Exercise Science Curriculum Map
Mapped to Student Learning Outcomes (ACSM, C-EP Knowledge and Skills)

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SLO #1: Demonstrate Proficiency in Health and Fitness Assessment

	Learning Outcome	Course	I, E, R (Introduce, Emphasize, or Reinforced)	Assessment Method
A. Implement assessment protocols and pre-participation health screening procedures to maximize participant safety and minimize risk.				
Knowledge of:	pre-activity screening procedures and tools that provide accurate information about the individual's health/ medical history, current medical conditions, risk factors, sign/symptoms of disease, current physical activity habits, and medications.	EX 250	I	Lab manual activity + exam
		EX 240	I	Exam and Lab activity
		EX 362	E	Exam in class
	the key components included in informed consent and health/medical history.	EX 100	I	Exam
		EX 230	I	Exam & Informed Consent in Honors Project
		EX240	E	Health history during PPE assessed through exam and lab activity
		EX 250	R.	Lab manual activity + exam
		EX 362	R	None
	the limitations of informed consent and health/medical history.	EX 250	I	Lab manual activity + exam
		EX 362	E	In-class examination
B. Determine participant's readiness to take part in a health-related physical fitness assessment and exercise program.				
Knowledge of:	risk factor thresholds for ACSM risk stratification including genetic and lifestyle factors related to the development of CVD.	EX 240	I	Lab manual activity + exam
		EX 362	E	In class exam
		EX 366	R	Case Studies in Classroom Module
	the major signs or symptoms suggestive of cardiovascular, pulmonary and metabolic disease.	EX 240	I	Lab manual activity + exam
		EX 362	E	Case Study/Exam

	cardiovascular risk factors or conditions that may require consultation with medical personnel prior to exercise testing or training (e.g., inappropriate changes in resting heart rate and/or blood pressure, new onset discomfort in chest, neck, shoulder, or arm, changes in the pattern of discomfort during rest or exercise, fainting, dizzy spells, claudication).	EX 240	I	Lab manual activity + exam
		EX 362	E	In class exam
	the pulmonary risk factors or conditions than may require consultation with medical personnel prior to exercise testing or training (e.g., asthma, exercise-induced asthma/bronchospasm, extreme breathlessness at rest or during exercise, chronic bronchitis, emphysema).	EX 362	E	In class exam
	the metabolic risk factors or conditions than may require consultation with medical personnel prior to exercise testing or training (e.g., obesity, metabolic syndrome, diabetes or glucose intolerance, hypoglycemia).	EX 362	E	In class examination and case study
	the musculoskeletal risk factors or conditions than may require consultation with medical personnel prior to exercise testing or training (e.g., acute or chronic pain, osteoarthritis, rheumatoid arthritis, osteoporosis, inflammation/pain, low back pain).	EX 240	I	Exam
		EX 250	E: Topics applied to EX 250 lab tests	Lab manual activity + exam
		EX 362	E	In-class exam, Case Study, LAB exam
		EX 362	I & E	In Class exam and Case Study
		EX 366	R	Case Studies in Classroom Module
	medical terminology including, but not limited to, total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), triglycerides, impaired fasting glucose, impaired glucose tolerance, hypertension, atherosclerosis, myocardial infarction, dyspnea, tachycardia, claudication, syncope and ischemia.	EX 240	I: musculoskeletal terminology	Exam
		EX 250	Partially emphasized: Topics applied to EX 250 lab tests	Lab manual activity + exam
		EX 362	R	In-class exam
	recommended plasma cholesterol levels for adults based on National Cholesterol Education Program/ATP Guidelines.	EX 362	I	In-class exam
	recommended blood pressure levels for adults based on National High Blood Pressure Education Program Guidelines.	EX 250	E	Lab manual activity + exam
		EX 362	R	In-class exam
	medical supervision recommendations for cardiorespiratory fitness testing.	EX 250	E: Topics applied to EX 250 lab tests	Lab manual activity + exam
		EX 362	E	Case Study, In-class exam
		EX 240	I	Exam and lab activity

	The components of a health-history questionnaire (e.g., 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).	EX 250	E: Topics applied to EX 250 lab tests	Lab manual activity + exam
		EX 362	R	In class exam
Skill in:	the risk stratification of participants using CVD risk factor thresholds, major signs or symptoms suggestive of cardiovascular, pulmonary, or metabolic disease, and/or the presence of known cardiovascular, pulmonary, and metabolic disease status.	EX 366	R	Case Studies in Classroom Module
		EX 362	I	Case Study, In class exam
	reviewing pre-activity screening documents to determine the need for medical clearance prior to exercise and to select appropriate physical fitness assessment protocols.	EX 240	I	Lab activity and lab exam
		EX 250	E: Topics applied to EX 250 lab tests	Lab manual activity + exam
		EX 362	E	Case Study, In-class examination
C. Select and prepare physical fitness assessments for healthy participants and those with controlled disease.				
Knowledge of:	the physiological basis of the major components of physical fitness: cardiorespiratory fitness, body composition, flexibility, muscular strength, and muscular endurance.	EX 100	I	Exam
		EX 250	E	Exam
		EX 363	E	Exam
		EX 362	R	In-class exam
	selecting the most appropriate testing protocols for each participant based on preliminary screening data.	EX 100	I	Exam
		EX 250	E: Topics applied to EX 250 lab tests	Lab manual activity + exam
		EX 363	E	Exam
		EX 362	E	Case Study/In class exam
	calibration techniques and proper use of fitness testing equipment. (240, 250, 260, 363 - Introduced)	EX 250	I	none
		EX 260	I	none
		EX 362	R	Lab Exam
	the purpose and procedures of fitness testing protocols for the components of health related fitness.	EX 100	I	Exam
		EX 250	E	Lab manual activity + exam
		EX 363	E	Exam
		EX 362	R	Lab Exam
	test termination criteria and proper procedures to be followed after discontinuing health fitness tests.	EX 250	E	Lab manual activity + exam
		EX 362	E	In class exam
	fitness assessment sequencing.	EX 100	I	Exam

		EX 250	E	Lab manual activity + exam
		EX 363	E	Exam
		EX 362	E	In class exam
	The effects of common medications and substances on exercise testing.	EX 363	I	Case Study
		EX 363	I	none
Skill In:	analyzing and interpreting information obtained from assessment of the components of health related fitness.	EX 100	I	Exam
		EX 250	E	Lab manual activity + exam
		EX 363	E	Lab exam
		EX 366	E	Case Studies in Classroom Module
		EX 362	E	Lab assignment, Case Study, In-Class Exam
	modifying protocols and procedures for testing children, adolescents, older adults and individuals with special considerations.	EX 363	I	Exam and Lab exam
		EX 362	E	Case Study, Lab assignment
D. Conduct and interpret cardiorespiratory fitness assessments.				
Knowledge of:	common submaximal and maximal cardiorespiratory fitness assessment protocols.	EX 250	Partially E	Lab manual activity + exam
		EX 362	E	Exam/LAB exam
	blood pressure measurement techniques.	EX 250	I	Lab manual activity + exam
		EX 362	E	Lab Exam
	Korotkoff sounds for determining systolic and diastolic blood pressure.	EX 250	I	Lab manual activity + exam
		EX 362	E	Lab exam
	The blood pressure response to exercise	EX 250	I	Lab manual activity + exam
		EX 100	I	Exam
		EX 362	E	Lab Exam/Exam
	techniques of measuring heart rate and heart rate response to exercise.	EX 100	I	Exam

		EX 250	E	Lab manual activity + exam
		EX 362	R	Lab Exam
	the rating of perceived exertion (RPE).	EX 250	E	Lab manual activity + exam
		EX 100	I	Exam
		EX 362	R	Exam/Lab Exam
	heart rate, blood pressure and RPE monitoring techniques before, during, and after cardiorespiratory fitness testing.	EX 250	E	Lab manual activity + exam
		EX 362	E	Lab Exam
	the anatomy and physiology of the cardiovascular and pulmonary systems.	EX 250	E	Lab manual activity + exam
		EX 100	I	Exam
	cardiorespiratory terminology including angina pectoris, tachycardia, bradycardia, arrhythmia, and hyperventilation	EX 250	Partially E	Lab manual activity + exam
		EX 362	R	none
	the pathophysiology of myocardial ischemia, myocardial infarction, stroke, hypertension, and hyperlipidemia.	EX 250	I	none
		EX 362	R	none
	the effects of myocardial ischemia, myocardial infarction, hypertension, claudication, and dyspnea on cardiorespiratory responses during exercise.	EX 362	E	Case Study/exam
	oxygen consumption dynamics during exercise (e.g., heart rate, stroke volume, cardiac output, ventilation, ventilatory threshold).	EX 250	I	Exam + Research Assignment
		EX 100	I HR, SV, Q	Exam
		EX 362	R	none
	methods of calculating VO2max.	EX 250	I	Exam + Research Assignment
		EX 362	R	Lab assignment
	cardiorespiratory responses to acute graded exercise of conditioned and unconditioned participants	EX 250	I	Lab manual activity + exam
		EX 363	R	none
Skill in:	interpreting cardiorespiratory fitness test results.	EX 250	I	Lab manual activity + exam
		EX 362	E	Lab assignment, Lab exam
	locating anatomic landmarks for palpation of peripheral pulses and blood pressure.	EX 250	I	Lab manual activity + exam

		EX 362	E	Lab assignment, lab exam
	measuring heart rate, blood pressure, and RPE at rest and during exercise.	EX 250	I	Lab manual activity + exam
		EX 362	E	Lab Exam
	conducting submaximal exercise tests (e.g., cycle ergometer, treadmill, field testing, step test).	EX 250	I	Lab manual activity + exam
		EX 362	E	Lab Exam
	determining cardiorespiratory fitness based on submaximal exercise test results	EX 250	I	Lab manual activity + exam
		EX 362	E	In class exam, lab assignment
E. Conduct assessments of muscular strength, muscular endurance and flexibility.				
Knowledge of:	common muscular strength, muscular endurance, and flexibility assessment protocols.	EX 100	I	Exam
		EX 260	R	Lab Activity, Exam
		EX 363	E	Exam, Lab activities and lab exam
		EX 362	E	Lab assignment/lab exam
	interpreting muscular strength, muscular endurance, and flexibility assessments.	EX 363	I	Exam and Lab exam
		EX 366	R	Case Studies in Classroom Module
		EX 362	E	Case Study/exam
	relative strength, absolute strength, and repetition maximum (1-RM) estimation.	EX 363	I	Exam and lab exam
		EX 362	R	none
	the anatomy of bone, skeletal muscle, and connective tissues.	EX 100	I	Practical Exam
		EX 240	I	Exam and lab exam
		EX 260	E	Exam
		EX 362	R	none
	muscle action terms including anterior, posterior, inferior, superior, medial, lateral, supination, pronation, flexion, extension, adduction, abduction, hyperextension, rotation, circumduction, agonist, antagonist, and stabilizer.	EX 100	I	Practical Exam and Midterm/Final Exam
		EX 240	E	Exam
		EX 260	E	Exams
		EX 362	R	none

	the planes and axes in which each movement action occurs.	EX 100	I	Practical Exam and Midterm/Final Exam
		EX 240	E	Exam and lab activities
		EX 260	E	Lab Activities, HW, Exam
		EX 363	R	Exam and applied exam
		EX 362	R	none
	the interrelationships among center of gravity, base of support, balance, stability, posture, and proper spinal alignment.	EX 260	E	Lab Activity, Exam
		EX 362	R	none
	the normal curvatures of the spine and common assessments of postural alignment.	EX 240	I	Exam and lab activity
		EX 260	I	
		EX 362	E	Lab Assignments
	the location and function of the major muscles (e.g., pectoralis major, trapezius, latissimus dorsi, biceps, triceps, rectus abdominus, internal and external obliques, erector spinae, gluteus maximus, quadriceps, hamstrings, adductors, abductors, and gastrocnemius).	EX 100	I	Practical Exam
		EX 240	I	Exam & HAL activity
		EX 260	E	Exams
		EX 362	R	none
	the major joints and their associated movement.	EX 100	I	Practical Exam
		EX 260	E	Exams
		EX 240	I	Exam, lab activity, HAL activity
		EX 362	R	Lab exam
Skill In:	identifying the major bones, muscles, and joints.	EX 100	I	Practical Exam
		EX 240	I	Exam, lab activity, HAL activity
		EX 362	R	none
	conducting assessments of muscular strength, muscular endurance and flexibility (e.g., 1-RM, hand grip dynamometer, push-ups, curl-ups, sit-and-reach	EX 100	I	Fitness Assess. Lab
		EX 363	E	Exam and lab exam
		EX 362	E	Lab assign/exam
	estimating 1-RM using lower resistance (2-10 RM)	EX 362	I	none
		EX 363	I	Exam and lab exam
	interpreting results of muscular strength, muscular endurance and flexibility assessments.	EX 362	R	Case Study
E. Conduct anthropometric and body composition assessments.				

Knowledge of:	the health implications of variation in body fat distribution patterns and the significance of BMI, waist circumference, and waist-to-hip ratio.	EX 250	E	Lab manual activity + exam
		EX 362	R	Case Study/Exam
		EX 100	I	Exam
	the advantages, disadvantages and limitations of body composition techniques (e.g., air displacement plethysmography (BOD POD®), duel-energy x-ray absorptiometry (DEXA), hydrostatic weighing, skinfolds, and bioelectrical impedance.	EX 250	I	Lab manual activity + exam
		Ex 362	R	In Class Exam
		EX 100	I	Exam
	the standardized descriptions of circumference and skinfold sites.	EX 362	E	Lab Exam
	procedures for determining BMI and taking skinfold and circumference measurements.	EX 362	E	Lab exam
Skill In:	locating anatomic landmarks for skinfold and circumference measurements.	EX 362	E	Lab Exam
	interpreting the results of anthropometric and body composition assessments.	EX 250	I	Lab manual activity + exam
		EX 362	E	Lab assignment, in class exam

SLO #2: Develop safe and effective exercise programming based on the FITT principles which address all health-fitness related variables

and

SLO# 3: Develop safe and effective programming to enhance athletic performance

Note: These two SLOs are combined into one table to better align with the format of the Knowledge and Skills format for the American College of Sports Medicine's Certified Exercise Physiologist Certification.

	Learning Outcome	Course	I, E, R (Introduced, Emphasized, or Reinforced)	Assessment Method
A. Review pre-participation health screening including self-guided health questionnaires and appraisals, exercise history and fitness assessments.				
Skill in:	synthesizing pre-screening results and reviewing them with participants	EX 250	I	Lab manual activity + exam
		EX 362	R	Case Study
B. Determine safe and effective exercise programs to achieve desired outcomes and goals.				
Knowledge of:	strength, aerobic, and flexibility based exercise.	EX 363	E	Exam and lab exam
		EX 362	R	Exam
	the benefits and precautions associated with exercise training in apparently healthy participants and those with controlled disease.	EX 100	I	Exam
		EX 362	E	Exam
		EX 363	E	Exam
	program development for specific client needs (e.g., health, lifestyle, aerobic, anaerobic).	EX 363	E	Exam and project
		EX 362	E (some)	Case Study/Exam

	the six motor skill physical fitness components; agility, balance, coordination, reaction time, speed, and power.	EX 100	I	Exam
		EX 363	E	Exam and lab activity/exam
	the physiologic changes associated with an acute bout of exercise.	EX 250	E	Exam and research assignment
		EX 100	I	Exam
		EX 362	R	Exam
		EX 363	R	Exam
	the physiologic adaptations following chronic exercise training.	EX 250		Lab manual activity + exam
		EX 100	I	Exam
		EX 362	R	Exam
		EX 363	R	Exam
	ACSM exercise prescription guidelines for strength, aerobic, and flexibility based exercise for apparently healthy clients, clients with increased risk, and clients with controlled disease.	EX 363	E	Exam
		EX 366	R	Case Studies in Classroom Module
		EX 362	E	Exam/Case Study
	the components and sequencing incorporated into an exercise session (e.g., warm-up, stretching, conditioning or sports related exercise, cool-down).	EX 250	E	Lab manual activity + exam
		EX 100	I	Exam
		EX 363	E	Exam
		EX 362	R	Exam
		EX 366	R	Case Studies in Classroom Module

	the physiological principles related to warm-up and cool-down.	EX 250	E	Lab manual activity + exam
		EX 362	R	none
		EX 363	E	Exam
		EX 100	I	Exam
	the principles of reversibility, progressive overload, individual differences and specificity of training, and how they relate to exercise prescription.	EX 250	I	Exam and research assignment
		EX 362	E	Case Study/Exam
		EX 363	E	Exam
	the role of aerobic and anaerobic energy systems in the performance of various physical activities.	EX 100	I	Exam
		EX 363	E	Exam
		Ex 362	E	none
	the basic biomechanical principles of human movement.	EX 260	E	All Assessments + Lab
		EX 362	R	none
	the psychological and physiological signs and symptoms of overtraining.	EX 363	I	Exam
		EX 362	R	none
	the signs and symptoms of common musculoskeletal injuries associated with exercise (e.g., sprain, strain, bursitis, tendonitis).	EX 240	I	Exam and lah activity (HAL)
		EX 362	R	none
	the advantages and disadvantages of exercise equipment (e.g., free weights, selectorized machines, aerobic equipment).	EX 250	Partially E	Exam and research assignment
		EX 100	I	Practical Exam
		EX 260	I	Exam
		EX 362	E	Case Study/Exam
		EX 363	E	Exam and lab activity

Skill in:	teaching and demonstrating exercises.	EX 100	I	Practical Exam
		EX 362	E	Lab exam
		EX 363	E	Lab Exam
	designing safe and effective training programs.	EX 366	R	Case Studies in Classroom Module
		EX 362	E	Case Study
		EX 363	E	Exam and project
	implementing exercise prescription guidelines for apparently healthy clients, clients with increased risk, and clients with controlled disease.	EX 363	E	Exam and project
		EX 362	E	Case Study, in class exam
		EX 366	R	Case Studies in Classroom Module
C. Implement cardiorespiratory exercise prescriptions using the FITT principle (frequency, intensity, time, and type) for apparently healthy participants based on current health status, fitness goals and availability of time.				
Knowledge of:	the recommended FITT framework for the development of cardiorespiratory fitness.	EX 250	E	Lab manual activity + exam
		EX 362	E	Exam
		EX 100	I	Exam
	the benefits, risks and contraindications of a wide variety of cardiovascular training exercises based on client experience, skill level, current fitness level and goal	EX 362	E	Exam
	the minimal threshold of physical activity required for health benefits and/or fitness development.	EX 250	E	Exam
		EX 362	E	Case Study/Exam
		EX 100	I	Exam
	determining exercise intensity using HRR, VO2R, peak HR method, peak VO2 method, peak METs method, and the RPE Scale.	EX 250	I	Lab manual activity + exam
		EX 362	E	Exam

	the accuracy of HRR, VO2R, peak HR method, peak VO2 method, peak METs method, and the RPE Scale.	EX 250	I	Lab manual activity + exam
		EX 362	R	None
	abnormal responses to exercise (e.g., hemodynamic, cardiac, ventilatory).	EX 362	Emphasized	Exam
	metabolic calculations (e.g., unit conversions, deriving energy cost of exercise, caloric expenditure).	EX 250	I	Lab manual activity + exam
		EX 362	E	
	calculating the caloric expenditure of an exercise session (kcal•session1).	EX 100	I	
		EX 362	E	Exam
	methods for establishing and monitoring levels of exercise intensity, including heart rate, RPE, and METs.	EX 250	I	Lab manual activity + exam
		EX 362	R	Exam
		EX 100	I	Exam
	the applications of anaerobic training principles.	EX 362	R	Exam
	the anatomy and physiology of the cardiovascular and pulmonary systems including the basic properties of cardiac muscle.	EX 250	I	Exam
	the basic principles of gas exchange.	EX 250	I	Exam
		EX 362	R	none
Skills in:	determining appropriate exercise frequency, intensity, time and type for clients with various fitness levels.	EX 366	R	Case Studies in Classroom Module
	determining the energy cost, absolute and relative oxygen costs (VO2), and MET levels of various activities and apply the information to an exercise prescription.	EX 362	E	Exam, lab assignment, case study
	identifying improper technique in the use of cardiovascular equipment.	EX 250	E	Lab Manual Activity
		EX 362	R	none
	teaching and demonstrating the use of a variety of cardiovascular exercise equipment.	EX 100	I	

D. Implement exercise prescriptions using the FITT principle (frequency, intensity, time, and type) for flexibility, muscular strength, and muscular endurance for apparently healthy participants based on current health status, fitness goals and availability of time.				
Knowledge of:	the recommended FITT framework for the development of muscular strength, muscular endurance and flexibility.	EX 363	I	Exam
		EX 362	E	Exam, Case Study
		EX 366	R	Case Studies in Classroom Module
	the minimal threshold of physical activity required for health benefits and/or fitness development.	EX 100	I	Exam
		EX 362	E	Exam, Case Study
		EX 363	E	Exam
	safe and effective exercises designed to enhance muscular strength and/or endurance of major muscle groups.	EX 100	I	Practical Exam
		EX 362	E	Exam, Case Study
		EX 363	E	Exam, lab activities/exam, and project
	safe and effective stretches that enhance flexibility.	EX 100	I	Exam
		EX 362	E	Exam, Case Study
		EX 363	E	Exam, lab activities/exam
	indications for water based exercise (e.g., arthritis, obesity).	EX 362	E	Exam, Case Study
	the types of resistance training programs (e.g., total body, split routine) and modalities (e.g., free weights, variable resistance equipment, pneumatic machines, bands).	EX 363	I	Exam and project
		EX 362	E	Exam, Case Study
	acute (e.g., load, volume, sets, repetitions, rest periods, order of exercises) and chronic training variables (e.g., periodization).	EX 363	I	Exam and project

		EX 362	E	Exam
	the types of muscle contractions (e.g., eccentric, concentric, isometric).	EX 100	I	Exam
		EX 260	E	Exam, Lab
		EX 362	R	Exam
		EX 363	R	Exam and applied exam
	joint movements (e.g., flexion, extension, adduction, abduction) and the muscles responsible for them.	EX 100	I	Exam
		EX 260	E	Exam
		EX 362	R	Exam, Case Study
		EX 363	R	Exam and applied exam
	acute and delayed onset muscle soreness (DOMS)	EX 260	I	Exam
		EX 362	R	none
		EX 363	R	Exam
	the anatomy and physiology of skeletal muscle fiber, the characteristics of fast-and slow-twitch muscle fibers, and the sliding filament theory of muscle contraction.	EX 250	I	Exam and research assignment
		EX 362	R	Exam
		EX 363	R	Exam
		EX 100	I	Exam
	the stretch reflex, proprioceptors, golgi tendon organ (GTO), muscle spindles, and how they relate to flexibility.	EX 250	I	Exam and research assignment
		EX 260	I	Exam
		EX 362	E	Exam
		EX 363	E	Exam lab assignment
	muscle-related terminology including atrophy, hyperplasia, hypertrophy	EX 250	I	Exam and research assignment
		EX 260	Partially E	Exam
		EX 362	R	Exam
		EX 363	E	Exam
	the Valsalva maneuver and its implications during exercise.	EX 363	I	Exam

		EX 362	E	Exam
	the physiology underlying plyometric training and common plyometric exercises (e.g., box jumps, leaps, bounds).	EX 260	I	Exam, Lab
		EX 362	I	none
		EX 363	E	Exam and lab activity
	the contraindications and potential risks associated with muscular conditioning activities (e.g., straight-leg sit-ups, double leg raises, squats, hurdler's stretch, yoga plough, forceful back hyperextension, and standing bent-over toe touch, behind neck press/lat pull-down).	EX 260	I	Lab
		EX 362	E	Exam & Case Study
	prescribing exercise using the calculated %1-RM.	EX 363	I	Exam
		EX 362	E	Exam & Case Study
	spotting positions and techniques for injury prevention and exercise assistance.	EX 363	I	Exam and lab activity/exam
		EX 362	I	none
	periodization (e.g., macro, micro, mesocycles) and associated theories.	EX 363	I	Exam and project
		EX 362	I	none
	safe and effective Olympic weight lifting exercises.	EX 363	I	Exam and lab activity/exam
		EX 362	I	none
	safe and effective core stability exercises (e.g., planks, crunches, bridges, cable twists).	EX 363	I	Exam and lab activity/exam
		EX 362	E	Exam, lab exam
Skill in:	identifying improper technique in the use of resistive equipment (e.g., stability balls, weights, bands, resistance bars, and water exercise equipment).	EX 362	I	none
		EX 363	I	Exam and lab activity/exam
	teaching and demonstrating appropriate exercises for enhancing musculoskeletal flexibility.	EX 363	I	Exam and lab activity/exam
		EX 362	E	Lab exam
	teaching and demonstrating safe and effective muscular strength and endurance exercises (e.g., free weights, weight machines, resistive bands, Swiss balls, body weight and all other major fitness equipment).	EX 363	I	Exam and lab activity/exam
		EX 362	R	Lab exam

E. Establish exercise progression guidelines for resistance, aerobic and flexibility activity to achieve the goals of apparently healthy participants.				
Knowledge of:	the basic principles of exercise progression.	EX 100	I	none
		EX 250	I	Exam and research assignment
	adjusting the FITT framework in response to individual changes in conditioning.	EX 100	I	
		EX 363	I	Exam
	the importance of performing periodic reevaluations to assess changes in fitness status.	EX 362	I	none
		EX 363	I	Exam
	the training principles that promote improvements in muscular strength, muscular endurance, cardiorespiratory fitness, and flexibility. (EX 100)	EX 100	I	none
		EX 363	I	Exam
Skills in:	recognizing the need for progression and communicating updates to exercise prescriptions.	EX 362	I	none
		EX 363	I	Exam and lab activity/exam
F. Implement a weight management program as indicated by personal goals that are supported by pre-participation health screening, health history, and body composition/anthropometrics.				
Knowledge of:	exercise prescriptions for achieving weight management, including weight loss, weight maintenance and weight gain goals.	EX 362	E	Exam
	energy balance and basic nutritional guidelines (e.g., MyPyramid, USDA Dietary Guidelines for Americans).	EX 362	E	Exam
		EX 255	I, E	Exam
	weight management terminology including, but not limited to, obesity, overweight, percent fat, BMI, lean body mass (LBM), anorexia nervosa, bulimia, binge eating, metabolic syndrome, body fat distribution, adipocyte, bariatrics, ergogenic aid, fat-free mass (FFM), resting metabolic rate (RMR) and thermogenesis.	EX 362	R	none
		EX 255	I, E	Exam
	the relationship between body composition and health.	EX 250	E	Exam and research assignment
		EX 362	R	Exam
		EX 100	I	Exam
		EX 255	R	Exam

	the unique dietary needs of participant populations (e.g., women, children, older adults, pregnant women)	EX 255	I	Exam
		EX 363	I	
	common nutritional ergogenic aids, their purported mechanisms of action, and associated risks and benefits (e.g., protein/amino acids, vitamins, minerals, herbal products, creatine, steroids, caffeine)	EX 255	I	Exam
		EX 363	I	
	methods for modifying body composition including diet, exercise, and behavior modification.	EX 100	Partially I	Exam
		EX 362	R	none
		EX 255	R	Exam
	fuel sources for aerobic and anaerobic metabolism including carbohydrates, fats and proteins.	EX 250	I	Exam and research assignment
		EX 255	E	Exam
	the effects of overall dietary composition on healthy weight management.	EX 255	I	Exam
	the importance of maintaining normal hydration before, during and after exercise.	EX 250	E	Exam and research assignment
		EX 362	R	none
		EX 255	E	Exam
	the consequences of inappropriate weight loss methods (e.g., saunas, dietary supplements, vibrating belts, body wraps, over exercising, very low calorie diets, electric stimulators, sweat suits, fad diets).	EX 362	R	none
	the kilocalorie levels of carbohydrate, fat, protein, and alcohol.	EX 250	I	Exam and research assignment
		EX 255	R	Exam
	the relationship between kilocalorie expenditures and weight loss.	EX 362	E	Exam
	published position statements on obesity and the risks associated with it (e.g., National Institutes of Health, American Dietetic Association, ACSM)	EX 362	R	None

	the relationship between body fat distribution patterns and health.	EX 362	E	exam
		EX 255	I	Exam
	the physiology and pathophysiology of overweight and obese participants.	EX 362	R	None
	the recommended FITT framework for participants who are overweight or obese.	EX 362	E	Exam
	comorbidities and musculoskeletal conditions associated with overweight and obesity that may require medical clearance and/or modifications to exercise testing and prescription.	EX 362	E	Exam
Skill in:	applying behavioral strategies (e.g., exercise, diet, behavioral modification strategies) for weight management.	EX 290	E	Exam
	modifying exercises for individuals limited by body size.	EX 362	E	Exam
	calculating the volume of exercise in terms of kcal/session.	EX 362	E	Exam, lab assignment
G. Prescribe and implement exercise programs for participants with controlled cardiovascular, pulmonary, and metabolic diseases and other clinical populations.				
Knowledge of:	ACSM risk stratification and exercise prescription guidelines for participants with cardiovascular, pulmonary, and metabolic diseases and other clinical populations.	EX 362	E	Exam
	the effects of diet and exercise on blood glucose levels in diabetics.	EX 362	E	Exam
	ACSM relative and absolute contraindications for initiating exercise sessions or exercise testing, and indications for terminating exercise sessions and exercise testing.	EX 362	E	Exam
	physiology and pathophysiology of cardiac disease, arthritis, diabetes mellitus, dyslipidemia, hypertension, metabolic syndrome, musculoskeletal injuries, overweight and obesity, osteoporosis, peripheral artery disease, and pulmonary disease.	EX 362	R	none
	the recommended FITT principle for the development of cardiorespiratory fitness, muscular fitness and flexibility for participants with cardiac disease, arthritis, diabetes mellitus, dyslipidemia, hypertension, metabolic syndrome, musculoskeletal injuries, overweight and obesity, osteoporosis, peripheral artery disease, and pulmonary disease.	EX 362	E	Exam, Case Study

Skill in:	progressing exercise programs, according to the FITT principle, in a safe and effective manner.	EX 362	E	Exam
	modifying the exercise prescription and/or exercise choice for individuals with cardiac disease, arthritis, diabetes mellitus, dyslipidemia, hypertension, metabolic syndrome, musculoskeletal injuries, overweight and obesity, osteoporosis, peripheral artery disease, and pulmonary disease.	EX 362	E (for some)	Exam, Case Study
	identifying improper exercise techniques and modifying exercise programs for participants with low back, neck, shoulder, elbow, wrist, hip, knee and/or ankle pain.	EX 362	E (for some)	Exam, Case Study
H. Prescribe and implement exercise programs for healthy special populations (i.e., older adults, youth, pregnant women).				
Knowledge of:	normal maturational changes, from childhood to old age, and their effects on the 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.	EX 363	I	Exam
		EX 362	I	none
	techniques for the modification of cardiovascular, flexibility, and resistance exercises based on age, functional capacity and physical condition.	EX 363	E	Exam
		EX 362	I	none
	techniques for the development of exercise prescriptions for children, adolescents and older adults with regard to strength, functional capacity, and motor skills.	EX 363	I	Exam
	the unique adaptations to exercise training in children, adolescents, and older participants with regard to strength, functional capacity, and motor skills.	EX 363	I	Exam
		EX 362	I	none
	the benefits and precautions associated with exercise training across the lifespan.	EX 363	I	Exam
		EX 362	I	none
	the recommended FITT framework for the development of cardiorespiratory fitness, muscular fitness and flexibility in apparently healthy children and adolescents.	EX 363	I	Exam
		EX 362	I	
	the effects of the aging process on the musculoskeletal and cardiovascular structures and functions during rest, exercise, and recovery.	EX 363	I	Exam
		EX 362	I	none
	the recommended FITT framework necessary for the development of cardiorespiratory fitness, muscular fitness, balance, and flexibility in apparently healthy, older adults.	EX 363	Introduced	Exam
		EX 362	I	none
	common orthopedic and cardiovascular exercise considerations for older adults.	EX 260	Partially I	
		EX 362	I	none
		EX 240	I	Exam
	the relationship between regular physical activity and the successful performance of activities of daily living (ADLs) for older adults.	EX 362	I	
	the recommended frequency, intensity, type, and duration of physical activity necessary for the development of cardiorespiratory fitness, muscular fitness and flexibility in apparently healthy pregnant women.	EX 362	E	Exam

Skill in:	teaching and demonstrating appropriate exercises for healthy populations with special considerations.	EX 363	I	Exam and lab exam
		EX 362	R	Lab Exam
	modifying exercises based on age, physical condition, and current health status	EX 363	I	Exam & lab exam
		EX 362	E	Exam, Case Study
		EX 366	R	Case Studies
I. Modify exercise prescriptions based on environmental conditions.				
Knowledge of:	the effects of a hot, cold, or high altitude environment on the physiologic response to exercise.	EX 250	I	Exam and research assignment
		EX 362	R	none
	special precautions and program modifications for exercise in a hot, cold, or high altitude environment.	EX 250	I	Exam and research assignment
		EX 362	R	none
	appropriate fluid intake during exercise in a hot, humid environments as well as cold, and altitude.	EX 250	I	Exam and research assignment
		EX 362	R	none
	the role of acclimatization when exercising in a hot or high altitude environment.	EX 250	I	Exam and research assignment
		EX 362	R	none

SLO #4: Develop evidence-based strategies for promoting physical activity initiation and maintenance

	Learning Outcome	Course	I, E, R (Introduced, Emphasized, or Reinforced)	Assessment Method
A. Optimize adoption and adherence to exercise programs and other healthy behaviors by applying effective communication techniques.				
Knowledge of:	the effective and timely uses of communication modes (e.g., email, telephone, web site, newsletters).	EX 230	I	Exam
	verbal and non-verbal behaviors that communicate positive reinforcement and encouragement (e.g., eye contact, targeted praise, empathy).	EX 290	E	Exam
	active listening techniques.	EX 290	E	none
	types of feedback (e.g., evaluative, supportive, descriptive).	EX 290	E	Exam
	learning modes (auditory, visual, kinesthetic).	EX 260	I	none
Skill in:	using active listening techniques.	EX 290	E	none
	applying teaching and training techniques to optimize participant training sessions.	EX 363	I	
	using feedback to optimize participant training sessions.	EX 290	E	none
	applying verbal and non-verbal communications with diverse participant populations.	EX 290	E	Exam
B. Optimize adoption of and adherence to exercise programs and other healthy behaviors by applying effective behavioral and motivational strategies.				
Knowledge of:	behavior change models and theories (e.g., health belief model, theory of planned behavior, socio-ecological model, transtheoretical model, social cognitive theory, cognitive evaluation theory).	EX 290	E	Exam
		EX 100	Partially I	Exam
	the basic principles involved in Motivational Interviewing.	EX 290	E	Exam
	intervention strategies and stress management techniques.	EX 290	E	Exam
	the stages of motivational readiness (e.g., Transtheoretical model).	EX 290	E	Exam
	behavioral strategies for enhancing exercise and health behavior change (e.g., reinforcement, S.M.A.R.T. goal setting, social support).	EX 100	I	Exam
		EX 290	E	Exam
	behavior modification terminology including, but not limited to, self-esteem, self-efficacy, antecedents, cues to action, behavioral beliefs, behavioral intentions, and reinforcing factors.	EX 290	E	Exam
	behavioral strategies (e.g., exercise, diet, behavioral modification strategies) for weight management.	EX 290	E	Exam
	the role that affect, mood and emotion play in exercise adherence.	EX 290	E	Exam

	common barriers to exercise initiation and compliance (e.g., time management, injury, fear, lack of knowledge, weather).	EX 290	E	Exam
	techniques that facilitate motivation (e.g., goal setting, incentive programs, achievement recognition, support).	EX 290	E	Exam
	the role extrinsic and intrinsic motivation plays in the adoption and maintenance of behavior change.	EX 290	E	Exam
	relapse prevention strategies and plans of action.	EX 290	E	Exam
	applying health coaching principles and lifestyle management techniques related to behavior change.	EX 290	E	Exam
	strategies that increase non-structured physical activity levels (e.g., stair walking, parking farther away, bike to work).	EX 290	E	Exam
Skills in:	explaining the purpose and value of understanding perceived exertion.	EX 362	E	In class exam
	using imagery as a motivational tool. (EX 290 - add)	EX 363	I	
	evaluating behavioral readiness to optimize exercise adherence.	EX 290	E	Exam
	applying the theories related to behavior change to diverse populations.	EX 290	E	Exam
	developing intervention strategies to increase self-efficacy and self-confidence.	EX 290	E	Exam
	developing reward systems that support and maintain program adherence.	EX 290	E	Exam
	setting effective behavioral goals.	EX 290	E	Exam
C. Provide educational resources to support clients in the adoption and maintenance of healthy lifestyle behaviors.				
Knowledge of:	the relationship between physical inactivity and common chronic diseases (e.g., Atherosclerosis, type II diabetes, obesity, dyslipidemia, arthritis, low back pain, hypertension).	EX 290	R	Exam
		EX 100	I	Exam
	the dynamic inter-relationship between fitness level, body composition, stress and overall health.	EX 362	I	
	modifications necessary to promote healthy lifestyle behaviors for diverse populations.	EX 290	E	Exam
	the activities of daily living (ADLs) and how they relate to overall health	EX 362	E	Case Study
	in accessing and disseminating scientifically-based, relevant health, exercise, nutrition, and wellness-related resources and information.	EX 230	E	Exam, Lit. Search
		EX 366	R	Clinical Eval. Summary
	specific, age-appropriate leadership techniques and educational methods to increase client engagement.	EX 366	I	none
	community-based exercise programs that provide social support and structured activities (e.g., walking clubs, intramural sports, golf leagues, cycling clubs).	EX 290	E	Exam
Skill in:	accessing and delivering health, exercise, and wellness-related information.	EX 230	E	Exam
	educating clients about benefits and risks of exercise and the risks of sedentary behavior.	EX 290	E	Exam
D. Provide support within the scope of practice of an ACSM Certified Exercise Physiologist and refer to other health professionals as indicated.				
Knowledge of:	the side effects of common over-the-counter and prescription drugs that may impact a client's ability to exercise.	EX 362	R	Exam
	signs and symptoms of mental health states (e.g., anxiety, depression, eating disorders) that may necessitate referral to a medical or mental health professional.	EX 363	I	

	symptoms and causal factors of test anxiety (i.e., performance, appraisal threat during exercise testing) and how they may affect physiological responses to testing.	EX 362	E	Lab Exam
	client needs and learning styles that may impact exercise sessions and exercise testing procedures.	EX 290	I	
Skill in:	communicating the need for medical, nutritional, or mental health intervention.	EX 290	I	none

SLO #5: Effectively manage fiscal, physical, and human resources for health fitness facilities

Note: A new required course is being developed to cover this SLO. The course will be added to our program for the 2017-2018 academic year.

	Learning Outcome	Course	I, E, R (Introduced, Emphasized, or Reinforced)	Assessment Method
A. Create and disseminate risk management guidelines for a health/fitness facility, department or organization to reduce member, employee and business risk.				
Knowledge of:	employee criminal background checks, child abuse clearances and drug and alcohol screenings			
	employment verification requirements mandated by state and federal laws.			
	safe handling and disposal of body fluids and employee safety (OSHA guidelines).	EX 240	I	Exam and Lab exam
	insurance coverage common to the health/fitness industry including general liability, professional liability, workers' compensation, property, and business interruption			
	sexual harassment policies and procedures.			
	interviewing techniques.			
	basic precautions taken in an exercise setting to ensure participant safety.	EX 363	I	Exam
	pre-activity screening, medical release and waiver of liability for normal and at-risk participants	EX 240	I	Exam and Lab activity
		EX 363	R	Exam
	emergency response systems and procedures (EAP).	EX 240	I	Exam and Lab Activity
	the use of signage.			
	preventive maintenance schedules and audits.			
	techniques and methods of evaluating the condition of exercise equipment to reduce the potential risk of injury.			
	the legal implications of documented safety procedures, the use of incident documents, and ongoing safety training documentation for the purpose of safety and risk management.			

	documentation procedures for CPR and AED certification for employees.			
	AED guidelines for implementation.			
	the components of the ACSM Code of Ethics and the ACSM Certified Exercise Physiologist scope of practice	EX 366	I	ACSM Code of Ethics Quiz
Skill in:	developing and disseminating a policy and procedures manual.			
	developing and implementing confidentiality policies.			
	maintenance of a safe exercise environment (e.g., equipment operation, proper sanitation, safety and maintenance of exercise areas, and overall facility maintenance).			
	the organization, communication, and human resource management required to implement risk management policies and procedures.			
	training employees to identify high risk situations.			
B. Create an effective injury prevention program and ensure that emergency policies and procedures are in place.				
Knowledge of:	emergency procedures (i.e., telephone procedures, written emergency procedures (EAP), personnel responsibilities) in a health and fitness setting.	EX 240	I	Exam and lab activity/exam
	basic first-aid procedures for exercise-related injuries, such as bleeding, strains/sprains, fractures, and exercise intolerance (dizziness, syncope, heat and cold injuries).	EX 240	I	Exam and lab activity/exam
	the Exercise Physiologist's responsibilities and limitations, and the legal implications of carrying out emergency procedures.	EX 240	I	Exam and lab activity/exam
	safety plans, emergency procedures and first-aid techniques needed during fitness evaluations, exercise testing, and exercise training.	EX 240	I	Exam and lab activity/exam
	potential musculoskeletal injuries (e.g., contusions, sprains, strains, fractures), cardiovascular/pulmonary complications (e.g., tachycardia, bradycardia, hypotension/hypertension, dyspnea) and metabolic abnormalities (e.g., fainting/syncope, hypoglycemia/hyperglycemia, hypothermia/hyperthermia).	EX 240	I	Exam and lab activity/exam
	the initial management and first-aid techniques associated with open wounds, musculoskeletal injuries, cardiovascular/pulmonary complications, and metabolic disorders.	EX 240	I	Exam and lab activity/exam
	emergency documentation and appropriate document utilization.	EX 240	I	Exam and lab activity/exam
Skill in:	applying basic first-aid procedures for exercise-related injuries, such as bleeding, strains/sprains, fractures, and exercise intolerance (dizziness, syncope, heat and cold injuries).	EX 240	I	Exam and lab activity/exam
	applying basic life support, first aid, cardiopulmonary resuscitation, and automated external defibrillator techniques.	EX 240	I	Exam and lab activity/exam

	designing an evacuation plan.	EX 240	I	Exam and lab activity/exam
	demonstrating emergency procedures during exercise testing and/or training.	EX 240	I	Exam and lab activity/exam
C. Manage human resources in accordance with leadership, organization, and management techniques.				
Knowledge of:	industry benchmark compensation and employee benefit guidelines.			
	federal, state and local laws pertaining to staff qualifications and credentialing requirements.			
	techniques for tracking and evaluating member retention.			
Skill in:	applying policies, practices and guidelines to efficiently hire, train, supervise, schedule and evaluate employees.			
	applying conflict resolution techniques.			
D. Manage fiscal resources in accordance with leadership, organization, and management techniques.				
Knowledge of:	fiduciary roles and responsibilities inherent in managing an exercise and health promotion program.			
	principles of financial planning and goal setting, institutional budgeting processes, forecasting, and allocation of resources.			
	basic software systems that facilitate accounting (e.g., Excel)			
	industry benchmarks for budgeting and finance.			
	basic sales techniques that promote health, fitness, and wellness services.			
Skill in:	efficiently managing financial resources and performing related tasks (e.g., planning, budgeting, resource allocation, revenue generation).			
	administering fitness- and wellness-related programs within established budgetary guidelines			
E. Develop and execute a marketing plan to promote programs, services and facilities.				
Knowledge of:	accepted guidelines, standards, and regulations used to establish policies and procedures for the management of health fitness facilities.			
	facility design and operation principles.			
	facility and equipment maintenance guidelines.			
	documentation techniques for health fitness facility management.			
	federal, state, and local laws as they relate to health fitness facility management.			
Skill in:	applying marketing techniques that promote client retention.			
	applying marketing techniques that attract new clients			
	designing and writing promotional materials.			
	collaborating with community and governmental agencies and organizations.			
	providing customer service.			

F. Use effective communication techniques to develop professional relationships with other allied health professionals (e.g., nutritionists, physical therapists, physicians, nurses).				
Knowledge of:	communication styles and techniques.			
	networking techniques.			
Skill in:	planning meetings.			