

# Assessment of Student Learning Plan (ASLP): Exercise, Health, Sport Sciences

2017-18 Academic Year

University of Southern Maine

## A. College, Department, Date

*College* College of Science, Technology, and Health  
*Department* Exercise, Health, and Sport Sciences  
*Date* May 1, 2018

## B. Contact Person for the Assessment Plan

*Name and title* Jane Whatley Blum, Chair & Professor

## C. Degree Program

*Name of Degree Program* BS Athletic Training  
BS Exercise Science  
BS Health Science

## D. Assessment of Student Learning: Program Assessment

### Step 1: Identify the Student Learning Outcomes (SLO's)

- a. Do you have your student learning outcomes published on your department's website? Yes
  - i. If yes, please indicate the url:  
BS Athletic Training: <https://usm.maine.edu/ehss/athletic-training-program>  
BS Exercise Science: <https://usm.maine.edu/ehss/exercise-science-program>
  - ii. If no, please list 3-5 of the most important student learning outcomes for your program. **What will students know by the end of your program?**

- b. Please identify **which of your student learning outcome(s) were assessed this past academic year**. (One or more of the outcomes and corresponding assessment plans could come from your department's CORE Course Blueprint(s).

BS Athletic Training: Students demonstrate competency in clinical integrated proficiencies as dictated by the Commission on Accreditation of Athletic Training Education (CAATE)

BS Exercise Science: Student demonstrate competency in the knowledge, psychomotor, and affective learning domains as dictated by the Commission on Accreditation of Allied Health Education Programs (CAAHEP)

- c. Do you have a **matrix or curriculum map** showing when your student learning outcomes are assessed and in which courses? Yes/No
- i. If yes, do you have this map published on your website? Please indicate url or attach a copy of the curriculum map.

BS Athletic Training: <https://usm.maine.edu/ehss/athletic-training-program>

BS Exercise Science: see attachment (KSA's)

## **Step 2: Assessment Methods Selected and Implemented**

- a. Identify which direct measures (other than course grades), that were used to determine whether students achieved the stated learning outcomes for the degree.

1. Success in passing a national certification examination after completing the program curriculum. Student success is reported by the national organization.
2. Successful completion of the capstone (internship course) after completing the program curriculum. Assessment in this course includes a portfolio and graduation survey.

- b. Briefly describe when you implemented the assessment activity, and if a scoring rubric was used to evaluate the expected level of student achievement. (This information may be shown on your curriculum map).

National certification exam administered after the program (item 1 above)

**Step 3: Using the Assessment results to Improve Student Learning**

- a. *Briefly describe your unit's process of reviewing the program assessment results (i.e. annual process by faculty committee, etc).*

Improvement in curriculum. Routine review of course offerings, pre-requisites, course content, sequences of classes and student evaluation of courses.

- b. *What specific changes have been or will be made to improve student learning, as a result of using the program assessment results?*

Pre-requisites were updated for all courses for the 2018-2019 catalog. Course content will be routinely updated by individual faculty and department curriculum committees.

- c. *Date of most recent program review/self-study?*

BS in Athletic Training, Re-accredited by CAATE, 2017  
BS in Exercise Science, Re-accredited by CAAHEP, 2014

**E..Course Assessment Activities:** *Is your program able to report any assessment-related activities at the Course-Level... (i.e. created grading rubrics to use in required courses, examined student progress in entry-level courses, developed a new course, etc)? Please briefly explain any assessment projects.*

None at this time.

**F. Community Engagement Activities in your departmental curriculum:**

a. Does your department have a student learning outcome that is related to any community engagement activities? If so, please state the outcome.

b. Please indicate if any of the community engagement activities listed below are included in your program's curriculum, by noting which activities are required or optional for students in your major.

<u>Community Engagement Activity</u>	<u>Required/Optional</u>	
Student Research (related to a community-based problem)	R	O
Student-Faculty Community Research Project	R	O
Internship, or a Field Experience	<input checked="" type="radio"/> R	<input type="radio"/> O
Independent Study (community-related project)	R	O
Capstone Course (community-related project)	R	O
Service-Learning (course-based)	R	O
Study Abroad, or an International Program	R	O
Interdisciplinary Collaborative Project (community related)	R	O
Student Leadership Activities (related to a team project)	R	O
Students/Faculty Community Leadership (advisory boards, committees, conference presentations)	R	O
Other activities:		

c. Please list any courses (i.e. EDU 400) that have a community engagement activity in your program.

Entry-level courses: \_\_\_\_\_ Mid-level courses: \_\_\_\_\_ Upper-level courses: SPM 495, Internship

## INSTITUTIONAL KSA MATCHING FORM

### Exercise Sciences

KSA Numbering System	KSA description	Course prefix, number and name Example Course Title: MOV 304 Physiology of Activity
	<b>GENERAL POPULATION/CORE:  EXERCISE PHYSIOLOGY AND RELATED EXERCISE SCIENCE</b>	
1.1.1	Knowledge of the structures of bone, skeletal muscle, and connective tissues.	SPM 325, SPM 381, BIO 111/112, BIO 211/212
1.1.2	Knowledge of the anatomy and physiology of the cardiovascular system and pulmonary system.	SPM 330, SPM 431 BIO 111/112, BIO 211/212
1.1.3	Knowledge of the following muscle action terms: inferior, superior, medial, lateral, supination, pronation, flexion, extension, adduction, abduction, hyperextension, rotation, circumduction, agonist, antagonist, and stabilizer.	SPM 381
1.1.4	Knowledge of the plane in which each movement action occurs and the responsible muscles.	SPM 381
1.1.5	Knowledge of the interrelationships among center of gravity, base of support, balance, stability, posture, and proper spinal alignment.	SPM 381
1.1.6	Knowledge of the curvatures of the spine including lordosis, scoliosis, and kyphosis.	SPM 381, SPM 450
1.1.7	Knowledge of the stretch reflex and how it relates to flexibility.	SPM 325, SPM 330
1.1.8	Knowledge of biomechanical principles that underlie performance of the following activities: walking, jogging, running, swimming, cycling, weight lifting, and carrying or moving objects.	SPM 381
1.1.9	Ability to describe the systems for the production of energy.	SPM 325, SPM 330, SPM 431
1.1.10	Knowledge of the role of aerobic and anaerobic energy systems in the performance of various physical activities.	SPM 325, SPM 330, SPM 431
1.1.11	Knowledge of the following cardiorespiratory terms: ischemia, angina pectoris, tachycardia, bradycardia, arrhythmia, myocardial infarction, claudication, dyspnea and hyperventilation.	SPM 330, SPM 430, SPM 450

1.1.12	Ability to describe normal cardiorespiratory responses to static and dynamic exercise in terms of heart rate, stroke volume, cardiac output, blood pressure, and oxygen consumption.	SPM 325, SPM 330, SPM 430, SPM 431
1.1.13	Knowledge of the heart rate, stroke volume, cardiac output, blood pressure, and oxygen consumption responses to exercise.	SPM 325, SPM 330, SPM 430, SPM 431
1.1.14	Knowledge of the anatomical and physiological adaptations associated with strength training.	SPM 260, SPM 325, SPM 330, SPM 430
1.1.15	Knowledge of the physiological principles related to warm-up and cool-down.	SPM 260, SPM 325, SPM 330, SPM 430
1.1.16	Knowledge of the common theories of muscle fatigue and delayed onset muscle soreness (DOMS).	SPM 330
1.1.17	Knowledge of the physiological adaptations that occur at rest and during submaximal and maximal exercise following chronic aerobic and anaerobic exercise training.	SPM 325, SPM 330, SPM 431
1.1.18	Knowledge of the differences in cardiorespiratory response to acute graded exercise between conditioned and unconditioned individuals.	SPM 330, SPM 430, SPM 431
1.1.19	Knowledge of the structure and function of the skeletal muscle fiber.	SPM 325, SPM 330
1.1.20	Knowledge of the characteristics of fast and slow twitch muscle fibers.	SPM 325, SPM 330
1.1.21	Knowledge of the sliding filament theory of muscle contraction.	SPM 325, SPM 330
1.1.22	Knowledge of twitch, summation, and tetanus with respect to muscle contraction.	SPM 330
1.1.23	Knowledge of the principles involved in promoting gains in muscular strength and endurance.	SPM 325, SPM 330, SPM 430
1.1.24	Knowledge of muscle fatigue as it relates to mode, intensity, duration, and the accumulative effects of exercise.	SPM 325, SPM 330
1.1.26	Knowledge of the response of the following variables to acute static and dynamic exercise: heart rate, stroke volume, cardiac output, pulmonary ventilation, tidal volume, respiratory rate, and arteriovenous oxygen difference.	SPM 330, SPM 430, SPM 431
1.1.27	Knowledge of blood pressure responses associated with acute exercise, including changes in body position.	SPM 330, SPM 430, SPM 431
1.1.28	Knowledge of and ability to describe the implications of ventilatory threshold (anaerobic threshold) as it relates to exercise training and cardiorespiratory assessment.	SPM 330, SPM 430, SPM 431

1.1.29	Knowledge of and ability to describe the physiological adaptations of the pulmonary system that occur at rest and during submaximal and maximal exercise following chronic aerobic and anaerobic training.	SPM 330, SPM 430, SPM 431
1.1.30	Knowledge of how each of the following differs from the normal condition: dyspnea, hypoxia, and hyperventilation.	SPM 330, SPM 431
1.1.31	Knowledge of how the principles of specificity and progressive overload relate to the components of exercise programming.	SPM 260, SPM 325, SPM 330, SPM 430, SPM 431
1.1.32	Knowledge of the concept of detraining or reversibility of conditioning and its implications in exercise programs.	SPM 260, SPM 330, SPM 430
1.1.33	Knowledge of the physical and psychological signs of overreaching/overtraining and to provide recommendations for these problems.	SPM 230
1.1.34	Knowledge of and ability to describe the changes that occur in maturation from childhood to adulthood for the following: skeletal muscle, bone, reaction time, coordination, posture, heat and cold tolerance, maximal oxygen consumption, strength, flexibility, body composition, resting and maximal heart rate, and resting and maximal blood pressure.	SPM 430, SPM 450
1.1.35	Knowledge of the effect of the aging process on the musculoskeletal and cardiovascular structure and function at rest, during exercise, and during recovery.	SPM 330, SPM 430, SPM 450
1.1.36	Knowledge of the following terms: progressive resistance, isotonic/isometric, concentric, eccentric, atrophy, hyperplasia, hypertrophy, sets, repetitions, plyometrics, Valsalva maneuver.	SPM 260, SPM 325, SPM 330, SPM 430
1.1.37	Knowledge of and skill to demonstrate exercises designed to enhance muscular strength and/or endurance of specific major muscle groups.	SPM 260, SPM 325
1.1.38	Knowledge of and skill to demonstrate exercises for enhancing musculoskeletal flexibility.	SPM 260, SPM 325, SPM 430
1.1.39	Ability to identify the major muscles. Major muscles include, but are not limited to, the following: trapezius, pectoralis major, latissimus dorsi, biceps, triceps, rectus abdominis, internal and external obliques, erector spinae, gluteus maximus, quadriceps, hamstrings, adductors, abductors, and gastrocnemius.	SPM 381, BIO 111/112, BIO 211/212
1.1.40	Ability to identify the major bones. Major bones include, but are not limited to the clavicle, scapula, sternum, humerus, carpals, ulna, radius, femur, fibia, tibia, and tarsals.	SPM 381, BIO 111/112, BIO 211/212
1.1.41	Ability to identify the joints of the body.	SPM 381, BIO 111/112, BIO 211/212

1.1.42	Knowledge of the primary action and joint range of motion for each major muscle group.	SPM 381
1.1.43	Ability to locate the anatomic landmarks for palpation of peripheral pulses and blood pressure.	SPM 216, SPM 330
	<b>GENERAL POPULATION/CORE: PATHOPHYSIOLOGY AND RISK FACTORS</b>	
1.2.1	Knowledge of the physiological and metabolic responses to exercise associated with chronic disease (heart disease, hypertension, diabetes mellitus, and pulmonary disease).	SPM 431, SPM 450
1.2.2	Knowledge of cardiovascular, pulmonary, metabolic, and musculoskeletal risk factors that may require further evaluation by medical or allied health professionals before participation in physical activity.	SPM 430, SPM 450
1.2.3	Knowledge of risk factors that may be favorably modified by physical activity habits.	SPM 430, SPM 450
1.2.4	Knowledge to define the following terms: total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), TC/HDL-C ratio, low-density lipoprotein cholesterol (LDL-C), triglycerides, hypertension, and atherosclerosis.	CON 252, SPM 352, SPM 430, SPM 450
1.2.5	Knowledge of plasma cholesterol levels for adults as recommended by the National Cholesterol Education Program.	CON 252, SPM 430, SPM 450
1.2.6	Knowledge of the risk factor thresholds for ACSM risk stratification which includes genetic and lifestyle factors related to the development of CAD.	SPM 430, SPM 450
1.2.7	Knowledge of the atherosclerotic process, the factors involved in its genesis and progression, and the potential role of exercise in treatment.	SPM 430, SPM 450
1.2.8	Knowledge of how lifestyle factors, including nutrition and physical activity, influence lipid and lipoprotein profiles.	SPM 430, SPM 450
	<b>GENERAL POPULATION/CORE: HEALTH APPRAISAL, FITNESS AND CLINICAL EXERCISE TESTING</b>	
1.3.1	Knowledge of and ability to discuss the physiological basis of the major components of physical fitness: flexibility, cardiovascular fitness, muscular strength, muscular endurance, and body composition.	SPM 260, SPM 325, SPM 330, SPM 430
1.3.2	Knowledge of the value of the health/medical history.	SPM 216, SPM 430, SPM 450

1.3.3	Knowledge of the value of a medical clearance prior to exercise participation.	SPM 260, SPM 430, SPM 450
1.3.4	Knowledge of and the ability to perform risk stratification and its implications towards medical clearance prior to administration of an exercise test or participation in an exercise program.	SPM 430, SPM 450
1.3.5	Knowledge of relative and absolute contraindications to exercise testing or participation.	SPM 430, SPM 450
1.3.6	Knowledge of the limitations of informed consent and medical clearance prior to exercise testing.	SPM 430, SPM 450
1.3.7	Knowledge of the advantages/disadvantages and limitations of the various body composition techniques including but not limited to: air displacement plethysmography (BOD POD <sup>®</sup> ), dual energy X-ray absorptiometry (DEXA), hydrostatic weighing, skinfolds and bioelectrical impedance.	SPM 330, SPM 325, SPM 430
1.3.8	Skill in accurately measuring heart rate, blood pressure, and obtaining rating of perceived exertion (RPE) at rest and during exercise according to established guidelines.	SPM 330, SPM 430, SPM 385/395, SPM 495
1.3.9	Skill in measuring skinfold sites, skeletal diameters, and girth measurements used for estimating body composition.	SPM 330, SPM 430, SPM 385/395, SPM 495
1.3.10	Knowledge of calibration of a cycle ergometer and a motor-driven treadmill.	SPM 340
1.3.11	Ability to locate the brachial artery and correctly place the cuff and stethoscope in position for blood pressure measurement.	SPM 216, SPM 330, SPM 430, SPM 495
1.3.12	Ability to locate common sites for measurement of skinfold thicknesses and circumferences (for determination of body composition and waist-hip ratio).	SPM 330, SPM 430, SPM 385/395, SPM 495
1.3.13	Ability to obtain a health history and risk appraisal that includes past and current medical history, family history of cardiac disease, orthopedic limitations, prescribed medications, activity patterns, nutritional habits, stress and anxiety levels, and smoking and alcohol use.	SPM 430, SPM 450, SPM 385/395, SPM 495
1.3.14	Ability to obtain informed consent.	SPM 430, SPM 450, SPM 385/395, SPM 485, SPM 495
1.3.15	Ability to explain the purpose and procedures and perform the monitoring (HR, RPE and BP) of clients prior to, during, and after cardiorespiratory fitness testing.	SPM 430, SPM 431, SPM 385/395, SPM 495

1.3.16	Ability to instruct participants in the use of equipment and test procedures.	SPM 330, SPM 430, SPM 385/395, SPM 495
1.3.17	Ability to explain purpose of testing, determine an appropriate submaximal or maximal protocol, and perform an assessment of cardiovascular fitness on the treadmill or the cycle ergometer.	SPM 330, SPM 385/395, SPM 430
1.3.18	Ability to describe the purpose of testing, determine appropriate protocols, and perform assessments of muscular strength, muscular endurance, and flexibility.	SPM 330, SPM 430, SPM 385/395, SPM 495
1.3.19	Ability to perform various techniques of assessing body composition.	SPM 330, SPM 430, SPM 385/395, SPM 495
1.3.20	Ability to analyze and interpret information obtained from the cardiorespiratory fitness test and the muscular strength and endurance, flexibility, and body composition assessments for apparently healthy individuals and those with controlled chronic disease.	SPM 430, SPM 385/395, SPM 495
1.3.21	Ability to identify appropriate criteria for terminating a fitness evaluation and demonstrate proper procedures to be followed after discontinuing such a test.	SPM 430, SPM 385/395, SPM 495
1.3.22	Ability to modify protocols and procedures for cardiorespiratory fitness tests in children, adolescents, and older adults.	SPM 430, SPM 450, SPM 385/395, SPM 495
1.3.23	Ability to identify individuals for whom physician supervision is recommended during maximal and submaximal exercise testing.	SPM 430, SPM 450, SPM 495
	<b>GENERAL POPULATION/CORE:</b>  <b>ELECTROCARDIOGRAPHY AND DIAGNOSTIC TECHNIQUES</b>	
1.4.1	Knowledge of how each of the following arrhythmias differs from the normal condition: premature atrial contractions and premature ventricular contractions.	SPM 330, SPM 450
1.4.3	Knowledge of the basic properties of cardiac muscle and the normal pathways of conduction in the heart.	SPM 330, SPM 430, SPM 450
	<b>GENERAL POPULATION/CORE:</b>  <b>PATIENT MANAGEMENT AND MEDICATIONS</b>	
1.5.1	Knowledge of common drugs from each of the following classes of medications and describe the principal action and the effects on exercise testing and prescription including antianginals; antihypertensives; antiarrhythmics; anticoagulants, bronchodilators; hypoglycemics; psychotropics; and vasodilators.	SPM 430, SPM 450

1.5.2	Knowledge of the effects of the following substances on the exercise response such as antihistamines, tranquilizers, alcohol, diet pills, cold tablets, caffeine, and nicotine.	SPM 352, SPM 430
	<b>GENERAL POPULATION/CORE</b> <b>EXERCISE PRESCRIPTION AND PROGRAMMING</b>	
1.7.1	Knowledge of the relationship between the number of repetitions, intensity, number of sets, and rest with regard to strength training.	SPM 260, SPM 325, SPM 430
1.7.2	Knowledge of the benefits and precautions associated with exercise training in apparently healthy and controlled disease.	SPM 325, SPM 430, SPM 450
1.7.3	Knowledge of the benefits and precautions associated with exercise training in across the lifespan (from youth to the elderly).	SPM 325, SPM 430, SPM 450
1.7.4	Knowledge of specific group exercise leadership techniques appropriate for working with participants of all ages.	SPM 260, SPM 450
1.7.5	Knowledge of how to select and/or modify appropriate exercise programs according the age, functional capacity and limitations of the individual.	SPM 325, SPM 450
1.7.6	Knowledge of the differences in the development of an exercise prescription for children, adolescents, and older participants.	SPM 430, SPM 450
1.7.7	Knowledge of and ability to describe the unique adaptations to exercise training in children, adolescents, and older participants with regard to strength, functional capacity, and motor skills.	SPM 450
1.7.8	Knowledge of common orthopedic and cardiovascular considerations for older participants and the ability to describe modifications in exercise prescription that are indicated.	SPM 450
1.7.10	Knowledge of the recommended intensity, duration, frequency, and type of physical activity necessary for development of cardiorespiratory fitness in an apparently healthy population.	SPM 260, SPM 430, SPM 431
1.7.11	Knowledge of and the ability to describe exercises designed to enhance muscular strength and/or endurance of specific major muscle groups.	SPM 260, SPM 325, SPM 330, SPM 430
1.7.12	Knowledge of the principles of overload, specificity, and progression and how they relate to exercise programming.	SPM 260, SPM 325, SPM 430
1.7.13	Knowledge of the various types of interval, continuous, and circuit training programs.	SPM 260, SPM 325, SPM 430
1.7.14	Knowledge of approximate METs for various sport, recreational, and work tasks.	SPM 330, SPM 430

1.7.15	Knowledge of the components incorporated into an exercise session and the proper sequence (i.e., preexercise evaluation, warm-up, aerobic stimulus phase, cool-down, muscular strength and/or endurance, and flexibility).	SPM 330, SPM 430
1.7.16	Knowledge of special precautions and modifications of exercise programming for participation at altitude, different ambient temperatures, humidity, and environmental pollution.	SPM 260, SPM 325, SPM 430
1.7.17	Knowledge of the importance of recording exercise sessions and performing periodic evaluations to assess changes in fitness status.	SPM 325
1.7.18	Knowledge of the advantages and disadvantages of implementation of interval, continuous, and circuit training programs.	SPM 260, SPM 430
1.7.19	Knowledge of the exercise programs that are available in the community and how these programs are appropriate for various populations.	SPM 260, SPM 325
1.7.20	Knowledge of and ability to describe "Activities of Daily Living" (ADLs) and its importance in the overall health of the individual.	SPM 260
1.7.21	Skill to teach and demonstrate the components of an exercise session (i.e., warm-up, aerobic stimulus phase, cool-down, muscular strength/endurance, flexibility).	SPM 430, SPM 450
1.7.22	Skill to teach and demonstrate appropriate modifications in specific exercises for groups such as older adults, pregnant and postnatal women, obese persons, and persons with low back pain.	SPM 260, SPM 385/395, SPM 495
1.7.23	Skill to teach and demonstrate appropriate exercises for improving range of motion of all major joints.	SPM 450, SPM 385/395, SPM 495
1.7.24	Skill in the use of various methods for establishing and monitoring levels of exercise intensity, including heart rate, RPE, and oxygen cost.	SPM 260, SPM 330, SPM 385/395, SPM 495
1.7.25	Ability to identify and apply methods used to monitor exercise intensity, including heart rate and rating of perceived exertion.	SPM 260, SPM 330, SPM 385/395, SPM 495
1.7.26	Ability to describe modifications in exercise prescriptions for individuals with functional disabilities and musculoskeletal injuries.	SPM 260, SPM 430, SPM 495
1.7.27	Ability to differentiate between the amount of physical activity required for health benefits and/or for fitness development.	SPM 260, SPM 430, SPM 385/395, SPM 495
1.7.28	Knowledge of and ability to determine target heart rates using two methods: percent of age-predicted maximum heart rate and heart rate reserve (Karvonen).	SPM 260, SPM 430, SPM 385/395, SPM 495

1.7.29	Ability to identify proper and improper technique in the use of resistive equipment such as stability balls, weights, bands, resistance bars, and water exercise equipment.	SPM 260, SPM 385/395, SPM 495
1.7.30	Ability to identify proper and improper technique in the use of cardiovascular conditioning equipment (e.g., stairclimbers, stationary cycles, treadmills, elliptical trainers, rowing machines).	SPM 260, SPM 385/395, SPM 495
1.7.31	Ability to teach a progression of exercises for all major muscle groups to improve muscular strength and endurance.	SPM 260, SPM 325, SPM 385/395, SPM 495
1.7.32	Ability to communicate appropriately with exercise participants during initial screening and exercise programming.	SPM 260, SPM 385/395, SPM 495
1.7.33	Ability to design, implement, and evaluate individualized and group exercise programs based on health history and physical fitness assessments.	SPM 260, SPM 385/395, SPM 495
1.7.34	Ability to modify exercises based on age, physical condition and cognitive status.	SPM 260, SPM 450, SPM 385/395, SPM 495
1.7.35	Ability to apply energy cost, $\dot{V}O_2$ , METs, and target heart rates to an exercise prescription.	SPM 430
1.7.36	Ability to convert between the U.S. and Metric systems for length/height (inches to centimeters), weight (pounds to kilograms) and speed (miles per hour to meters per minute).	SPM 430
1.7.37	Ability to convert between absolute ( $\text{mL}\cdot\text{min}^{-1}$ or $\text{L}\cdot\text{min}^{-1}$ ) and relative oxygen costs ( $\text{mL}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$ , and/or METs).	SPM 430
1.7.38	Ability to determine the energy cost for given exercise intensities during horizontal and graded walking and running stepping exercise, cycle ergometry, arm ergometry and stepping.	SPM 430
1.7.39	Ability to prescribe exercise intensity based on $\dot{V}\cdot\text{O}_2$ data for different modes of exercise, including graded and horizontal running and walking, cycling, and stepping exercise.	SPM 430, SPM 385/395
1.7.40	Ability to explain and implement exercise prescription guidelines for apparently healthy clients, increased risk clients, and clients with controlled disease.	SPM 430, SPM 450, SPM 385/395, SPM 495
1.7.41	Ability to adapt frequency, intensity, duration, mode, progression, level of supervision, and monitoring techniques in exercise programs for patients with controlled chronic disease (e.g., heart disease, diabetes mellitus, obesity, hypertension), musculoskeletal problems (including fatigue), pregnancy and/or postpartum, and exercise-induced asthma.	SPM 450, SPM 385/395, SPM 495
1.7.42	Ability to design resistive exercise programs to increase or maintain muscular strength and/or endurance.	SPM 260, SPM 325, SPM 430, SPM 385/395, SPM 495

1.7.43	Ability to evaluate flexibility and prescribe appropriate flexibility exercises for all major muscle groups.	SPM 260, SPM 430, SPM 385/395, SPM 495
1.7.44	Ability to design training programs using interval, continuous, and circuit training programs.	SPM 260, SPM 325, SPM 430, SPM 385/395, SPM 495
1.7.45	Ability to describe the advantages and disadvantages of various commercial exercise equipment in developing cardiorespiratory fitness, muscular strength, and muscular endurance.	SPM 260, SPM 385/395, SPM 495
1.7.46	Ability to modify exercise programs based on age, physical condition, and current health status.	SPM 430, SPM 450, SPM 385/395, SPM 495
1.7.47	Ability to assess postural alignment and recommend appropriate exercise to meet individual needs and refer as necessary.	SPM 381, SPM 385
	<b>GENERAL POPULATION/CORE: NUTRITION AND WEIGHT MANAGEMENT</b>	
1.8.1	Knowledge of the role of carbohydrates, fats, and proteins as fuels for aerobic and anaerobic metabolism.	CON 252, SPM 330
1.8.2	Knowledge of the following terms: obesity, overweight, percent fat, BMI, lean body mass, anorexia nervosa, bulimia, metabolic syndrome and body fat distribution.	CON 252, SPM 330, SPM 352, SPM 450
1.8.3	Knowledge of the relationship between body composition and health.	CON 252, SPM 330, SPM 352
1.8.4	Knowledge of the effects of diet, exercise and behavior modification as methods for modifying body composition.	SPM 352
1.8.5	Knowledge of the importance of an adequate daily energy intake for healthy weight management.	CON 252, SPM 352
1.8.6	Knowledge of the difference between fat-soluble and water-soluble vitamins.	CON 252, SPM 352
1.8.7	Knowledge of the importance of maintaining normal hydration before, during, and after exercise.	SPM 352
1.8.8	Knowledge of the USDA Food Pyramid and Dietary Guidelines for Americans.	CON 252, SPM 352
1.8.9	Knowledge of the importance of calcium and iron in women's health.	CON 252, SPM 352
1.8.10	Knowledge of the myths and consequences associated with inappropriate weight loss methods (e.g., fad diets, dietary supplements, over-exercising, starvation diets).	CON 252, SPM 352

1.8.11	Knowledge of the number of kilocalories in one gram of carbohydrate, fat, protein, and alcohol.	CON 252, SPM 352
1.8.12	Knowledge of the number of kilocalories equivalent to losing 1 pound of body fat and the ability to prescribe appropriate amount of exercise to achieve weight loss goals.	CON 252, SPM 352
1.8.13	Knowledge of the guidelines for caloric intake for an individual desiring to lose or gain weight.	CON 252, SPM 352
1.8.14	Knowledge of common nutritional ergogenic aids, the purported mechanism of action, and any risk and/or benefits (e.g., carbohydrates, protein/amino acids, vitamins, minerals, herbal products, creatine, steroids, caffeine).	SPM 352
1.8.15	Knowledge of nutritional factors related to the female athlete triad syndrome (i.e., eating disorders, menstrual cycle abnormalities, and osteoporosis).	SPM 352
1.8.16	Knowledge of the NIH Consensus statement regarding health risks of obesity, Nutrition for Physical Fitness Position Paper of the American Dietetic Association, and the ACSM Position Stand on proper and improper weight loss programs.	SPM 352
1.8.17	Ability to describe the health implications of variation in body fat distribution patterns and the significance of the waist to hip ratio.	SPM 352, SPM 430
1.8.18	Knowledge of the nutrition and exercise effects on blood glucose levels in diabetes.	CON 252, SPM 352, SPM 450
	<b>GENERAL POPULATION/CORE:</b> <b>HUMAN BEHAVIOR AND COUNSELING</b>	
1.9.1	Knowledge of behavioral strategies to enhance exercise and health behavior change (e.g., reinforcement, goal setting, social support).	SPM 230, SPM 350
1.9.2	Knowledge of the important elements that should be included in each behavior modification session.	SPM 230
1.9.3	Knowledge of specific techniques to enhance motivation (e.g., posters, recognition, bulletin boards, games, competitions).	SPM 230
1.9.4	Knowledge of extrinsic and intrinsic reinforcement and give examples of each.	SPM 230
1.9.5	Knowledge of the stages of motivational readiness.	SPM 230, SPM 350
1.9.6	Knowledge of approaches that may assist less motivated clients to increase their physical activity.	SPM 230

1.9.7	Knowledge of signs and symptoms of mental health states (e.g., anxiety, depression, eating disorders) that may necessitate referral to a medical or mental health professional.	SPM 230, SPM 450
1.9.8	Knowledge of the potential symptoms and causal factors of test anxiety (i.e., performance, appraisal threat during exercise testing) and how it may affect physiological responses to testing.	SPM 230
1.9.9	Ability to coach clients to set achievable goals and overcome obstacles through a variety of methods (e.g., in person, phone, and internet).	SPM 230, SPM 350, SPM 385
	<b>GENERAL POPULATION/CORE: SAFETY, INJURY PREVENTION, AND EMERGENCY PROCEDURES</b>	
1.10.1	Knowledge of and skill in obtaining basic life support, first aid, cardiopulmonary resuscitation, and automated external defibrillator certifications.	SPM 216
1.10.2	Knowledge of appropriate emergency procedures (i.e., telephone procedures, written emergency procedures, personnel responsibilities) in a health and fitness setting.	SPM 216, SPM 385, SPM 395
1.10.3	Knowledge of and skill in performing basic first aid procedures for exercise-related injuries, such as bleeding, strains/sprains, fractures, and exercise intolerance (dizziness, syncope, heat and cold injuries).	SPM 216
1.10.4	Knowledge of basic precautions taken in an exercise setting to ensure participant safety.	SPM 260, SPM 430
1.10.5	Knowledge of the physical and physiological signs and symptoms of overtraining and the ability to modify a program to accommodate this condition.	SPM 325
1.10.6	Knowledge of the effects of temperature, humidity, altitude, and pollution on the physiological response to exercise and the ability to modify the exercise prescription to accommodate for these environmental conditions.	SPM 330
1.10.7	Knowledge of the signs and symptoms of the following conditions: shin splints, sprain, strain, tennis elbow, bursitis, stress fracture, tendonitis, patellar femoral pain syndrome, low back pain, plantar fasciitis, and rotator cuff tendonitis and the ability to recommend exercises to prevent these injuries.	SPM 450
1.10.8	Knowledge of hypothetical concerns and potential risks that may be associated with the use of exercises such as straight leg sit-ups, double leg raises, full squats, hurdlers stretch, yoga plough, forceful back hyperextension, and standing bent-over toe touch.	SPM 260, SPM 430

1.10.9	Knowledge of safety plans, emergency procedures, and first aid techniques needed during fitness evaluations, exercise testing, and exercise training.	SPM 216, SPM 430
1.10.10	Knowledge of the health/fitness instructor's responsibilities, limitations, and the legal implications of carrying out emergency procedures.	SPM 216, SPM 430, SPM 450
1.10.11	Knowledge of potential musculoskeletal injuries (e.g., contusions, sprains, strains, fractures), cardiovascular/pulmonary complications (e.g., tachycardia, bradycardia, hypotension/hypertension, tachypnea) and metabolic abnormalities (e.g., fainting/syncope, hypoglycemia/hyperglycemia, hypothermia/hyperthermia).	SPM 216, SPM 450
1.10.12	Knowledge of the initial management and first aid techniques associated with open wounds, musculoskeletal injuries, cardiovascular/pulmonary complications, and metabolic disorders.	SPM 216
1.10.13	Knowledge of the components of an equipment maintenance/repair program and how it may be used to evaluate the condition of exercise equipment to reduce the potential risk of injury.	SPM 385, SPM 395
1.10.14	Knowledge of the legal implications of documented safety procedures, the use of incident documents, and ongoing safety training documentation for the purposes of safety and risk management.	SPM 385, SPM 395
1.10.15	Skill to demonstrate exercises used for people with low back pain, neck, shoulder, elbow, wrist, hip, knee and/or ankle pain; and the ability to modify a program for people with these conditions.	SPM 450, SPM 385/395, SPM 495
1.10.16	Skill in demonstrating appropriate emergency procedures during exercise testing and/or training.	SPM 430, SPM 385/395, SPM 495
1.10.17	Ability to identify the components that contributes to the maintenance of a safe environment including equipment operation and maintenance, proper sanitation, safety and maintenance of exercise areas, and overall facility maintenance.	SPM 385/395, SPM 495
1.10.18	Knowledge of basic ergonomics to address daily activities that may cause musculoskeletal problems in the workplace, and the ability to recommend exercises to alleviate symptoms caused by repetitive movements.	SPM 385, SPM 450
	<b>GENERAL POPULATION/CORE: PROGRAM ADMINISTRATION, QUALITY ASSURANCE, AND OUTCOME ASSESSMENT</b>	
1.11.1	Knowledge of the health/fitness instructor's role in administration and program management within a health/fitness facility.	SPM 350, SPM 385, SPM 395

1.11.2	Knowledge of and the ability to use the documentation required when a client shows signs or symptoms during an exercise session and should be referred to a physician.	SPM 430, SPM 450
1.11.3	Knowledge of how to manage of a fitness department (e.g., working within a budget, interviewing and training staff, scheduling, running staff meetings, staff development).	SPM 350, SPM 385, SPM 395
1.11.4	Knowledge of the importance of tracking and evaluating member retention.	SPM 350, SPM 385, SPM 395
1.11.6	Ability to administer fitness-related programs within established budgetary guidelines.	SPM 350, SPM 385, SPM 395
1.11.7	Ability to develop marketing materials for the purpose of promoting fitness-related programs.	SPM 350, SPM 385/395, SPM 495
1.11.8	Ability to create and maintain records pertaining to participant exercise adherence, retention, and goal setting.	SPM 385/395, SPM 495
1.11.9	Ability to develop and administer educational programs (e.g., lectures, workshops) and educational materials.	SPM 350, SPM 385/395, SPM 495
1.11.10	Knowledge of basic sales techniques to promote health, fitness, and wellness services.	SPM 350, SPM 385/395
1.11.11	Knowledge of networking techniques with other health care professionals for referral purposes.	SPM 350, SPM 385/395, SPM 450
1.11.12	Ability to provide and administer appropriate customer service.	SPM 385/395
1.11.13	Knowledge of the importance of tracking and evaluating health promotion program results.	SPM 385/395
	<b>CARDIOVASCULAR: PATHOPHYSIOLOGY AND RISK FACTORS</b>	
2.2.1	Knowledge of cardiovascular risk factors or conditions that may require consultation with medical personnel before testing or training, including inappropriate changes of resting or exercise heart rate and blood pressure, new onset discomfort in chest, neck, shoulder, or arm, changes in the pattern of discomfort during rest or exercise, fainting or dizzy spells, and claudication.	SPM 430, SPM 450
2.2.2	Knowledge of the pathophysiology of myocardial ischemia and infarction.	SPM 430, SPM 450
2.2.3	Knowledge the pathophysiology of stroke, hypertension, and hyperlipidemia.	SPM 430, SPM 450

2.2.4	Knowledge the effects of the above diseases and conditions on the cardiorespiratory responses at rest and during exercise.	SPM 430, SPM 450
	<b>PULMONARY: PATHOPHYSIOLOGY AND RISK FACTORS</b>	
3.2.1	Knowledge of pulmonary risk factors or conditions that may require consultation with medical personnel before testing or training, including asthma, exercise-induced asthma/bronchospasm, extreme breathlessness at rest or during exercise, bronchitis, and emphysema.	SPM 450
	<b>METABOLIC: PATHOPHYSIOLOGY AND RISK FACTORS</b>	
4.2.1	Knowledge of metabolic risk factors or conditions that may require consultation with medical personnel before testing or training, including obesity, metabolic syndrome, thyroid disease, kidney disease, diabetes or glucose intolerance, and hypoglycemia.	SPM 430, SPM 450
	<b>ORTHOPEDIC/MUSCULOSKELETAL: PATHOPHYSIOLOGY AND RISK FACTORS</b>	
5.2.1	Knowledge of musculoskeletal risk factors or conditions that may require consultation with medical personnel before testing or training, including acute or chronic back pain, osteoarthritis, rheumatoid arthritis, osteoporosis, inflammation/pain, and low back pain.	SPM 430, SPM 450
	<b>NEUROMUSCULAR: PATHOPHYSIOLOGY AND RISK FACTORS</b>	
6.2.1	Knowledge of neuromuscular risk factors or conditions that may require consultation with medical personnel before testing or training, including spinal cord injuries and multiple sclerosis.	SPM 430, SPM 450
	<b>IMMUNOLOGIC: PATHOPHYSIOLOGY AND RISK FACTORS</b>	
7.2.1	Knowledge of immunologic risk factors or conditions that may require consultation with medical personnel before testing or training, including AIDS and cancer.	SPM 450