the Department Chair will forward the appeal for review to the 2) Department Grievance Committee, 3) the Department Chair will inform the student of the decision.

*For questions, please contact the Department of Kinesiology at 817-272-0083, or MAC 147 for assistance. The form is available in the MAC 147.
### Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Unit</th>
<th># Days</th>
<th>Dates</th>
<th>Examinations</th>
<th>Research Paper</th>
<th>Lab Schedule Online</th>
<th>Lab Schedule On-Campus</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>1</td>
<td>Aug. 26</td>
<td></td>
<td>Due Sunday of respective week</td>
<td>Due Sunday of respective week</td>
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<tr>
<td>2</td>
<td>Metabolism</td>
<td>2</td>
<td>Sept 1 &amp; 3</td>
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<td>Intro/Welcome Via CANVAS</td>
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<td>3</td>
<td></td>
<td>2</td>
<td>Sept 8 &amp; 10</td>
<td>Refereed Journal Article Review in Lab</td>
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<tr>
<td>4</td>
<td></td>
<td>2</td>
<td>Sept 15 &amp; 17</td>
<td>Proposal: 1.5 page, single spaced. CANVAS</td>
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<tr>
<td>5</td>
<td>Sept 22</td>
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<td>Exam 1 – Tuesday</td>
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<td>Lab 3: Measuring Anaerobic Power</td>
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<tr>
<td>5 cntd</td>
<td>Neuromuscular</td>
<td>1</td>
<td>Sept 24</td>
<td>Thursday</td>
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<td>6</td>
<td></td>
<td>2</td>
<td>Sept 29 &amp; 1 Oct 1</td>
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<td>7</td>
<td></td>
<td>2</td>
<td>Oct 6 &amp; 8</td>
<td>Lab 4: Measuring Aerobic Oxygen Consumption</td>
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<td>8</td>
<td></td>
<td>1</td>
<td>Oct 13</td>
<td>Tuesday</td>
<td>Lab 6: Anthropometric and Physiological Considerations... Case Studies Body Composition Practical Assessment</td>
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<td>Oct 15</td>
<td>Exam 2 – Thursday</td>
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<td>9</td>
<td>Body Composition</td>
<td>2</td>
<td>Oct 20 &amp; 22</td>
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<td>Lab 9: Resting Dynamic Lung Volumes</td>
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<td>Cardio-Pulmonary</td>
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<td>Oct 29</td>
<td>Thursday</td>
<td>Lab 10: Cardiovascular Response to Exercise Meet Online During Group’s Scheduled Lab Time</td>
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<td>2</td>
<td>Nov 3 &amp; 5</td>
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<td>PowerPoint Presentations Due</td>
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<td>Cardiovascular</td>
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<td>Nov 17 &amp; 19</td>
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<td>1</td>
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<td>Tuesday</td>
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<tr>
<td>14 cntd</td>
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<td>1</td>
<td>Nov 26</td>
<td>Thursday</td>
<td>THANKSGIVING HOLIDAY</td>
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<td>Cardiovascular/ Training Effects</td>
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<td>Dec 1 &amp; 3</td>
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<td>Final</td>
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<td>DEC 10</td>
<td>Exam 5 – 11:30</td>
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Institution Information

UTA students are encouraged to review the below institutional policies and informational sections and reach out to the specific office with any questions. To view this institutional information, please visit the Institutional Information page (https://resources.uta.edu/provost/course-related-info/institutional-policies.php) which includes the following policies among others:

- Drop Policy
- Disability Accommodations
- Title IX Policy
- Academic Integrity
- Student Feedback Survey
- Final Exam Schedule

Additional Information

Mandatory Face Covering Policy
All students and instructional staff are required to wear facial coverings while they are on campus, inside buildings and classrooms. Students that fail to comply with the facial covering requirement will be asked to leave the class session. If students need masks, they may obtain them at the Central Library, the E.H. Hereford University Center’s front desk or in their department. Students who refuse to wear a facial covering in class will be asked to leave the session by the instructor, and, if the student refuses to leave, they may be reported to UTA’s Office of Student Conduct.

Attendance
At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator of student success. Each faculty member is free to develop his or her own methods of evaluating students’ academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, I do not require you to attend the lecture portion of the course.

However, your attendance at the accompanying lab portion of the course is required.

In addition, regular/daily quizzes will be assigned in-class (quizzes will be administered and immediately “turned in” at the beginning of most lectures. Therefore, while attendance is not directly required, it is a requisite to complete the quizzes, which are a significant portion of the overall grade for this course.

However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients “begin attendance in a course.” UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report must the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Canvas. This date is reported to the Department of Education for federal financial aid recipients.

Emergency Exit Procedures
Should we experience an emergency event that requires evacuation of the building, students should exit the room and move toward the nearest exit, which is located: both to the “left” (stairwell) and “right” (second floor exits) upon leaving the lab and “upstairs,” Kinesiology suite. When exiting the building during an emergency, do not take an elevator but use the stairwells instead. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

You are encouraged to subscribe to the MavAlert system that will send information in case of an emergency to their cell phones or email accounts. Anyone can subscribe at Emergency Communication System.
**Student Success Programs**

UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include **tutoring by appointment, drop-in tutoring, etutoring, supplemental instruction, mentoring** (time management, study skills, etc.), **success coaching**, **TRIO Student Support Services**, and **student success workshops**. For additional information, please email **resources@uta.edu**, or view the **Maverick Resources** website.

The **IDEAS Center** ([https://www.uta.edu/ideas/](https://www.uta.edu/ideas/)) (**2nd Floor of Central Library**) offers **FREE** tutoring and mentoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. Students can drop in or check the schedule of available peer tutors at **www.uta.edu/IDEAS**, or call (817) 272-6593.

**The English Writing Center (411LIBR)**

The Writing Center offers **FREE** tutoring in 15-, 30-, 45-, and 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Register and make appointments online at the **Writing Center** ([https://uta.mywconline.com](https://uta.mywconline.com)). Classroom visits, workshops, and specialized services for graduate students and faculty are also available. Please see **Writing Center: OWL** for detailed information on all our programs and services.

The Library’s **2nd floor Academic Plaza** ([http://library.uta.edu/academic-plaza](http://library.uta.edu/academic-plaza)) offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the **library's hours** of operation.

**Librarian to Contact**

Each academic unit has access to **Librarians by Academic Subject** that can assist students with research projects, tutorials on plagiarism and citation references as well as support with databases and course reserves.

**Emergency Phone Numbers**

In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911. Non-emergency number **817-272-3381**.

**Library Information**

**Research or General Library Help**

Ask for Help

- **Academic Plaza Consultation Services** ([library.uta.edu/academic-plaza](http://library.uta.edu/academic-plaza))
- **Ask Us** ([ask.uta.edu/](http://ask.uta.edu/))
- **Research Coaches** ([http://libguides.uta.edu/researchcoach](http://libguides.uta.edu/researchcoach))

**Resources**

- **Library Tutorials** ([library.uta.edu/how-to](http://library.uta.edu/how-to))
- **Subject and Course Research Guides** ([libguides.uta.edu](http://libguides.uta.edu))
- **Librarians by Subject** ([library.uta.edu/subject-librarians](http://library.uta.edu/subject-librarians))
- **A to Z List of Library Databases** ([libguides.uta.edu/az.php](http://libguides.uta.edu/az.php))
- **Course Reserves** ([https://uta.summon.serialssolutions.com/#!/course_reserves](https://uta.summon.serialssolutions.com/#!/course_reserves))
- **Study Room Reservations** ([openroom.uta.edu/](http://openroom.uta.edu/))

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