

Course Outline for: EXSC 2305 Exercise Physiology

A. Course Description

- 1. Number of credits: 3
- 2. Lecture hours per week: 3
- 3. Prerequisites: None
- 4. Corequisites: None
- 5. MnTC Goals: None

Exercise physiology involves the scientific basis of exercise and its relationship to athletic performance. There is an emphasis in this class on the human body's physiological adaptation to external stressors, such as work, exercise, and environmental conditions. Information presented directly relates to fitness conditioning for athletes, non-athletes, and special populations, for a greater understanding of athletic performance limitations. Hands-on activities are incorporated to develop kinesiology-based skills applicable in personal training and physical education settings.

B. Date last reviewed/updated: March 2025

C. Outline of Major Content Areas

- 1. ACSM Guidelines and Exercise Prescription for Health and Fitness
- 2. Muscular and Neurological Control of Movement and Adaptations to Physical Training
- 3. Basic Energy Systems during Exercise at Varying Intensities and Metabolic Adaptations to Physical Training
- 4. Cardiovascular, Respiratory, and Hormonal Control during Exercise and Adaptations to Physical Training
- 5. Cardiovascular Disease and Physical Inactivity
- 6. Body Composition and Physical Performance
- 7. Nutrition, Obesity, Diabetes and Physical Activity
- 8. Benefits and Limitations of Sport Training
- 9. Thermoregulation and Exercise

D. Course Learning Outcomes

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

- 1. Recognize the important role of exercise physiology in physical education and health status.
- 2. Recognize the cellular-to-organ biological responses of the cardiorespiratory and ventilatory systems during exercise.
- 3. Demonstrate knowledge of the neuromuscular response to exercise during various physical activities.
- 4. Determine limitations of the metabolic, neuromuscular, cardiorespiratory, and ventilatory systems during exercise of varying intensities and with various environmental conditions.

- 5. Describe the hormone endocrine system and its role in exercise metabolism and fluid balance.
- 6. Explain metabolic energy pathways as they apply to varying intensities of exercise.
- 7. Analyze the functions, recommendations and guidelines for nutrients.
- 8. Describe digestion, absorption, transport, eliminations, and metabolism of nutrients.
- 9. Explain how food choices affect overall health and wellness.
- 10. Discuss nutritional needs throughout the lifespan.
- 11. Measure body composition using appropriate clinical testing procedures.
- 12. Identify healthy body composition values for health status and athletic performance.
- 13. Identify the relationship of physical inactivity to specific illnesses and diseases.
- 14. Demonstrate an understanding of the components of physical fitness as measured through practical in-class activities.

E. Methods for Assessing Student Learning

Methods for assessment may include, but are not limited to, the following:

- 1. Literary research skills and written professional documents
- 2. Written exams
- 3. Practical lab activities and written reports

F. Special Information

None