1. Principles of Human Anatomy (20%)
   A. Identify components of the following systems
      i. Muscular system
      ii. Skeletal system
      iii. Nervous system
      iv. Respiratory system
      v. Circulatory system
      vi. Endocrine system
      vii. Digestive system
      viii. Immune system
   B. Identify types of joints
   C. Recognize muscle types (i.e., skeletal, cardiac, smooth)
   D. Recognize skeletal muscle structure and components
   E. Anatomical positioning and reference points

2. Principles of Human Physiology (19%)
   A. Recognize the function of body systems and how they interact
      i. Muscular system
      ii. Skeletal system
      iii. Nervous system
      iv. Respiratory system
      v. Circulatory system
vi. Endocrine system
vii. Digestive system
viii. Immune system

B. Explain musculoskeletal biomechanics
   i. Planes of motion
   ii. Joint movements
   iii. Prime movers

C. Differentiate between muscle fiber types (i.e., fast twitch and slow twitch)

D. Identify and define types of muscle contractions (e.g., concentric, eccentric, isometric)

E. Recognize neuromuscular recruitment patterns (e.g., contractile speed recruitment, immediate recruitment, depleting energy)

F. Identify proprioceptors and their functions (e.g., stretch reflex, muscle spindle)

G. Identify and describe the metabolic processes of the body
   i. Nutritional factors (i.e., macronutrients, micronutrients, deficiencies)
   ii. Energy systems (e.g., aerobic, anaerobic, metabolic oxidation, ATP, lactic acid)
   iii. Metabolic limitations of the body (e.g., gluconeogenesis, protein synthesis/catabolism)
   iv. Additional factors that affect metabolic processes (e.g., age, stress, gender, sleep)

3. Fitness Components (23%)

A. Recognize components of general fitness
   i. Cardiorespiratory conditioning
   ii. Muscular endurance
   iii. Muscular strength
   iv. Flexibility
   v. Body composition

B. Apply basic training principles (e.g., FITT principle, progressive adaptations, overload) to fitness components

C. Recognize training adaptations
   i. Anaerobic (e.g., strength, power)
   ii. Aerobic (e.g., endurance, fatigue)
iii. Sports-specific (e.g., agility, speed)
iv. Functional (e.g., core, stability, balance)

4. Training Program Development, Implementation, and Modification (33%)

A. Conduct client consultation and assessment
   i. Conduct screening and identify risk factors (e.g., CVD, PAR-Q, medical history, contraindications)
   ii. Collect appropriate documentation (e.g., hold harmless/liability waiver, physician waivers)
   iii. Programming aspects (e.g., expectations, goal-setting, scheduling)
   iv. Apply fitness assessment techniques for the following fitness components
      a. Non-performance variables (e.g., resting heart rate, blood pressure, body composition)
      b. Performance variables (e.g., cardiorespiratory condition, muscle endurance, muscle strength, flexibility)
   v. Recognize contraindicated exercises and physical limitations
   vi. Interpret assessment results and review with client
      a. Define and discuss factors that impact goals
         i. Exercise (e.g., over/under training)
         ii. Nutrition (e.g., caloric intake, supplements, dietary recommendations)
         iii. Hydration (e.g., water, electrolytes, fluid replacement)
         iv. Lifestyle factors (e.g., scheduling factors, sleep, stress)
      b. Identify realistic goals for the client (e.g., specific and measurable)

B. Design and implement training program
   i. Synthesize data to assist with developing a training program
   ii. Determine special exercise conditions (e.g., special populations, training environment)
   iii. Recognize steps in planning lifestyle change (e.g., large-scale dietary change, smoking cessation)
   iv. Determine training methods
      a. Anaerobic (e.g., repetition ranges, recovery, intensity)
      b. Aerobic (e.g., target heart rate zone, duration, frequency, speed)
      c. Stretching (e.g., static, dynamic, PNF)
v. Introduce training tools, equipment, and exercises (e.g. modalities, form)

C. Monitor program and determine need for modifications
   i. Evaluate client progress and effectiveness of program
      a. Evaluate non-performance variables against goals (e.g., resting heart rate, blood pressure, body composition)
      b. Measure performance variables against goals (e.g., cardiorespiratory condition, muscle endurance, muscle strength, flexibility)
      c. Explore need for behavior change (e.g., sleep, stress, smoking cessation, compliance, eating habits)
   ii. Identify strategies for program improvement (e.g., psychological, physiological)

5. Professionalism and Communication Skills (5%)
   A. Apply strategies for effective communication
      i. Verbal and non-verbal communication (e.g., listening, speaking, attention)
      ii. Problem solving and conflict resolution
   B. Recognize professional limitations
   C. Maintain client confidentiality/privacy
   D. Practice within professional scope/boundaries (e.g., referrals to other professionals and resources)
   E. Injury prevention and management (e.g., emergency medical plan, PRICE, exercise cessation)