Course Outline
Introduction to Personal Training

Course Description:
PE 127. Introduction to Personal Training. 3 hours credit. This course provides a basic understanding of the role of exercise in a wellness lifestyle, the scientific foundations necessary to evaluate fitness levels, and the prescription of exercise. Students considering a career in the fitness industry will have basic knowledge of exercise and program administration. This course will enable the student to sit for the Certified Health Professional Examination offered by the National Council of Strength and Fitness.

Required Textbook:

NCSF. Personal Trainer Certification Workbook. 1st Ed. National Council Strength and Fitness.

NCSF. Personal Trainer Certification Lab Workbook. 1st Ed. National Council Strength and Fitness.

Course Objectives:
At the successful completion of this course, the student should be able to:

1. Describe the importance of the role of physical activity in health
   a. describe the elements of total fitness
   b. enumerate the goals and behaviors of a healthy lifestyle
   c. understand the link between physical activity and lowered risk of premature health problems
   d. identify risk factors for cardiovascular disease and the effects of exercise on each factor
   e. describe acute and chronic benefits associated with fitness participation

2. Differentiate between health-related and performance-related fitness
   a. describe the goals of fitness and performance related activity
   b. understand the components of fitness
   c. list healthy behaviors related to fitness
   d. describe the factors related to setting individual fitness goals
e. explain the role of the fitness professional in encouraging healthy behavior

3. Describe the importance of determining current health status
   a. identify appropriate instruments for health appraisal
   b. make activity recommendations based on health status
   c. identify factors that may indicate the need for supervised activity

4. Demonstrate an understanding of the aspects of exercise physiology necessary to make exercise recommendations
   a. identify means of energy production in the body and how each relates to fitness and sport activity
   b. describe the structure of muscle fiber and the mechanisms for muscular movement
   c. differentiate between different types of muscle fibers in terms of speed, power, endurance, and metabolism
   d. describe the role of recruitment in muscle fiber types in varying exercise intensities
   e. explain the metabolic and respiratory responses to regular participation in physical activity
   f. summarize the effects of endurance training on muscle, metabolism, and the cardiovascular system
   g. contrast the importance of exercise precautions in extreme weather conditions

5. Analyze the functions of bones, muscles, and joints in human movement as it pertains to activity
   a. identify major bones of the skeleton and classify them by shape
   b. describe the maturation process of bone
   c. distinguish between joint types both structurally and functionally
   d. name and demonstrate the movements possible in the different joint types
   e. describe the gross structure of muscle
   f. explain the differences between types of muscular contractions
   g. list and identify major muscle groups and describe their role in movement
   h. describe proper lifting techniques
   i. identify the forces that cause movement and resist movement caused by another force

6. Summarize aspects of measurement and evaluation that are related to fitness testing
a. describe the components and types of validity
b. explain the ways to improve accuracy in testing
c. understand how to interpret fitness test scores
d. to calibrate exercise testing equipment

7. Estimate the energy requirements of various physical and recreational activities
   a. describe the relationship between oxygen consumption and energy production
   b. estimate the energy and oxygen costs of walking and running

8. Convey basic nutritional information and distinguish between good and bad
   a. list the six essential nutrients and the proper amounts for good nutrition
   b. describe the role of the USDA Food Guide Pyramid in making healthy nutritional choices
   c. explain the relationship between blood lipids, cardiovascular disease, and exercise
   d. describe appropriate methods of hydrating
   e. evaluate the protein, vitamin, and mineral needs of the physically active person
   f. identify the three components of the female athlete triad

9. Identify the effects of body composition on health status
   a. discuss the importance of body composition analysis in the health assessment
   b. identify common measurement sites for skinfold and girth assessment
   c. assess body composition by a variety of techniques
   d. describe the advantages and disadvantages to different body composition analysis methods

10. Determine the role of weight management in a healthy lifestyle
    a. analyze the effects of aging on body composition
    b. identify the factors that contribute to obesity
    c. describe the relationship between energy balance and exercise in weight loss/gain
    d. develop appropriate behavioral change strategies for prescribed weight loss and maintenance
    e. state the efficacy of fad and quick-fix weight loss methods
    f. discuss the relationship between body weight and self-esteem
    g. recognize the signs of eating disorders

11. Describe the relationship of cardiorespiratory fitness to health
a. enumerate procedures for logical and sequential testing of cardiorespiratory fitness
b. contrast the varying instruments used to measure cardiorespiratory fitness
c. describe the procedures used in cardiorespiratory fitness testing and the variables measured
d. contrast submaximal and maximal graded exercise testing
e. analyze extrapolation procedures to estimate maximal oxygen consumption testing

12. Summarize the importance of muscular strength and endurance as components of health
   a. list the physiological adaptations that occur with strength training in males and females
   b. describe the possible causes of delayed-onset-muscle soreness
   c. evaluate the factors associated with muscle fatigue in both fast-twitch and slow-twitch muscle fibers
   d. describe various field tests used to evaluate muscular endurance
   e. identify the various means of evaluating muscular strength

13. Describe the relationship between flexibility, range of motion, and low-back function
   a. list five factors that can affect the degree of an individual’s flexibility
   b. explain the relationship between good range of motion at the hip joint and a healthy back
   c. analyze the advantages and disadvantages of the sit-and-reach test

14. Determine the amount of exercise needed to bring about the desired cardiorespiratory effects
   a. characterize "dose" of exercise and the health-related effects
   b. explain the principles of overload and specificity as they relate to cardiorespiratory training
   c. describe general guidelines for designing workouts including warm-up and cool-down
   d. develop an exercise prescription to achieve and maintain cardiorespiratory fitness goals
   e. contrast approaches used for developing prescriptions for different populations
   f. evaluate the effects of environment on exercise prescription
15. Design a program for increasing or maintaining muscle strength, endurance, and bone density

a. Discuss overload, specificity, and progression as they relate to resistance training
b. Describe the physiological adaptations of muscle to aerobic and anaerobic training
c. Evaluate the varying methods of resistance training and their effectiveness
d. Contrast strength training programs with maintenance programs and the effects of overtraining
e. Demonstrate an understanding of the relationship between sets, repetitions, intensity, and rest with regard to resistance training

16. Describe exercise programs that can be used to improve flexibility and low-back function

a. Identify a motion segment
b. Differentiate between functional and structural spinal curves and the limitations that each may impose on the exercise regimen
c. Describe the anatomical limitations of range of motion as a factor in exercise prescription
d. Differentiate between low-back problems typically seen in adults and youths
e. Demonstrate why full-sit-ups should not be included in an exercise program

17. Identify concepts and ideas that determine effective leadership

a. Distinguish between general population activities and activities designed for the improvement of functional capacity
b. Describe the factors related to high and low participation rates
c. Develop exercise programs with balance between duration and intensity for all levels of participants
d. Enumerate means of measuring exercise intensity during exercise
e. Evaluate aquatic programs for effective exercise benefits
f. Define appropriate beginning goals for use of aerobic equipment
g. Describe the characteristics of an effective exercise leader

18. Summarize the value of exercise for special populations and specific diseases

a. Design exercise programs for children, elderly, and pregnant women
b. Evaluate exercise benefits for those afflicted with metabolic diseases such
as Type I and Type II diabetes mellitus
c. describe the benefits of exercise for the respiratory disorders of asthma and chronic obstructive pulmonary disease
d. identify the effects of exercise on cardiovascular disease and its associated risk factors

19. Describe how the Health Fitness Instructor deals with different personalities in an exercise setting

a. explain how to enhance motivation to begin and continue exercise
b. list techniques to communicate with individuals in group programs
c. describe the components of stress
d. explain how physical activity may affect different levels of stress
e. describe the positive and negative aspects of stress
f. examine how aging may affect response to stressors
g. list ways to minimize unhealthy stress levels
h. identify methods of coping with stress

20. Investigate the models and systems used to enhance behavior modification

a. describe the transtheoretical model and stages involved in health behavior change
b. discuss the role of motivation in exercise adoption and adherence
c. identify six specific behavior change strategies for facilitating the adoption and maintenance of exercise
d. describe strategies personal trainers can use to monitor and support behavior change
e. examine the use of relapse prevention in exercise behavior
f. identify effective communication skills useful in motivating and fostering health behavior change

21. Design and implement a risk management and injury treatment model

a. describe ways to minimize injury risks and prevent the transmission of bloodborne pathogens
b. identify the signs and symptoms of soft-tissue injuries and how to provide initial treatment for such injuries
c. identify signs, symptoms, and proper treatment measures for bone injuries, wounds, and common skin irritations
d. describe the causes of heat-related disorders, methods of prevention, and means of coping with heat-related emergencies including fluid replacement
e. explain the causes of cold-related disorders, methods of prevention, and means of coping with a related emergency
f. distinguish between signs and symptoms of diabetic coma and insulin shock and describe proper treatment of each

22. Explain the key concepts to the administration and management of fitness programs

   a. describe the importance of long-range planning
   b. identify the personnel and working environments recommended for a fitness program
   c. enumerate the elements of a comprehensive fitness program
   d. define the key elements of a budget and identify equipment needs within the budget
   e. describe the importance of keeping records of all aspects of the fitness program.

**Topical Outline:**

I. Physical Activity and Health

   a. Relationship between physical activity and health
   b. Physical activity and the prevention of premature health problems
   c. Implications for fitness professionals

II. Physical Fitness and Performance

   a. Physical fitness goals
   b. Performance goals
   c. Components of physical fitness and performance
   d. Behaviors that support fitness and performance
   e. Common behaviors for fitness and health
   f. Setting fitness goals

III. Health Appraisal and Evaluation Techniques

   a. Evaluating health status
   b. Making decisions based on health status
   c. Changing of health fitness status

IV. Exercise Physiology
a. Relationship of energy to work
b. Understanding muscle structure and function
c. Metabolic, cardiovascular, and respiratory responses to exercise
d. Effects of endurance training and detraining on physiological responses to exercise
e. Cardiovascular responses to isometric exercise and weightlifting
f. Regulating body temperature

V. Functional Anatomy and Biomechanics

a. Understanding skeletal anatomy
b. Structure and function of joints
c. Factors that determine direction and range of motion
d. Common exercise mistakes
e. Muscle group involvement in selected activities
f. Basic mechanical concepts related to human movement
g. Common mechanical errors during locomotion, throwing, and striking

VI. Measurement and Evaluation

a. Establishing validity
b. Increasing the accuracy of testing
c. Using test scores in a fitness program

VII. Energy Costs of Physical Activity

a. Ways to measure energy expenditure
b. Ways to express energy expenditure
c. Formulas for estimating energy costs of activity

VIII. Nutrition

a. Six classes of essential nutrients
b. Assessing dietary intake
c. Recommendations for dietary intake
d. Diet, exercise, and blood lipid profile
e. Nutrition for physically active individuals

IX. Body Composition

a. Health and body composition
b. Body composition assessment
c. Methods for assessing body composition
d. Calculating target body weight
X. Weight Management
   a. Prevalence of obesity in the United States
   b. Etiology of obesity
   c. Healthy ways to lose weight
   d. Behavior modification techniques
   e. Body weight and psychological factors
   f. Eating disorders
   g. Gaining weight

XI. Cardiorespiratory
   a. Why test for cardiorespiratory fitness
   b. Risks of cardiorespiratory fitness testing
   c. Testing sequence
   d. Graded Exercise Tests
   e. Variables for graded exercise testing
   f. Submaximal and maximal testing determination

XII. Muscular Strength and Endurance
   a. Defining muscular strength and endurance
   b. General adaptations to resistance training
   c. Muscle soreness
   d. Muscle fatigue
   e. Assessing muscular strength and endurance

XIII. Flexibility and Low Back Function
   a. Factors affecting range of motion
   b. Range of motion and low back function
   c. Measuring spine and hip-joint range of motion

XIV. Exercise Prescription for Cardiorespiratory Fitness
   a. Prescribing exercise
   b. Exercise training principles
   c. Guidelines for cardiorespiratory fitness programs
   d. Formulating exercise prescription
   e. Determining exercise intensity
   f. Exercise recommendations for the fit and unfit populations
   g. Program selection
   h. Environmental concerns

XV. Exercise Prescription for Strength, Endurance, and Bone Density
a. Training considerations for increasing muscle/endurance and bone density
b. Aerobic and anaerobic adaptations
c. Weight training methods
d. Systems of resistance training
e. Resistance training and bone mineral density
f. Maintenance and overtraining
g. Warm-up and cool-down
h. Training safety tips
i. Exercise prescription for resistance training

XVI. Exercise Prescription for Flexibility and Low Back Function

a. Anatomy of the spine
b. Spinal movements
c. Mechanics of the spine and hip joint
d. Low-back pain
e. Therapeutic and preventative exercise considerations

XVII. Exercise Leadership for Fitness

a. Effective leadership
b. Activity progression
c. Walk/Jog/Run programs
d. Cycling
e. Games
f. Aquatic exercise
g. Exercising to music
h. Exercise equipment
i. Circuit training

XVIII. Exercise Prescription for Special Populations

a. Exercise prescription for children
b. Exercise prescription for the elderly
c. Exercise prescription for pregnant women
d. Exercise prescription for diseases/disabilities

XIX. Human Behavior, Psychology, Stress, and Health

a. Relaxation and arousal balance
b. Personality-based variables and physical activity
c. Understanding participant personalities
d. Physical activity and stress
e. Relationship between health and stress
f. Recommendations for maintaining healthy stress levels
g. Coping mechanisms

XX. Behavior Modification

a. Transtheoretical model of behavior change
b. Promotion and targeting for contemplators
c. Methods of behavior change
d. Relapse prevention
e. Health fitness counseling

XXI. Injury Prevention and Treatment

a. Preventing injuries
b. Injury treatment
c. Environmental concerns
d. Common orthopedic problems
e. CPR and emergency procedures

XXII. Program Administration and Management

a. Setting long-range goals
b. Managing personnel
c. Developing a successful program
d. Developing a budget
e. Acquiring equipment and supplies
f. Keeping records
g. Evaluating the program

**Methods of Instruction:**
The following teaching and learning activities will assist the students in completing the course objectives: lecture, discussion, reading assignments, and laboratory assignments.

**Methods of Evaluation:**
Grades will be based on class participation, attendance, laboratory assignments, and examinations.