



XS355 – M1: Physiology of Exercise
Fall 2026
Tuesdays & Thursdays 11:20 – 12:50pm, QRC 141

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CREDIT:	4 credit hours

CATALOG DESCRIPTION:

- A study of how the body's structures and functions are altered when exposed to acute and chronic bouts of exercise. How human performance is affected by environmental factors, nutrition, dietary supplements is emphasized. The measurement of physiological parameters, the effects of various kinds of training, application of nutritional principles for athletes, the effects of learning on performance, positive health behaviors, and the effect of age and sex on physiological response and adaptation are included. Prerequisite: HS344

COURSE OBJECTIVE:

- The objective of the course is to provide instruction in how the **musculoskeletal, neuroendocrine, cardiovascular, and respiratory systems** of the human body function to allow the **performance of physical activity and exercise**, and how these physiological systems **respond to both acute and chronic exercise training**.

REQUIRED TEXTBOOK / MATERIALS:

- *Physiology of Sport and Exercise (9th Edition)* – older editions may be used if warranted
Kenney, W.L., Wilmore, J.H., Costill, D.L. Human Kinetics, 2025.
ISBN: 978-1-7182-2842-9
- Calculators may be needed. No cell phone calculators allowed during exams
- The student will need to have access to and know how to use Wilmington's Blackboard (Bb).
- A minimum of 2 hours of out of class student work is expected for each hour of in class time

TENTATIVE STUDENT LEARNER OUTCOMES (SLOs):

- ***Throughout the lecture portion of the course, the students will be expected to:***
 - 1) Define and contrast the terms "exercise physiology", "work physiology", and "sport physiology".

- 2) Demonstrate familiarity with the history of exercise physiology as a field of study and academic discipline.
- 3) Describe the structure and function of skeletal muscle.
- 4) Detail the physiological interaction of the skeletal and muscular systems results in movement during exercise.
- 5) Discuss the physiology of human metabolism and the bioenergetics that fuel human movement during exercise.
- 6) Explain the role the endocrine system plays, in conjunction with the nervous system, in controlling and regulating movement during exercise.
- 7) Demonstrate an understanding of how nervous system interacts with the muscular system to initiate and control movement during exercise.
- 8) Explain how neuromuscular systems respond to acute exercise and adapt to chronic exercise training.
- 9) Discuss how the neuroendocrine systems and metabolic processes respond to acute exercise and adapt to chronic exercise training.
- 10) Determine energy expenditure at rest and during exercise.
- 11) Explain the concept of “fatigue” and identify the potential physiological causes of fatigue.
- 12) Detail the structure and function of the cardiovascular system at rest.
- 13) Discuss the role the cardiovascular system plays in enabling movement during exercise.
- 14) Detail the structure and function of the respiratory system at rest.
- 15) Demonstrate an understanding of the role the respiratory system plays, in conjunction with the cardiovascular system, in enabling and controlling movement during exercise.
- 16) Explain how the cardiorespiratory systems respond to acute exercise and adapt to chronic exercise training.
- 17) Define and discuss the basic physiological principles of exercise training (e.g., individuality, specificity, overload, disuse, hard/easy, and periodization).
- 18) Explain the physiological bases for commonly prescribed muscular strength and anaerobic power training
- 19) Explain the physiological bases for commonly prescribed aerobic power training regimens.
- 20) Explanation of the anatomical and physiological premises for the measurement of human body composition
- 21) Explain the basic methodology for the assessment of body composition via hydrostatic weighing, dual-energy x-ray absorptiometry and plethysmography.
- 22) Use field tests to estimate maximal oxygen consumption (VO_{2MAX}).
- 23) Use virtual or physical laboratory technology to observe and explain the metabolic responses to prolonged exercise and graded exercise.
- 24) Use virtual or physical laboratory technology to observe and explain the effects of training on the metabolic responses to prolonged and graded exercise
- 25) Measure and explain heart rate and blood pressure responses to graded exercise.

- 26) Explain the responses and adaptations during acute and prolonged exposure to extreme environments.

METHODS OF EVALUATION AND GRADING PROCEDURES:

- Performance Evaluation (Examinations/Quizzes and Laboratory Assignments)
 - Student performance (i.e., the degree to which the student achieves the aforementioned SLOs) will be evaluated via in a series of written examinations/quizzes and laboratory assignments.

Grading Procedures (will change significantly if we have to move online)

- Quizzes are worth 25 points each
- Exams will be worth 100 points each
- Laboratory performance is worth 100 points.
- Therefore, the grading for the course will be as follows:

Labs	= 100 pts	A = 90-100%	C- = 70-72%
Quizzes	= 100 pts	B+ = 86-89%	D+ = 66-69%
Exams	= 400 pts	B = 83-85%	D = 63-65%
TOTAL	= 600 pts	B- = 80-82%	D- = 60-62%
		C+ = 76-79%	F = 0-59%
		C = 73-75%	

Lab Grading

- You must be present and have signed the sign-in sheet to receive any credit on lab assignments. Absences will result in a '0' for each lab not attended. Labs cannot be "made up" outside of class.
- Data sheets (where present) must be filled out to receive any credit on lab assignments. Incomplete data sheets will result in a '0' for the lab assignment.
- Two or more unexcused absences will result in a '0' for the lab portion of the class grade (0/100 points).
- Excused absences (doctor's note, death in the family, university sponsored athletic travel, etc.) will not count against the lab scores. You must get data from a fellow student.

Grading

- Percentage grades will only be rounded to the nearest whole number and the cutoff is 0.5%. For example, a grade of 89.5% will be rounded to 90% (letter grade of an A) and a grade of an 89.4% will be rounded to 89% (letter grade of a B+).

Examinations/Quizzes

- All Quizzes will be in person in class.
- All exams may be comprised of one or more of the following types of questions: multiple choice, true/false, key term definition, matching, fill-in-the-blank, short answer, or short essay.
- In the rare case of an approved make-up exam, long essay questions and/or oral examination could also be the test form utilized by the professor.
- Once the exams have been graded and returned to the student, any appeal of any test item must be made within one week by the student for it to be considered by the professor.
- **No cell phones, headphones, cameras, Bluetooths, or electronic devices such as “Google Glass” are allowed to be used or placed anywhere on the desk while taking an exam. Failure to remove these items will result in an “F” for that particular exam.**

Laboratory Assignments

- To ensure an optimal learning environment for the class, if it is apparent that the student is not prepared for the laboratory activity (e.g., he/she doesn't bring the assigned materials, hasn't read the assigned reading and is not familiar with the activity, etc.), he/she will not be allowed to participate in the activity. This, of course, will result in the student not being allowed to turn in that particular laboratory assignment for credit.
- Students are expected to experience a variety of exercise testing skills in the laboratory setting, making attendance at, and participation in these laboratories critical to the course learning experience and achievement of the course SLOs. Additionally, the material covered in lecture is critical to ensure the students' understanding and positive participation in the applicable lab activities. Failure of students to participate positively in laboratory sessions will result in points being deducted from their laboratory assignments.
- Laboratory assignments must be turned in by the predetermined due dates unless otherwise noted (i.e., at the beginning of the class period when the assignment is due.).
- Laboratory assignments will not be accepted late. There will be NO EXCEPTIONS to this policy. Even if students have an excused absence on a day that a lab is due, they should make sure that their lab is turned in on time.
- The nature the laboratory portion of this class encourages peer discussion and peer tutoring. This is expected. However, each student is expected to turn in his/her own work in his/her own words. In situations where it is obvious that one or more students essentially copied another student's work, all involved parties will be deemed to have engaged in academic misconduct. That is, whether you were the one copying, or the one being copied from, you will be cited for academic misconduct and subject to being penalized. The penalty for this form of academic misconduct is determined by the instructor and varies depending upon each specific case.
- Once the lab assignments have been graded and returned to the students, any appeal of any lab assignment item must be made within one week for it to be considered by the professor.

ATTENDANCE POLICY

Lectures

- Excused absences include: 1) activities in which the student serves as an official representative of the College (e.g., musical performance, athletic contests, field trips); 2) Personal illness, with documentation by the College nurse or a physician, if possible; 3) Family or personal emergencies; and 4) When severe weather makes travel to campus dangerous.
- Attendance is a critical aspect of academic success and regular attendance and regular classroom interaction is advised to be successful in this subject matter.

Exams

- Make-up exams will not be permitted except in situations related to excused absences (see above) and religious holy days. In the case that the professor approves a make-up exam, it should be taken prior to the absence if possible. If this is not possible, it must be taken within one week of the originally scheduled exam.
- In the rare case that the professor approves a make-up lab, it should be performed prior to the absence if possible. If this is not possible, it must be performed within one week of the originally scheduled lab.
- **A student who is absent (unapproved) on days when the class is performing laboratory activities will not be allowed to turn in that particular laboratory assignment for credit.**

OTHER POLICIES

Sleeping in Class

- Students sleeping in class are a distraction to the professor and to the students in class who have a sincere desire to learn. Therefore, this behavior is deemed to be a form of nonacademic misconduct (see below) and will not be tolerated. No snoring.

Classroom Electronics Policy

- To promote engagement, minimize distractions, and maintain a productive learning environment, the use of electronic devices in class is restricted.
- Cell phones, smartwatches, tablets, laptops, headphones, earbuds, and similar electronic devices must be silenced and stored out of sight unless their use is specifically authorized for a class activity, assessment, or accommodation. The use of headphones or earbuds during class is prohibited, as they interfere with participation, communication, and attention to course activities.
- Students are expected to give their full attention to class discussions, lectures, demonstrations, and group activities. Texting, social media use, web browsing, streaming media, gaming, or other non-course-related activities are not permitted during class.
- Repeated violations of this policy may result in the student being asked to put the device away, leave the classroom for the remainder of the class period, and/or receive a reduction in participation or professionalism points, as outlined in the course grading policy. Failing to comply with this policy is deemed to be a form of nonacademic misconduct (see below) and will not be tolerated.

Disability statement:

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disability. If you have a documented disability that accommodation please contact the Disability Services Director at 937-481-2444, Robinson Communication Center 114 Office B.

Academic misconduct statement:

You are expected to adhere to the highest academic standards of behavior and personal conduct in this course and all other courses. Students who engage in academic misconduct are subject to College disciplinary procedures.

Forms of academic dishonesty:

- 1) Cheating: Using unauthorized notes or study aids, allowing another party to do one's work/exam and turning in that work/exam as one's own; submitting the same or similar work in more than one course without permission from the course instructors; deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
- 2) AI (artificial intelligence) and the use of it to aid in quizzes and assignments is discouraged. See the current Student Handbook for the college's Academic Integrity policies as they pertain to examinations, plagiarism, classroom behavior, and the process for handling academic misconduct charges."
- 3) Aid of academic dishonesty: Intentionally facilitating any act of academic dishonesty. Tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
- 4) Fabrication: Falsification or creation of data, research or resources, or altering a graded work without the prior consent of the course instructor.
- 5) Plagiarism: Portrayal of another's work or ideas as one's own. Examples include unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.
- 6) Lying: Deliberate falsification with the intent to deceive in written or verbal form as it applies to an academic submission.
- 7) Bribery: Providing, offering or taking rewards in exchange for a grade, an assignment, or the aid of academic dishonesty.
- 8) Threat: An attempt to intimidate a student, staff or faculty member for the purpose of receiving an unearned grade or in an effort to prevent reporting of an Honor Code violation.

Other Forms of Academic Misconduct:

- 1) Unauthorized possession of examinations, reserved library materials, laboratory materials or other course related materials.
- 2) Failure to follow the instructor or proctor's test-taking instructions, including but not limited to not setting aside notes, books or study guides while the test is in progress, failing to sit in designated locations and/or leaving the classroom/ test site without permission during a test.
- 3) Prevention of the convening, continuation or orderly conduct of any class, lab or class activity. Engaging in conduct that interferes with or disrupts teaching, research or class activities such as making loud and distracting noises, repeatedly answering cell phones/text messaging or allowing pagers to beep, exhibiting erratic or irrational behavior, persisting in speaking without being recognized, repeatedly leaving and entering the classroom or test site without authorization, and making physical threats or verbal insults to the faculty member, or other students and staff.
- 4) Falsification of student transcript or other academic records; or unauthorized access to academic computer records.
- 5) Nondisclosure or misrepresentation in filling out applications or other college records.
- 6) Any action which may be deemed as unprofessional or inappropriate in the professional community of the discipline being studied.

Artificial Intelligence:

The use of AI for this class is discouraged and assignments that are flagged will be pulled and the student will be brought in regarding the paper. Depending on the severity of the offense the student will redo the assignment for less credit or receive no credit. See the current handbook for the college's academic integrity policies.

Non-academic misconduct:

The university respects the rights of instructors to teach and of students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with these rights will not be tolerated; examples include

- 1) interfering with the instructor's ability to conduct the class,
- 2) causing inability of other students to profit from the instructional program, or
- 3) any interference with the rights of others.

An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under non-academic procedures.

Ongoing behaviors or single behaviors considered distracting (e.g., coming late to class, performing a repetitive act that is annoying, sleeping or reading a newspaper in class, etc.) will be addressed by the faculty member initially either generally or individually. Cases in which such annoying behavior becomes excessive and the student refuses to respond to the faculty member's efforts can be referred to the Dean of Students. In the case of serious disruptive behavior in a classroom the instructor may first request compliance from the student and if it is not received, an instructor has the authority to ask the student to leave the classroom. If the student fails to leave after being directed to do so, assistance may be obtained from other

university personnel, including Campus Safety. An individual engaging in such disruptive behavior is subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under non-academic procedures to determine if the student should be allowed to return to the classroom.

TENTATIVE LECTURE SCHEDULE

The Professor has the authority to edit and change the schedule and syllabus at any point in the semester and will notify the class when changes have been made. Due to the density of material and depth required, the class will take the time needed to adequately cover the lecture before moving on.

WK:	DAY:	TOPIC:	ASSESSMENT:
1	08-25	course introduction, ch. 1	
	08-27	Chapter 1: Structure and Function of Exercising Muscle	
2	09-01	Chapter 1: Structure and Function of Exercising Muscle	
	09-03	Chapter 2: Fuel for Exercise: Bioenergetics, Metabolism	
3	09-08	Chapter 2: Fuel for Exercise: Bioenergetics, Metabolism	Quiz 1: ch. 1&2
	09-10	Chapter 3: Neural Control of Exercising Muscle	
4	09-15	Chapter 3: Neural Control of Exercising Muscle	
	09-17	Chapter 4: Hormonal Control During Exercise	
5	09-22	Chapter 4: Hormonal Control During Exercise	Exam 1: ch. 1-4
	09-24	Chapter 5: Energy Expenditure	
6	09-29	Chapter 6: Fatigue, Muscle Soreness, and Muscle Cramps	
	10-01	Chapter 7: The Cardiovascular System and Its Control	
7	10-06	NO IN-CLASS MEETING – WC Peace Symposium	Assignment
	10-08	Chapter 8: The Respiratory System and Its Regulation	Quiz 2: ch. 5-7
8	10-13	NO CLASSES – IN-SERVICE DAY	none
	10-15	Chapter 8: The Respiratory System and Its Regulation	
9	10-20	Chapter 8: The Respiratory System and Its Regulation	Exam 2: ch. 5-8
	10-22	Chapter 9: Cardiorespiratory Responses to Acute Exercise	
10	10-27	Chapter 9: Cardiorespiratory Responses to Acute Exercise	
	10-29	Chapter 10: Principles of Exercise Training	
11	11-03	Chapter 10: Principles of Exercise Training	Quiz 3: ch. 9
	11-05	Chapter 11: Adaptations to Resistance Training	
12	11-10	Chapter 11: Adaptations to Resistance Training	
	11-12	Chapter 12: Adaptations to Aerobic, Anaerobic Training	
13	11-17	Chapter 12: Adaptations to Aerobic, Anaerobic Training	Exam 3: ch. 9-12
	11-19	Chapter 14: Exercise in Hot and Cold Environments	
14	11-24	Chapter 16: Training for Sport	
	11-26	THANKSGIVING DAY – NO CLASSES – COLLEGE CLOSED	
15	12-01	Chapter 16: Training for Sport	
	12-03	Chapter 17: Nutrition, Body Composition, and Obesity	Quiz 4: ch. 14, 16
16	12-08	Chapter 17: Nutrition, Body Composition, and Obesity	
	12-10	Review of ch.	
17	12-15	FINAL EXAM – 1-3PM	Exam 4 (final): ch. 14, 16-17