Exercise Science

This course guides students through an in-depth examination of the effects of exercise on the body. Students learn how to exercise efficiently and properly and how to motivate themselves and others. Basic anatomy, biomechanics, and physiology will serve as a foundation for students to build effective exercise programs. The study of nutrition and human behavior is also an integral part of the course to enhance the student comprehension of this multifaceted subject.

UNIT 1: INTRODUCTION TO EXERCISE SCIENCE (Time Estimate for Content Study 11 hours)

- **Section 1.1: Introduction to Exercise Science**

Learning Objectives:

- Define physical fitness, wellness, and exercise science
- Comprehend the history of exercise and physical fitness in America
- Summarize a few of the careers in the field of exercise science

UNIT 2: BODY SYSTEMS (Time Estimate for Content Study 11 hours)

- **Section 2.1: Terminology**
- **Section 2.2: Skeletal & Muscular Systems**
- **Section 2.3: Respiratory & Cardiovascular Systems**

Learning Objectives:

- Develop an understanding of medical terms in order to communicate with health professionals
- Appropriately use the terms orientation and movement
- Demonstrate how the skeletal and muscular systems function
- Illustrate the components of the skeletal and muscular systems
- Identify how exercise affects the skeletal and muscular systems
- Identify the anatomical components of the heart and lungs
- Explain the functions of the cardiovascular and respiratory systems
- Summarize the effects of exercise on the cardiovascular and respiratory systems

UNIT 3: EXERCISE PHYSIOLOGY (Time Estimate for Content Study 11 hours)

- **Section 3.1: Energy Systems**

- **Section 3.2: Muscle Physiology**
- **Section 3.3: Gender Differences**

Learning Objectives:

- Compare and contrast the three main energy sources
- Rank the three main energy sources according to their power and duration
- Differentiate between the abilities of the three main energy source
- Classify skeletal muscle fibers as fast-twitch or slow-twitch
- Distinguish between the different types of muscle contractions
- Analyze the effects of detraining and over training
- Identify strength, skeletal, and cardiorespiratory differences between males and females
- Describe the impact of the social revolution on male and female performances in physical fitness and sports
- Explain the role of culture and the media in influencing perspectives on gender differences

UNIT 4: BIOMECHANICS & SAFETY (Time Estimate for Content Study 11 hours)

- **Section 4.1: Biomechanics**
- **Section 4.2: Exercise Safety & Injury Prevention**

Learning Objectives:

- Demonstrate a basic understanding of biomechanics
- Summarize Newton's Laws of Motion
- Describe how principles of biomechanics can be applied to everyday activities and exercise
- Demonstrate safety precautions during exercise
- Implement injury prevention practices in an exercise program
- Differentiate between the effects of injury treatments

UNIT 5: EXERCISE PROGRAMMING (Time Estimate for Content Study 11 hours)

- **Section 5.1: Exercise Programming**
- **Section 5.2: Components of Physical Fitness**

Learning Objectives:

- Analyze the components of an exercise program
- Describe how the FIT guidelines apply to exercise
- Create an exercise program

- Distinguish between the components of physical fitness
- Design an exercise program that will improve each component of physical fitness
- Assess your muscular fitness

UNIT 6: MIND & BODY (Time Estimate for Content Study 10 hours)

- **Section 6.1: Exercise Psychology**
- **Section 6.2: Sports Nutrition**

Learning Objectives:

- Distinguish between the stages of change
- Summarize health behavior interventions
- Understand relapse and relapse prevention
- Describe the components of a healthy diet
- Apply the sports nutrition principles in your diet
- Assess your body mass index

UNIT 7: EXERCISE CONSIDERATIONS (Time Estimate for Content Study 10 hours)

- **Section 7.1: Exercise Programming Considerations**
- **Section 7.2: Special Populations**

Learning Objectives:

- Identify myths, fads, and misconceptions about topics within the field of exercise science
- Effectively modify exercise according to environmental considerations
- Define self-efficacy and describe ways to increase it
- Understand the specific considerations that should be taken into account for age, gender, pregnancy, and obesity
- Identify conditions that require exercise program modifications
- Describe the modifications needed when prescribing an exercise program for special populations