

FSS 234 / Fundamentals of Exercise Science

Credits: 4.00
CRN: 90157 / Term: 201909

Instructor Information

Instructor Name: Dr. Maritza Diaz-Collazo
Instructor Phone: 520-225-4233
Instructor Email: Maritza.DiazCollazo@tusd1.org
Office Location/Hours: 9-10am
Department Head: 520-206-6685, Nancy Gamboian

Course Information

Course Description: Overview of various systems, reactions, and adaptations to exercise and movement. Includes muscular system and anatomy, nervous system, kinesiology, metabolism, principles of exercise training, adaptations to exercise training; and the cardiovascular, respiratory, and endocrine systems.

Information: FSS 234A and 234B together constitute FSS 234.

Expectation of coursework hours: Students are expected to spend 2-3 hours outside of class for every hour they spend in class working on classroom assignments, projects, readings, etc. Your instructor and college counselors can assist in setting up a time management plan to help you be successful in managing the course workload.

Course Meeting Days/Time: Monday- Friday -Time-TBA

Course Delivery: Lecture /class activities to enforce material

Required Textbook: **Physiology of Sport and Exercise** (6th ed) Kenney, W.L., Wilmore, J.H., & Costill, D.L. (2015) Champaign, IL: Human Kinetics

Other Required Materials: Students are required to have dry erase markers, notebook and 2 folders.

Student Learning Outcomes

Course Learning Outcomes:

Upon successful completion of this course, the student will be able to:

1. Discuss how the skeletal framework helps to provide support and aids in movement while exercising.
2. Identify major muscle structures and how they adapt to exercise.
3. Demonstrate and Identify the planes of motion of the human body in specific movements.
4. Identify what factors lead to muscle soreness and cramps.
5. Explain how the body metabolizes nutrients to fuel exercise at various intensities.
6. Discuss the basic principles of exercise training and how they are incorporated into training programs.
7. Students will analyze and explain how the different body systems (e.g. cardiovascular,

- respiratory, and metabolic) adapt to aerobic training.
8. Students will create visuals assignments and describe the basic components of the cardiovascular and respiratory systems and their responses to exercise.
 9. Students will evaluate and Identify essential hormones of the endocrine system and discuss their role in regulating physiological processes that accompany exercise.

Program Learning Outcomes: Students will become critical thinkers. They will have many assignments in which they will analyze, create and evaluate information.

General Education Learning Outcomes: Students will be able to understand the fundamentals of sports medicine, but they will also be able to apply their knowledge in real world situations.

Grade and Instructor Policies

Grade Determination and Grading Policies: All assignments are worth points. A total of 1550 points will be awarded during this course.

Grading Scale	Percentage of 1550 Possible Points	Points Needed
A	90%	1395 or more
B	80 - 89%	1240 - 1394
C	70 - 79%	1085 - 1239
D	60 - 69%	930 - 1084
F	Below 60%	Below 930
8 exams	100 points each	800 points
Evaluate, create and analyze -16	25 points each	400 points
Library -5 assignments	70 points each	350 points

Field Trips: Students will attend field trips to sports Medicine Facility and Medical clinic

Online assignments: Students will be expected to do online research. Students will have the availability of the Cholla Library but will need to do work on their own as homework.

Clinical: for extra credit students can volunteer their time at the athletic events being held at the high school. 10 points for every hour -5 hours maximum=50 points

Instructor Policies: Phone policy: Students are not allowed to text in class or take phone calls.

Other Policies Concerning Withdraw and Incompletes: Incompletes are given if there is a medical emergency or other uncontrolled circumstance. Please communicate with professor.

Syllabus Receipt: Students must read the syllabus and email instructor to verify that they understand policies, procedures and schedule. Please include your period number and add any questions that you might have before the start of class.

Attendance Requirements/Active Participation

A failure to participate as required may result in loss of financial aid and failure in the class. For every credit hour of your classes you should plan to spend approximately two to three hours outside of class studying each week. [Attendance requirements \(https://www.pima.edu/programs-courses/credit-programs-degrees/attendance.html\)](https://www.pima.edu/programs-courses/credit-programs-degrees/attendance.html)

Course-specific attendance and participation: Students are expected to participate in class

activities. Attendance is crucial in the learning process. Tardies are disruptive to the learning environment. Students that are 20 minutes late will be counted as an absence. If there are 10 absences, students will be asked to drop the course.

Course Feedback

You can expect an email reply by the instructor within 48 hours. Quiz results and exam results immediately upon completion of the exam, written assignments will be graded within one week of submission to the course assignments area.

Student Resources and Policies

Student resources: tutoring, libraries, computer commons, advising, code of conduct, complaint process. [Student resources](https://www.pima.edu/current-students/index.htm) (https://www.pima.edu/current-students/index.htm)

Student policies: plagiarism, use of copyright materials, financial aid benefits, ADA information, FERPA, and mandatory reporting laws at: [Policies www.pima.edu/syllabusresources](http://www.pima.edu/syllabusresources)

Tentative Schedule

This Syllabus is subject to change at the instructor's discretion. Any changes will be announced to class and it is your responsibility to check into the course regularly to get announcements and emails. No major work will be added to the course over and above what is in the Syllabus the first week of class.

Date	Topic	
8/2/18	Pre-test and orientation	
8/3/18	Chapter 1 – Terminology and Structure of Muscle	
8/6	Chapter 1- Anatomy of Skeletal Muscle Muscle Fiber Contraction	
8/7	Chapter 1 Muscle Fiber Types Skeletal Muscle and Exercise	
8/8	Chapter 1 analyze, create, evaluate exercise	
8/9	Chapter 1 review	
8/10	Chapter 2. Terminology Fuel for Exercise: Bioenergetics and Muscle Metabolism	
8/13	Chapter 2: Energy Substrates Controlling the Rate of Energy Production	
8/14	Chapter 2: Storing Energy: High-Energy Phosphates The Basic Energy Systems	
8/15	Chapter 2: Interaction Among the Energy Systems The Oxidative Capacity of Muscle	

8/16	Chapter 2: analyze, create or evaluate	
8/17	Chapter 2 review	
8/20	Chapter 1 and 2 EXAM	
8/21	Chapter 3 Terminology and Neural Control of Exercising Muscle	
8/22	Chapter 3: Structure and Function of the Nervous System -Central Nervous System	
8/23	Chapter 3: Peripheral Nervous System -Sensory-Motor Integration	
8/24	Chapter 3: analyze, create or evaluate	
8/27	Research day in library	
8/28	Research day in library	
8/29	Chapter 3 review	
8/30	Chapter 4. terminology and Hormonal Control During Exercise	
8/31	Chapter 4. terminology and Hormonal Control During Exercise -The Endocrine System -Endocrine Glands and Their Hormones: An Overview	
9/3	No school	
9/4	Chapter 4: Hormonal Regulation of Metabolism During Exercise	
9/5	Chapter 4: Hormonal Regulation of Fluid and Electrolytes During Exercise	
9/6	Chapter 4: Hormonal Regulation of Caloric Intake	
9/7	Chapter 4: analyze, create and evaluate	
9/10	Chapter 4 review	
9/11	Chapter 3 and 4 Exam	
9/12	Chapter 5. Terminology and Energy Expenditure and Fatigue	
9/13	Chapter 5 Measuring Energy Expenditure	
9/14	Chapter 5. Energy Expenditure at Rest and During Exercise	Parent and teacher conference
9/17	Chapter 5. Fatigue and Its Causes	
9/18	Chapter 5. Muscle Soreness and Muscle Cramps	
9/19	Chapter 5. analyze, create and evaluate	
9/20	Chapter 5. review	

9/21	Chapter 6. Terminology and The Cardiovascular System and Its Control	
9/24	Chapter 6. The Cardiovascular System and Its Control Heart	
9/25	Chapter 6. The Cardiovascular System and Its Control Vascular System	
9/26	Chapter 6. The Cardiovascular System and Its Control Blood	
9/27	Chapter 6. Analyze, create and evaluate	
9/28	Chapter 6 review	
10/1	Quiz chapter 5 and 6	
10/2	Review of chapter 1,2,3,4	
10/3	Review of chapter 1,2,3,4,	
10/4	Students last day	
10/5	Teacher grading day	
10-8/10-12	Fall break	
10/15	Research day library	
10/16	Chapter 7. Terminology and The Respiratory System and Its Regulation Pulmonary Ventilation	
10/17	Chapter 7. The Respiratory System and Its Regulation Pulmonary Volumes	
10/18	Chapter 7. The Respiratory System and Its Regulation Pulmonary Diffusion	
10/19	Chapter 7. The Respiratory System and Its Regulation Transport of Oxygen and Carbon Dioxide in the Blood	
10/22	Chapter 7. The Respiratory System and Its Regulation Gas Exchange at the Muscles	
10/23	Chapter 7. The Respiratory System and Its Regulation Regulation of Pulmonary Ventilation	
10/24	Chapter 7. The Respiratory System and Its Regulation Analyze, create and evaluate	
10/25	Chapter 7. The Respiratory System and Its Regulation Review	

10/26	Chapter 8. Terminology and Cardiorespiratory Responses to Acute Exercise	
10/29	Chapter 8. Cardiorespiratory Responses to Acute Exercise -Cardiovascular Responses to Acute Exercise	
10/30	Chapter 8. Cardiorespiratory Responses to Acute Exercise -Respiratory Responses to Acute Exercise	
10/31	Chapter 8. Cardiorespiratory Responses to Acute Exercise Analyze, create and evaluate	
11/1	Chapter 8 review	
11/2	Chapter 7 and 8 exam	
11/5	Library assignment- power point	
11/6	Library assignment-power point	
11/7	Presentations	
11/8	Presentations	
11/9	Presentations	
11/12	No School	
11/13	Chapter 9. Principles of Exercise Training Terminology	
11/14	Chapter 9. Principles of Exercise Training General Principles of Training	
11/15	Chapter 9. Principles of Exercise Training Resistance Training Programs	
11/16	Chapter 9. Principles of Exercise Training Anaerobic and Aerobic Power Training Programs	
11/19	Chapter 9. Principles of Exercise Training Analyze, create and evaluate	
11/20	Chapter 9. Principles of Exercise Training Review	
11/21	Quiz	
11/22-23	Thanksgiving break	
11/26	Chapter 10. Terminology and Adaptations to Resistance Training	
11/27	Chapter 10. Adaptations to Resistance Training Resistance Training and Gains in Muscular Fitness	
11/28	Chapter 10. Adaptations to Resistance Training Mechanisms of Gains in Muscle	

	Strength	
11/29	Chapter 10. Adaptations to Resistance Training Interaction between Resistance Training and Diet	
11/30	Chapter 10. Adaptations to Resistance Training Resistance Training for Special Populations	
12/3	Chapter 10. Adaptations to Resistance Training Analyze, create and evaluate	
12/4	Chapter 10. Adaptations to Resistance Training Review	
12/5	Chapter 10 quiz	
12/6	Review of chapter 1,2	
12/7	Review of chapter 3,4	
12/10	Review of chapter 5,6	
12/11	Review of chapter 7,8	
12/12	Review of chapter 9,10	
12/13	Questions and answer session	
12/14	Questions and answer session	
12/17	Give out certificates /celebrate successes	
12/18	Period 7 exam shorten periods	
12/19	Exams -half day	
12/20	Exams -half day -Last day for students	
12/21-1/4	Christmas Break	
1/7/19	Chapter 11. Terminology and Adaptations to Aerobic and Anaerobic Training Adaptations to Aerobic Training	
1/8	Chapter 11. Adaptations to Aerobic and Anaerobic Training Adaptations to Anaerobic Training	
1/9	Chapter 11. Adaptations to Aerobic and Anaerobic Training Adaptations to High-Intensity Interval Training	
1/10	Chapter 11. Adaptations to Aerobic and Anaerobic Training Specificity of Training and Cross-Training	
1/11	Chapter 11. Adaptations to Aerobic and Anaerobic Training Analyze, Create and Evaluate	

1/14	Chapter 11. Adaptations to Aerobic and Anaerobic Training Review	
1/15	Chapter 12. Exercise in Hot and Cold Environments Body Temperature Regulation	
1/16	Chapter 12. Exercise in Hot and Cold Environments Physiological Responses to Exercise in the Heat	
1/17	Chapter 12. Exercise in Hot and Cold Environments Health Risks During Exercise in the Heat	
1/18	Chapter 12. Exercise in Hot and Cold Environments Acclimation to Exercise in the Heat Exercise in the Cold	
1/21	NO SCHOOL	
1/22	Chapter 12. Exercise in Hot and Cold Environments Physiological Responses to Exercise in the Cold Health Risks During Exercise in the Cold	
1/23	Chapter 12. Exercise in Hot and Cold Environments Questions and Answers	
1/24	Chapter 12: Analyze, create and evaluate	
1/25	Library research	
1/26	Chapter 13. Terminology and Exercise at Altitude Environmental Conditions at Altitude	
1/27	Chapter 13. Exercise at Altitude Physiological Responses to Acute Altitude Exposure	
1/28	Chapter 13. Exercise at Altitude Exercise and Sport Performance at Altitude	
2/1	Chapter 13. Exercise at Altitude Acclimation: Chronic Exposure to Altitude	
2/4	Chapter 13. Exercise at Altitude Altitude: Optimizing Training and Performance Health Risks of Acute Exposure to Altitude	

2/5	Chapter 13. Exercise at Altitude Analyze, create and evaluate	
2/6	Chapter review	
2/7	Chapter 11,12,13 Exam	
2/8	Chapter 14. Terminology and Training for Sport	
2/11	Chapter 14. Training for Sport Optimizing Training	
2/12	Chapter 14. Training for Sport Periodization of Training	
2/13	Chapter 14. Training for Sport Overtraining Chapter 14. Training for Sport Tapering for Peak Performance	
2/14	Chapter 14. Training for Sport Detraining	
2/15	Parent teacher conference	
2/18	Chapter 15. Body Composition and Nutrition for Sport Assessing Body Composition	
2/19	Chapter 15. Body Composition and Nutrition for Sport Assessing Body Composition Body Composition, Weight, and Sport	
2/20	Chapter 15. Body Composition and Nutrition for Sport Performance Classification of Nutrients	
2/21-2/22	Rodeo break	
2/25	Chapter 15. Body Composition and Nutrition for Sport Water and Electrolyte Balance The Athlete's Diet	
2/26	Chapter 15. Body Composition and Nutrition for Sport Analyze, Create and evaluate	
2/27	Chapter 15. Body Composition and Nutrition for Sport Review	
2/28	Chapter 14 and 15 Exam	
3/1	Research in Library	
3/4	Research in Library	
3/5	Chapter 16. Terminology and Ergogenic	

	Aids in Sport Researching Ergogenic Aids	
3/6	Chapter 16. Ergogenic Aids in Sport Nutritional Ergogenic Aids	
3/7	Chapter 16. Ergogenic Aids in Sport Anti-Doping Codes and Drug Testing Prohibited Substances and Techniques	
3/8	Chapter 16. Ergogenic Aids in Sport Anti-Doping Codes and Drug Testing Prohibited Substances and Techniques	
3/11	Chapter 16. Ergogenic Aids in Sport Anti-Doping Codes and Drug Testing Prohibited Substances and Techniques	
3/12	Chapter 16. Ergogenic Aids in Sport <i>Analyze, create and evaluate</i>	
3/13	Chapter 16. Ergogenic Aids in Sport <i>Review and Quiz</i>	
3/14	Students leave early	
3/15	Grading day	
3/18-22	Spring Break	
3/25	Chapter 17. Terminology and Children and Adolescents in Sport and Exercise	
3/26	Chapter 17. Children and Adolescents in Sport and Exercise Growth, Development, and Maturation	
3/27	Chapter 17. Children and Adolescents in Sport and Exercise Physiological Responses to Acute Exercise	
3/28	Chapter 17. Children and Adolescents in Sport and Exercise Physiological Adaptations to Exercise Training	
3/29	Chapter 17. Children and Adolescents in Sport and Exercise Physical Activity Patterns Among Youth	
3/30	Chapter 17. Children and Adolescents in Sport and Exercise Sport Performance and Specialization Special Issues	
4/1	Questions and Answers	

4/2	Chapter 17. Children and Adolescents in Sport and Exercise <i>Analyze, create and evaluate</i>	
4/3	Chapter 18. Terminology and Aging in Sport and Exercise	
4/4	Chapter 18. Aging in Sport and Exercise Height, Weight, and Body Composition	
4/5	Chapter 18. Aging in Sport and Exercise Height, Weight, and Body Composition Physiological Responses to Acute Exercise	
4/8	Chapter 18. Aging in Sport and Exercise Physiological Adaptations to Exercise Training	
4/9	Chapter 18. Aging in Sport and Exercise Sport Performance Special Issues	
4/10	Chapter 18. Aging in Sport and Exercise <i>Analyze, create and evaluate</i>	
4/11	<i>Exam 17 and 18</i>	
4/12	Research library	
4/15	Chapter 19. Terminology and Sex Differences in Sport and Exercise	
4/16	Chapter 19. Sex Differences in Sport and Exercise Body Size and Composition	
4/17	Chapter 19. Sex Differences in Sport and Exercise Physiological Responses to Acute Exercise	
4/18	Chapter 19. Sex Differences in Sport and Exercise Physiological Adaptations to Exercise Training	
4/19	No School	
4/22	Chapter 19. Sex Differences in Sport and Exercise Sport Performance Special Issues	
4/23	Chapter 19. Sex Differences in Sport and Exercise <i>Analyze, Create and evaluate</i>	
4/24	Chapter 19. Sex Differences in Sport and Exercise Review	

4/25	Exam Chapter 18 and 19	
4/26	Chapter 21. Terminology and Cardiovascular Disease and Physical Activity	
4/29	Chapter 21. Cardiovascular Disease and Physical Activity Prevalence of Cardiovascular Disease	
4/30	Chapter 21. Cardiovascular Disease and Physical Activity Prevalence of Cardiovascular Disease Forms of Cardiovascular Disease	
5/1	Chapter 21. Cardiovascular Disease and Physical Activity Understanding the Disease Process Determining Individual Risk	
5/2	Chapter 21. Cardiovascular Disease and Physical Activity Reducing Risk Through Physical Activity Risk of Heart Attack and Death During Exercise	
5/3	Chapter 21. Cardiovascular Disease and Physical Activity Exercise Training and Rehabilitating Patients with Heart Disease	
5/6	Chapter 21. Cardiovascular Disease and Physical Activity <i>Review and Quiz</i>	
5/7	Chapter 22. Terminology and Obesity, Diabetes, and Physical Activity	
5/8	Chapter 22. Obesity, Diabetes, and Physical Activity Understanding Obesity	
5/9	Chapter 22. Obesity, Diabetes, and Physical Activity Weight Loss	
5/10	Chapter 22. Obesity, Diabetes, and Physical Activity Weight Loss Role of Physical Activity in Weight Management and Risk Reduction	
5/13	Chapter 22. Obesity, Diabetes, and Physical Activity Treatment of Diabetes Role of Physical Activity in Diabetes	
5/14	Chapter 22. Obesity, Diabetes, and Physical Activity	

	Analyze, create and evaluate	
5/15	Chapter 22. Obesity, Diabetes, and Physical Activity Review	
5/16	Review for exam	
5/17	Review for exam	
5/20	Give awards and certificates	
5/21	exams	
5/22	exams	
5/23	Last day of school	