



TEXAS A&M UNIVERSITY
SAN ANTONIO

College of Education and Human Development
Department of Counseling, Health & Kinesiology
EDKN 4417-901 – Advance Physiology of Exercise (4 credits)
Fall 2024

Instructor: T. Brock Symons, Ph.D.

Class Time & Location: 3:30 p.m. to 5:10 p.m.

Tuesday (Face-to-Face), Sci Tech 105

Thursday (Online Synchronous via WebEx or Asynchronous)

E-mail & Phone: tsymons@tamusa.edu (preferred contact method) and 210 – 784 – 2587 (office)

Office Hours: Monday and Tuesday at 1:30 – 3:30 pm via face-to-face or WebEx or by appointment via email.

I understand that this may not be possible for everyone; so, you can always email me at tsymons@tamusa.edu if you have any questions.

I am available from 10:00 a.m. – 5:30 p.m. Central Standard Time (EST) Monday through Friday to contact via telephone and/or e-mail using your Texas A&M University – San Antonio e-mail. If these times are not convenient for you, please let me know and I will be happy to accommodate your schedule if possible. I provide you with these times to make it easier to communicate with me, not to limit our contact and want you to know that, should you need to contact me outside these periods, you should not hesitate to do so.

In the event a third party needs to contact me, please direct them to my contact information listed under "E-mail & Phone" information above. No third party should use your login credentials to gain access to the classroom in Blackboard (Bb).

I will respond to your inquiry within 24 hours of receipt except on weekends and holidays, it will then be the next business day. If I do not respond in that period, know that I probably did not receive your message.

Office Location: SciTech 142K

Welcome: to the Texas A&M University – San Antonio, Department of Counseling, Health and Kinesiology's Advanced Physiology of Exercise (EDKN 4417) hybrid course. This course is designed as a hybrid class. You will learn how the human body, specifically its organ systems, respond to a single bout of exercise and to recurring bouts of exercise in this 16-week course.

The hybrid course contains assignments, quizzes, and exams designed to help you obtain the core concepts of each organ system studied in this course. You will read, attend class, and watch online modules and participate in both classroom and online activities.

Required Textbook: Physiology of Sport and Exercise (2020, 8th. edition).

Kenney L., Wilmore, J., & Costil, D.

Human Kinetics: Champaign, IL.

ISBN: 978-1-7182-0172-9 (hardback)

<https://www.bkstr.com/texasamsanantoniostore/home>

Recommended Textbooks: NA

Course Description: This course investigates the role of various physical environments, activity extremes, and disease status on the human response to physical activity. Additional emphasis is placed on the nutrient demands and role of supplements in human performance. Includes required laboratory experiences.

Course Prerequisites: EDKN 3426 and senior standing.

Course Objectives: This course emphasizes the acquisition of theoretical and practical knowledge for pre-service teachers and fitness/clinical professionals to assist them in better understanding how physiological responses to physical activity influences 1) the instructional process as it relates to physical education and 2) the management/delivery of services in fitness and rehab/clinical setting.

Student Learning Outcomes: Upon completion of this course, each student will be able to:

1. Demonstrate knowledge of the 3 major nutrients and their action upon the body.
2. Identify the functional status of the anaerobic and aerobic energy systems.
3. Display an understanding of the functioning of the respiratory system during rest and exercise.
4. Identify and discuss the physiology of the cardiovascular/circulatory system and its responses to rest and exercise.
5. Demonstrate knowledge of the functioning of the muscular system.
6. Develop an understanding of the nervous system and its relationship to the muscular system.
7. Demonstrate one method of estimating body composition and an understanding of body composition and obesity.
8. Identify aids for performance and the side effects and risks involved with ergogenic aids.
9. Explain methods of measurement for work, power, and energy expenditure.
10. Determine the effects of the environment upon exercise and performance.
11. Develop an individual project through literature review and other resources.

Outcomes are also based on the expected Knowledge, Skills, and Abilities (KSA's) for exercise science majors from the American College of Sports Medicine. Upon completion of this course, each student will be able to demonstrate the following competencies required for the Heath/Fitness Specialist exam:

- 1.1.2 Knowledge of the basic structure of the cardiovascular system and respiratory system
- 1.1.7 Knowledge to describe the myotatic stretch reflex
- 1.1.9 Ability to define aerobic and anaerobic metabolism
- 1.1.10 Knowledge of the role of aerobic and anaerobic energy systems in the performance of various activities
- 1.1.11 Knowledge of the following terms: ischemia, angina pectoris, tachycardia, bradycardia, arrhythmia, myocardial infarction, cardiac output, stroke volume, lactic acid, oxygen consumption, hyperventilation, systolic blood pressure, diastolic blood pressure, and anaerobic threshold
- 1.1.12 Knowledge to describe normal cardiorespiratory responses to static and dynamic exercises in terms of heart rate, blood pressure, and oxygen consumption
- 1.1.13 Knowledge of how heart rate, blood pressure, and oxygen consumption responses change with adaptations to chronic exercise training
- 1.1.14 Knowledge of physiological adaptations associated with strength training
- 1.1.15 Knowledge of the physiological principles related to warm-up and cool-down
- 1.1.16 Knowledge of the common theories of muscle fatigue and delayed onset muscle soreness
- 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
- 1.1.18 Knowledge of the differences in cardiorespiratory response to acute graded exercise between conditioned and unconditioned individuals
- 1.1.19 Knowledge to the structure of the skeletal muscle fiber and the basic mechanism of contraction
- 1.1.20 Knowledge of the characteristics of fast and slow twitch fibers
- 1.1.21 Knowledge of the sliding filament theory of muscle contraction
- 1.1.22 Knowledge of twitch, summation, and tetanus with respect to muscle contraction
- 1.1.23 Knowledge of the physiological principles involved in promoting gains in muscular strength and endurance
- 1.1.24 Knowledge of muscle fatigue as it relates to mode, intensity, duration, and the accumulative effects of exercise
- 1.1.25 Knowledge of the basic properties of cardiac muscle and the normal pathways of conduction in the heart
- 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
- 1.1.27 Knowledge of blood pressure responses associated with acute exercise, including change in body position
- 1.1.28 Knowledge of and ability to describe the implications of the ventilatory threshold (anaerobic threshold) as it relates to exercise training and cardiorespiratory assessment
- 1.1.29 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

- 1.1.31 Knowledge of how the principle of specificity relates to the components of fitness
- 1.1.32 Knowledge of the concept of detraining or reversibility of conditioning and its implications in fitness programs
- 1.1.33 Knowledge of the physical and psychological signs of overtraining and to provide recommendations for these problems
- 1.1.34 Knowledge of and ability to describe the changes that occur in maturation from childhood to adulthood for the following: skeletal muscle, bone structure, reaction time, coordination, heat and cold tolerance, maximal oxygen consumption, strength, flexibility, body composition, resting and maximal heart rate, and resting and maximal blood pressure
- 1.1.35 Knowledge of the effect of the aging process on the musculoskeletal and cardiovascular structure and function at rest, during exercise, and during recovery
- 1.1.36 Knowledge of the following terms: progressive resistance, isotonic/isometric, concentric, eccentric, atrophy, hypertrophy, sets, repetitions, plyometrics, Valsalva maneuver
- 1.3.1 Knowledge of and ability to discuss the physiological basis of the major components of physical fitness: flexibility, cardiovascular fitness, muscular strength, muscular endurance, and body composition
- 1.7.12 Knowledge of the principles of overload, specificity, and progression and how they relate to exercise programming
- 1.7.15 Knowledge of the components incorporated into an exercise session and the proper sequence (i.e., preexercise evaluation, warm-up, aerobic stimulus phase, cool-down, muscular strength and/or endurance, and flexibility)
- 1.7.36 Ability to convert weights from pounds (lbs) to kilograms (kg) and speed from miles per hour (mph) to meters per minute (m/min-1)
- 1.7.37 Ability to convert METs to VO₂ expressed as mL/kg⁻¹/min or L/min.
- 1.8.1 Knowledge of the role of carbohydrates, fats, and proteins as fuels for aerobic and anaerobic metabolism
- 1.8.11 Knowledge of the number of kilocalories in one gram of carbohydrate, fat, protein, and alcohol

Undergraduate Class Policies

A student has the right to expect competent, well-organized instruction for the full number of clock hours allotted for a course; to sufficient written assignments, graded fairly and with reasonable promptness to show the student's academic standing in the course at least before mid-semester; to have ample opportunity to confer with the instructor at published office hours and to review graded written work; to freedom from ridicule, discrimination, harassment or accusations in the presence of other students or faculty members; and to an avenue for appealing to higher academic authority in case of alleged unfairness by an instructor.

Student Rights and Responsibilities: Students' Rights and Responsibilities: The following statement of students' rights and responsibilities is intended to reflect the philosophical base upon which University Student Rules are built. This philosophy acknowledges the existence of both rights and responsibilities, which is inherent to an individual not only as a student at Texas A&M University-San Antonio but also as a citizen of this country.

Students' Rights:

1. A student shall have the right to participate in a free exchange of ideas, and there shall be no University rule or administrative rule that in any way abridges the rights of freedom of speech, expression, petition and peaceful assembly as set forth in the U.S. Constitution.
2. Each student shall have the right to participate in all areas and activities of the University, free from any form of discrimination, including harassment, on the basis of race, color, national or ethnic origin, religion, sex, disability, age, sexual orientation, gender identity, gender expression, and pregnancy/parenting or veteran status in accordance with applicable federal and state laws.
3. A student has the right to personal privacy except as otherwise provided by law, and this will be observed by students and University authorities alike.
4. Each student subject to disciplinary action arising from violations of university student rules shall be assured a fundamentally fair process.

Students' Responsibilities:

1. A student has the responsibility to respect the rights and property of others, including other students, the faculty, and administration.
2. A student has the responsibility to be fully acquainted with the published University Student Rules found in the Student Handbook, Student Code of Conduct, on our website, and University Catalog, and to comply with them, as well as with federal, state, and local laws.
3. A student has the responsibility to recognize that student actions reflect upon the individuals involved and upon the entire University community.
4. A student has the responsibility to recognize the University's obligation to provide a safe environment for learning.
5. A student has the responsibility to check their university email for any updates or official university notifications.

We expect that students will behave in a manner that is dignified, respectful, and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation, or disability. Conduct that infringes on the rights of another individual will not be tolerated.

Students are expected to exhibit a high level of honesty and integrity in their pursuit of higher education. Students engaging in an act that violates the standards of academic integrity will find themselves facing academic and/or disciplinary sanctions. Academic misconduct is any act, or attempt, which gives an unfair advantage to the student. Additionally, any behavior specifically prohibited by a faculty member in the course syllabus or class discussion may be considered as academic misconduct. For more information on academic misconduct policies and procedures please review the Student Code of Conduct (<https://www.tamusa.edu/university-policies/student-rights-and->

[responsibilities/documents/Student-Handbook-2022-23.pdf](https://www.tamusa.edu/university-policies/student-rights-and-responsibilities/academic-integrity.html)) or visit the resources available in the OSRR website (<https://www.tamusa.edu/university-policies/student-rights-and-responsibilities/academic-integrity.html>).

Academic Dishonesty: Students are expected to do their own course work. Academic dishonesty is a violation of the Student Code of Conduct; therefore, the instructor may report any form of academic dishonesty to the Office of Student Rights and Responsibilities. Please review the Student Handbook for a complete description of the process.

Artificial Intelligence Policy: One assumes that all work submitted by students will be generated by the students themselves, working individually or in groups. Students should not have another person/entity do the writing of any portion of an assignment for them, which includes hiring a person or a company to write assignments and/or using artificial intelligence (AI) tools like ChatGPT. Use of any AI-generated content in this course qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.

Class Attendance: A vital part of every student's education is regular attendance of class meetings. Any absences tend to lower the quality of a student's work in a course, and frequent or persistent absences may preclude a passing grade or cause a student to be dropped from one or more courses upon the request of a faculty member to the Provost and Vice President for Academic Affairs.

Religious Observances: Texas A&M University-San Antonio recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or course work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes.

Research on Human Subjects: Research that involves human subjects must be approved by the Institutional Review Board for the Protection of Human Subjects.

Academic Accommodations for Individuals with Disabilities: Texas A&M University-San Antonio is committed to providing all students with reasonable access to learning opportunities and accommodations in accordance with The Americans with Disabilities Act, as amended, and Section 504 of the Rehabilitation Act. If you experience barriers to your education due to a disability or think you may have a disability, Disability Support Services is located in the Central Academic Building, Suite 210. You can also contact us via phone at (210) 784-1335, visit us <https://www.tamusa.edu/Disability-Support-Services/index.html> or email us at dss@tamusa.edu. Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Support Services and their instructors as soon as possible.

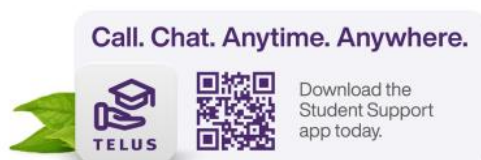
Academic Learning Center: The Academic Learning Center provides free course-based tutoring to all currently enrolled students at Texas A&M University-San Antonio. Students wishing to work with a tutor

can make appointments through the Brainfuse online tutoring platform. Brainfuse can be accessed in the Tools section of Blackboard. You can contact the Academic Learning Center by emailing tutoring@tamusa.edu, calling (210) 784-1307, or visiting the Central Academic Building, room 202.

Counseling/Mental Health Resources: As a college student, there may be times when personal stressors interfere with your academic performance and negatively impact your daily functioning. If you are experiencing emotional difficulties or mental health concerns, support is available to you through the Student Counseling Center (SCC). To schedule an appointment, call 210-784-1331 or visit Madla 120.

All mental health services provided by the SCC are free and confidential (as the law allows). The Student Counseling Center provides brief individual and group therapy, crisis intervention, consultation, case management, and prevention services. For more information on SCC services visit tamusa.edu/studentcounseling.

Crisis support is available 24/7 by calling the SCC at 210-784-1331 (after-hours select option '2').



Additionally, the TELUS Student Support App provides a variety of mental health resources to including support for in the moment distress, an anonymous peer to peer support network, mental health screenings, podcasts, and articles to improve your mental wellbeing.

Emergency Preparedness: JagE Alert is Texas A&M University-San Antonio's mass notification. In the event of an emergency, such as inclement weather, students, staff and faculty, who are registered, will have the option to receive a text message, email with instructions and updates. To register or update your information visit: <https://tamusa.bbcportal.com/>.

More information about Emergency Operations Plan and the Emergency Action Plan can be found here: <https://www.tamusa.edu/about-us/emergency-management/>.

Download the SafeZone App (<https://safezoneapp.com/>) for emergencies or call (210) 784-1911. Non-Emergency (210) 784-1900.

Financial Aid and Verification of Attendance: According to the following federal regulation, 34 CFR 668.21: U.S. Department of Education (DoE) Title IV regulation, a student can only receive Title IV funds based on Title IV eligibility criteria which include class attendance. If Title IV funds are disbursed to ineligible students (including students who fail to begin attendance), the institution must return these funds to the U.S. DoE within 30 days of becoming aware that the student will not or has not begun attendance. The faculty will provide the Office of Financial Aid with an electronic notification if a student has not attended the first week of class. Any student receiving federal financial aid who does not attend the first week of class will have their aid terminated and returned to the DoE. Please note that any

student who stops attending at any time during the semester may also need to return a portion of their federal aid.

Writing, Language, and Digital Composing Center: The Writing, Language, and Digital Composing Center supports graduate and undergraduate students in all three colleges as well as faculty and staff. Tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their written assignments. Our language tutors support students enrolled in Spanish courses and students composing in Spanish for any assignment. Our digital studio tutors support students working on digital projects such as eportfolios, class presentations, or other digital multimedia projects. Students can schedule appointments through JagWire under the Student Services tab. Click on “Writing, Language, and Digital Composing Center” to make your appointment. The Center offers face-to-face, synchronous online, and asynchronous digital appointments. More information about what services we offer, how to make an appointment, and how to access your appointment can be found on our website at <https://www.tamusa.edu/academics/>.

Meeting Basic Needs: Any student who has difficulty affording groceries or accessing sufficient food to eat every day or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to submit a CARE referral (<https://www.tamusa.edu/university-policies/Student-Rights-and-Responsibilities/file-a-report.html>) for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable them to direct you to available resources.

Military Affairs: Veterans and active-duty military personnel are welcomed and encouraged to visit the Office of Military Affairs for any question involving federal or state VA Education Benefits. Visit the Patriots’ Casa building, room 202, or to contact the Office of Military Affairs with any questions at military.va@tamusa.edu or (210)784-1397.

Statement of Harassment and Discrimination: Texas A&M University-San Antonio is committed to the fundamental principles of academic freedom, equal opportunity, and human dignity. To fulfill its multiple missions as an institution of higher learning, A&M-San Antonio encourages a climate that values and nurtures collegiality and the uniqueness of the individual within our state, nation, and world. All decisions and actions involving students and employees should be based on applicable law and individual merit. Texas A&M University-San Antonio, in accordance with applicable federal and state law, prohibits discrimination, including harassment, on the basis of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation, gender identity, gender expression, or pregnancy/parenting status. Individuals who believe they have experienced harassment or discrimination prohibited by this statement are encouraged to contact the appropriate offices within their respective units.

Texas A&M University-San Antonio faculty are committed to providing a safe learning environment for all students and for the university as a whole. If you have experienced any form of sex- or gender-based discrimination or harassment, including sexual assault, sexual harassment, domestic or dating violence, or stalking, know that help and support are available. A&M-San Antonio’s Title IX Coordinator can support those impacted by such conduct in navigating campus life, accessing health and counseling

services, providing academic and housing accommodations, and more. The university strongly encourages all students to report any such incidents to the Title IX Coordinator. Please be aware that all A&M-San Antonio employees (other than those designated as confidential resources such as counselors and trained victim advocates) are required to report information about such discrimination and harassment to the university. This means that if you tell a faculty member about a situation of sexual harassment, sexual violence, or other related misconduct, the faculty member must share that information with the university's Title IX Coordinator (titleix@tamusa.edu, 210-784-2061, CAB 439K). If you wish to speak to a confidential employee who does not have this reporting requirement, you can contact the Student Counseling Center at (210) 784-1331 or visit them in Madla 120.

Pregnant/Parenting Students: Texas A&M-San Antonio does not require a pregnant or parenting student, solely because of that status or issues related to that status, to (1) take a leave of absence or withdraw from their degree or certificate program; (2) limit the student's studies; (3) participate in an alternative program; (4) change the student's major, degree, or certificate program; or (5) refrain from joining or cease participating in any course, activity, or program at the University. The university will provide such reasonable accommodations to pregnant students as would be provided to a student with a temporary medical condition that are related to the health and safety of the student and the student's unborn child. These could include maintaining a safe distance from substances, areas, and activities known to be hazardous to pregnant individuals and their unborn child; excused absences because of illness or medical appointments; modified due dates for assignments; rescheduled tests/exams; taking a leave of absence; and being provided access to instructional materials and video recordings of lectures for excused absences, if these would be provided to any other student with an excused absence. Pregnant/parenting students are encouraged to contact the Title IX Coordinator with any questions or concerns related to their status (titleix@tamusa.edu; 210-784-2061; CAB 439K).

Texas A&M-San Antonio has also designated the Title IX Coordinator as the liaison officer for current or incoming students who are the parent or guardian of a child younger than 18 years of age. The Title IX Coordinator can provide students with information regarding support services and other resources.

The Six-Drop Rule: Students are subject to the requirements of Senate Bill (SB) 1231 passed by the Texas Legislature in 2007. SB 1231 limits students to a maximum of six (6) non-punitive course drops (i.e., courses a student chooses to drop) during their undergraduate careers. A non-punitive drop does not affect the student's GPA. However, course drops that exceed the maximum allowed by SB 1231 will be treated as "F" grades and will impact the student's GPA.

Administrative Drops for Non-Attendance: A faculty member may drop an undergraduate student for non-attendance at any time prior to the mid-point of a long semester. A drop processed by a faculty member for non-attendance will be treated as a non-punitive grade unless the undergraduate student is subject to the requirements of Senate Bill 1231. The Office of the Registrar will treat all drops processed by a faculty member in accordance with the requirements of Senate Bill 1231 and may change a grade of W to a grade of WS or an F, depending on the student's status.

Incompletes: The spirit of the “Incomplete” is to give a student an opportunity to complete a course after the end of the semester. An Incomplete will only be considered under specific circumstances: 1. 70% of the class has been completed and student is passing with a “C” or better 2. The circumstance for which the “I” is requested is supported with documentation 3. Student has been attending class on a regular basis Incompletes are not to be used to remedy excessive absences. Unforeseen circumstances precipitating the request for an “I”, should occur near the end of the semester. Students who are experiencing difficulties at the beginning or midway through the course should contact their professor immediately to discuss options. When a professor agrees to grant an “I”, a contract between the student and professor that outlines a specific timeline for completion of the course will be generated. Topics such as the highest possible grade will also be outlined. If the contract is not fulfilled, the professor will submit a change of grade form with earned letter grade. All “I”s will automatically revert to an “F” after one year.

Grading Policy: Your final grade will be presented as a standard percentage point. Your final grade will be determined by dividing the total points you earned by the total points offered in this course. ***I will not respond to individual request for calculation of grade.*** It is your responsibility to keep a record of the grade points you have earned in the exams, assignments, and in-class quizzes. All grades will be posted to Blackboard.

Your final grade will be determined as a percentage of the following points:

| | Points |
|--|---------------|
| Exams (125 points per exam) | 375 |
| Quizzes (5 points per quiz) | 60 |
| Assignments (15 points per assignment) | <u>180</u> |
| Total | 615 |

Grading Scale (No Curve!)

90 or higher = A, 80 – 89 = B, 70 – 79 = C, 65 – 69 = D, Below 65 = F

A grade of “C” or better must be earned in this course to satisfy Kinesiology requirements. Majors who do not earn a grade of “C” or better will be required to repeat the course. I will round up your grade under the following condition, if you earn an ##.9, then I will round your grade up to the next letter grade. Therefore, if you an 89.9, I will then round your grade up to 90.0 and you will earn an A. If you earn an 89.8, then your final grade will be a B.

No changes to your final grade will occur once class has ended unless I have made a mistake. You are given the opportunity to follow your grade throughout the semester; thus, you should not be surprised with the grade you earn. There are no exceptions (eligibility, financial aid, etc.)

Course Requirements: Consider the following, with some lectures occurring online, you will be responsible for viewing the online materials and/or PowerPoint presentations and keeping up with the module quizzes and assignments in order to not fall behind. You will be responsible for ensuring that you completely understand the key concepts that make up the learning objectives of each module,

essentially teaching yourself. The responsibility for ensuring your success in this course will be yours and that is what life-long learning is all about.

You will depend on technology to submit and complete course work and to communicate. The key word here is “depend.” If cyber communication is disrupted, you will be required to submit assignments via email or in an alternate manner to Texas A&M University – San Antonio, Health and Kinesiology Program, Science and Technology Building, San Antonio, TX 78224. Please keep in mind; you might need to find alternate internet sources if the computer at your home/work has an outage. Texas A&M University – San Antonio and many public libraries offer access. Need help? Contact the IT HelpDesk at (210) 784-4357 or helpdesk@tamusa.edu . Hours: Monday through Friday: 8:00 a.m. – 6:00 p.m. (closed Saturday and Sunday).

Exams. There will be 3 regular exams, each worth 125 points, throughout the semester. The exams will consist of multiple-choice questions, true or false, matching, diagram labeling questions, and/or short descriptive questions. Exams will cover material from the preceding lectures.

Quizzes. Module quizzes will be given to assess your knowledge following the completion of a module. You will be required to complete 14 module quizzes. Each module quiz will be worth 5 points and will be given on Blackboard. Quizzes will cover material from the particular module, semester total of 60 points.

Assignments. There will be 14 assignments, each worth 15 points. Each assignment will consist of short answer question(s) and will cover material from preceding lectures, semester total 180 points.

Make-up Exam/Late Assignment Policy: There will be no additional make-up for all assignments. (Exceptions: If you are, absent because of school-sponsored activity (you need to notify me at least one week in advance) or illness with doctor's excuse. In which case, you need to take the exam on specific date & time that I will assign).

All class work is due on the date and time assigned; work received later than the due date will be penalized one letter grade per day, after which 4 days will result in a zero (F).

- *I do not offer extra credit.*
- *I do not offer Independent Studies if an acceptable grade is not earned*

Technology Requirements: Quizzes are to be completed on Blackboard (Bb) according to the directions provided.

I will be holding in person / virtual office hour via WebEx. I will post a WebEx meeting link to Blackboard and we will be able to meet virtually.

Continuing and regular use of your TAMUSA e-mail is expected. You must be able to use Internet search tools, access Bb, download and print documents and upload assignments.

To access Blackboard, go to <https://tamusa.blackboard.com/>.

Library Support for COEHD Programs & Courses: The [A&M-SA Library](#) provides access to thousands of researches and learning materials for COEHD students, faculty, and staff. These resources are mainly provided in electronic format and are accessible 24/7/365 with Jaguar log-in credentials. They include, but are not limited to, scholarly academic journals, professional publications, newspapers, ebooks, streaming video, and curated web resources. Additionally, there is a smaller physical collection, study space, and computer access available in CAB 202. Two unique physical collections housed in CAB 202 are the curriculum materials (sample textbooks, teachers' guides, activity guides, manipulatives, models, classroom reading collections, educational games, etc.) and the children's literature collection. These materials are available for checkout and can be used by students in lesson planning and in their clinical school placements.

[Education Librarian Kimberly Grotewold](#) is available to assist with finding, accessing, evaluating, and effectively using relevant library resources and other information. She has developed subject, topic, and course-specific research guides which are linked into Blackboard (under Campus Resources in the left menu) and are accessible through the [Library's website](#) under the Research Guides link. If you have questions, concerns, or need help, please contact her through email at kimberly.grotewold@tamusa.edu; via phone: (210) 784-1519; or request an appointment using her [online scheduling calendar](#).

Schedule of Course Activities:

| Tasks | | | | | |
|--------|---|-----------------------------|-------------|--|-------------------------------|
| Module | Topic | Date | Reading | Objectives | Deliverables (Posting Date) |
| 1 | Introduction and Syllabus | 8.27 F-2-F | | Syllabus Review and Course Expectations | |
| | Fuel for Exercise | 8.29 | Ch. 2 | 1.1 Energy Substrates 1.2 Basic Energy Systems 1.3 Interaction of the Energy Systems 1.4 Crossover Concept | Assignment 1 Post-Mod Quiz |
| 2 | Structure, Function and Neural Control of Exercising Muscle | 9.3 | Ch. 1 and 3 | 2.1 Muscle Fiber Contraction 2.2 Muscle Fiber Types 2.3 Skeletal Muscle & Exercise | |
| | | 9.5 | | 2.3 Skeletal Muscle & Exercise Cont'd 2.4 Structure and Function of the Nervous System 2.5 Sensory Motor Integration | Assignment 2 Post-Mod Quiz |
| 3 | Hormonal Control During Exercise | 9.10 F-2-F | Ch. 4 | 3.1 The endocrine system 3.2 Endocrine Glands and Their Hormones: An Overview | |
| | | 9.12 | | 3.3 Hormonal Regulation of Metabolism During Exercise | |
| | | 9.17 F-2-F | | 3.4 Hormonal Regulation of Fluid & Electrolytes During Exercise 3.5 Hormonal Regulation of Caloric Intake | Assignment 3 Post-Mod Quiz |
| 4 | Energy Expenditure and Fatigue | 9.19 | Ch. 5 and 6 | 4.1 Measuring Energy Expenditure 4.2 Energy Expenditure at Rest & During Exercise 4.3 Fatigue and Its Causes | |
| | | 9.24 F-2-F | | 4.4 Critical Power: The Link Between Energy Expenditure and Fatigue 4.5 Muscle Soreness & Muscle Cramps | Assignment 4 Post-Mod Quiz |
| 5 | Cardiovascular System and Its Control | 9.26 | Ch. 7 | 5.1 The Heart 5.2 Vascular System 5.3 Blood | Assignment 5 Post-Mod Quiz |
| 6 | The Respiratory System and Its Regulation | 10.1 F-2-F | Ch. 8 | 6.1 Pulmonary Ventilation 6.2 Pulmonary Volumes 6.3 Pulmonary Diffusion | |

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|---------------|--|------------------------------|---|---|-------------------------------|
| | | 10.3 | | 6.4 Transport of Oxygen and Carbon Dioxide in the Blood | |
| | | | | 6.5 Gas Exchange at the Muscles | Assignment 6 |
| | | | | 6.6 Regulation of Pulmonary Ventilation | Post-Mod Quiz |
| | | | | 6.7 Afferent Feedback from Exercising Limbs | |
| 7 | Respiratory Response to Acute Exercise | 10.8 F-2-F | Ch. 9 | 7.1 Respiratory Responses to Exercise | Assignment 7 Post-Mod Quiz |
| | | 10.10 | | Catch-Up and Exam Preparation | |
| EXAM 1 | | 10.15 F-2-F | Modules 1 to 7 (Chapters 1 to 8) | | |
| 8 | Adaptations to Resistance & Anaerobic Training | 10.17 | Ch. 11 | 8.1 Mechanisms of Muscle Strength Gain | |
| | | | | 8.2 Interaction Between Resistance Training and Diet | |
| | | 10.22 F-2-F | Ch. 12 | 8.3 Adaptations to Aerobic Training | Assignment 8 |
| | | | | 8.4 Adaptations to Anaerobic Training | Post-Mod Quiz |
| 9 | Exercise in Hot and Cold Environment | 10.24 | Ch. 14 | 9.1 Body Temperature Regulation | |
| | | | | 9.2 Physiological Responses to Exercise in the Heat | |
| | | 10.29 F-2-F | | 9.3 Health Risks During Exercise in the Heat | |
| | | | | 9.4 Acclimation to Exercise in the Heat | |
| | | | | 9.5 Exercise in the Cold | Assignment 9 |
| | | | | 9.6 Physiological Responses to Exercise in the Cold | Post-Mod Quiz |
| | | | | 9.7 Health Risks During Exercise in the Cold | |
| 10 | Exercise at Altitude | 10.31 | Ch. 15 | 10.1 Environmental Conditions at Altitude | |
| | | | | 10.2 Physiological Responses to Acute Altitude Exposure | |
| | | | | 10.3 Exercise and Sport Performance at Altitude | |
| | | | | 10.4 Acclimation: Chronic Exposure to Altitude | |
| | | 11.5 F-2-F | | 10.5 Altitude: Optimizing Training and Performance | Assignment 10 |
| | | | | 10.6 Health Risks of Acute Exposure to Altitude | Post-Mod Quiz |
| | | 11.07 | | Catch-Up Day Exam Preparation | |

| EXAM 2 | | 11.12 F-2-F | Modules 8 to 11 (Chapters 11,12,14,15) | | |
|---------------|---|------------------------|--|---|--------------------------------|
| 11 | Children and Adolescents in Sport and Exercise | 11.14 | Ch. 19 | 11.1 Growth, development, and maturation 11.2 Physiological responses to acute exercise 11.3 Physiological adaptations to training 11.4 Physical activity patterns among youth 11.5 Sport performance and specialization | Assignment 12 Post-Mod Quiz |
| 12 | Sex Differences in Sport and Exercise | 11.19 F-2-F | Ch. 21 | 12.1 Sex Verses Gender in Exercise Physiology 12.2 Body Size and Composition 12.3 Physiological Responses to Acute Exercise 12.4 Physiological Adaptations to Exercise Training 12.5 Sport Performance | Assignment 12 Post-Mod Quiz |
| 13 | Prescription of Exercise for Health and Fitness | 11.21 | Ch. 13 | 13.1 Health Benefits of Regular Physical Activity and Exercise 13.2 Physical Activity Recommendations 13.3 Health Screening 13.4 Exercise Prescription 13.5 Monitoring Exercise Intensity 13.6 Exercise Programming 13.7 Exercise and Rehabilitation for People with Diseases | Assignment 13 Post-Mod Quiz |
| | | 11.26 F-2-F | | | |
| | | 11.28 | | <i>Thanksgiving Holiday</i> | |
| 14 | Cardiovascular Disease and Physical Activity | 12.3 F-2-F | Ch. 22 | 14.1 Forms of Cardiovascular Disease 14.2 Understanding the Disease Process 14.3 Reducing Risk through Physical Activity 14.4 Risk of Heart Attack and Death during Exercise 14.5 Exercise Training and Rehabilitation in Patients with Heart Disease | Assignment 14 Post-Mod Quiz |
| | | 12.7 | | Catch-Up and Exam Preparation | |
| EXAM 3 | | 12.12 | @ 2:00 to 3:50, Modules 12 to 14 (Chapters 13,19,21,22) | | |