

GEORGE MASON UNIVERSITY
School of Recreation, Health, and Tourism

KINE 350-003: Exercise Prescription and Programming (3)
Fall 2014

DAY/TIME: T/TH 10:30-11:15 am LOCATION: 248 Bull Run Hall
PROFESSOR: Dr. Joel Martin EMAIL ADDRESS: jmarti38@gmu.edu
OFFICE LOCATION: 207 Bull Run Hall PHONE NUMBER: 703-993-9257
OFFICE HOURS: Wednesday 1-3 pm FAX NUMBER: 703-993-2025

PREREQUISITES

KINE 200, ATEP 300, KINE 310, KINE 370

COURSE CATALOG DESCRIPTION

This course provides study of the design and implementation of exercise programs for the general population.

COURSE OBJECTIVES

At the completion of this course students should be able to:

1. Implement the principles of specificity and progressive overload into exercise program design.
2. Apply the theories of behavior change and motivational strategies to exercise adherence.
3. Apply results of fitness assessments to create fitness programs.
4. Develop single session and long-term fitness training plans for apparently healthy, asymptomatic clients.

COURSE OVERVIEW

Students are held to the standards of the George Mason University Honor Code. This course will include both lecture and laboratory instruction. Students are expected to attend all class sections, actively participate in class discussions, complete in-class exercises, and fulfill all assignments. Assignments must be turned in at the beginning of class on the specified date due or **no credit will be given**.

Since this course requires significant active participation, students must be dressed in appropriate fitness wear during some class sessions. Notification will be given when active dress is required.

Many of the concepts covered in this course will prepare the student to take the American College of Sports Medicine (ACSM) Health Fitness Specialist (HFS) exam; however this is NOT a preparation course for the ACSM-HFS exam.

ACCREDITATION STANDARDS

This course meets the Commission on Accreditation of Allied Health Education Programs (CAAHEP) requirements and covers the following American College of Sports Medicine's Knowledge-Skills-Abilities (KSA's):

KSA	Description	Lecture, Lab, or both
	GENERAL POPULATION/CORE: EXERCISE PHYSIOLOGY AND RELATED EXERCISE SCIENCE	

1.1.11	Knowledge of the following cardiorespiratory terms: ischemia, angina pectoris, tachycardia, bradycardia, arrhythmia, myocardial infarction, claudication, dyspnea and hyperventilation.	Lecture
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.	Both
1.1.13	Knowledge of the heart rate, stroke volume, cardiac output, blood pressure, and oxygen consumption responses to exercise.	Both
1.1.18	Knowledge of the differences in cardiorespiratory response to acute graded exercise between conditioned and unconditioned individuals.	Lecture
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.	Both
1.1.31	Knowledge of how the principles of specificity and progressive overload relate to the components of exercise programming.	Lecture
1.1.32	Knowledge of the concept of detraining or reversibility of conditioning and its implications in exercise programs.	Lecture
1.1.33	Knowledge of the physical and psychological signs of overreaching/overtraining and to provide recommendations for these problems.	Lecture
	GENERAL POPULATION/CORE: HEALTH APPRAISAL, FITNESS AND CLINICAL EXERCISE TESTING	
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.	Lecture
1.3.2	Knowledge of the value of the health/medical history.	Lecture
1.3.3	Knowledge of the value of a medical clearance prior to exercise participation.	Lecture
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.	Lecture
1.3.5	Knowledge of relative and absolute contraindications to exercise testing or participation.	Lecture
1.3.6	Knowledge of the limitations of informed consent and medical clearance prior to exercise testing.	Lecture
1.3.10	Knowledge of calibration of a cycle ergometer and a motor-driven treadmill.	Lecture
1.3.11	Ability to locate the brachial artery and correctly place the cuff and stethoscope in position for blood pressure measurement.	Lab
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.	Lecture
	GENERAL POPULATION/CORE EXERCISE PRESCRIPTION AND PROGRAMMING	
1.7.2	Knowledge of the benefits and precautions associated with exercise training in apparently healthy and controlled disease.	Lecture
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.	Lecture

1.7.12	Knowledge of the principles of overload, specificity, and progression and how they relate to exercise programming.	Lecture
1.7.14	Knowledge of approximate METs for various sport, recreational, and work tasks.	Lecture
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).	Lecture
1.7.17	Knowledge of the importance of recording exercise sessions and performing periodic evaluations to assess changes in fitness status.	Lecture
1.7.18	Knowledge of the advantages and disadvantages of implementation of interval, continuous, and circuit training programs.	Lecture
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.	Lecture
1.7.25	Ability to identify and apply methods used to monitor exercise intensity, including heart rate and rating of perceived exertion.	Lecture
1.7.27	Ability to differentiate between the amount of physical activity required for health benefits and/or for fitness development.	Lecture
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).	Lecture
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).	Lecture
1.7.33	Ability to design, implement, and evaluate individualized and group exercise programs based on health history and physical fitness assessments.	Lecture
1.7.35	Ability to apply energy cost, $\dot{V}O_2$, METs, and target heart rates to an exercise prescription.	Lecture
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).	Lecture
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).	Lecture
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.	Lecture
1.7.39	Ability to prescribe exercise intensity based on $\dot{V}O_2$ data for different modes of exercise, including graded and horizontal running and walking, cycling, and stepping exercise.	Lecture
1.7.40	Ability to explain and implement exercise prescription guidelines for apparently healthy clients, increased risk clients, and clients with controlled disease.	Lecture
1.7.44	Ability to design training programs using interval, continuous, and circuit training programs.	Lecture
1.7.45	Ability to describe the advantages and disadvantages of various commercial exercise equipment in developing cardiorespiratory fitness, muscular strength, and muscular endurance.	Lecture
1.7.46	Ability to modify exercise programs based on age, physical condition, and current health status.	Lecture
	CARDIOVASCULAR: PATHOPHYSIOLOGY AND RISK FACTORS	
2.2.1	Knowledge of cardiovascular risk factors or conditions that may require consultation with medical personnel before testing or training, including	Lecture

	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.	
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NATURE OF COURSE DELIVERY

This course will include both lecture and laboratory instruction

SPECIAL REQUIREMENTS:

This course requires a laboratory fee of \$25.00 payable to George Mason University. This fee is due at the beginning of the second-class meeting (August 29, 2013) and you need to pay online at: <http://rht.gmu.edu/course-fees> or you can bring a check to Lindsey Olson in 220 Bull Run Hall. You should make your check payable to George Mason University and in the Memo section write in “KINE 350 Lab Fee.” A receipt will be issued to you upon payment.

REQUIRED READINGS:

Heyward, V.H. (2010). *Advanced fitness assessment and exercise prescription (6th edition)*. Champaign, IL: Human Kinetics.

EVALUATION

Requirement	Percentage
Exams (3) <i>Exams will be T/F, multiple choice and short answer. Each exam will cover approximate one third of the semester's material (Objectives 1,2,3,4)</i>	40
Lab Reports <i>Lab reports will be written in response to each lab activity. Specific questions will be given for students to address (Objective 3)</i>	20
Case Reports/ Homework <i>Case reports and homework will emphasize application of course material into mock-client scenarios (Objectives 1,2,3,4)</i>	25
Attendance, Participation & Professionalism <i>Attendance will be taken. Students not participating in class activities will be counted as absent (Objectives 1,2,3,4)</i>	10
Quizzes <i>Quizzes may be given unannounced at various times during the semester. Questions will be based on lecture content, book readings and articles posted on Blackboard (Objectives 1,2,3,4)</i>	5

Grading Scale

A = 93.5 – 100	B+ = 87.5 – 89.4	C+ = 77.5 – 79.4	D = 59.5 – 69.4
A- = 89.5 – 93.4	B = 82.5 – 87.4	C = 72.5 – 77.4	F = 0 – 59.4
	B- = 79.5 – 82.4	C- = 69.5 – 72.4	

TENTATIVE COURSE SCHEDULE

Week	Topic	Reading/Assignment Due
1 (8/26 & 8/28)	Introduction / Physical Activity, Health and Chronic Disease / Preliminary Health Screening and Risk Classification	Chapters 1 & 2
2 (9/2 & 9/4)	Principles of Assessment, Prescription, and Exercise Program Adherence / Flexibility and Movement Screens Overview / Flexibility Program Design	Chapters 3, 10 & 11
3 (9/9 & 9/11)	Movement Screen Lab – FMS & Running Screen	Articles on Blackboard
4 (9/16 & 9/18)	Assessing Cardiorespiratory Fitness / Submaximal VO ₂ max tests	1) Chapter 4 2) Movement Screen Lab Report Due
5 (9/23 & 9/25)	Submaximal VO ₂ max tests / VO ₂ max test	1) Articles on Blackboard 2) Submaximal Tests Lab Report due
6 (9/30 & 10/2)	VO ₂ max test / Exam 1	Maximal Test Lab Report Due
7 (10/7 & 10/9)	Basic Principles of Training Program Design / Designing Cardiorespiratory Exercise Programs / Measures of Intensity, Frequency, and Duration / Progression	1) Chapter 5 2) Articles on Blackboard
8 (10/16)	Metabolic Equations / <i>Case Study</i>	Article on Blackboard
9 (10/21 & 10/23)	Lactate Threshold	Metabolic Equations Homework Due
10 (10/28 & 10/30)	Exam 2 / <i>Case Study</i>	1) Article on Blackboard 2) Lactate Threshold Lab Report Due

11 (11/4 & 11/6)	Assessing Muscular Fitness	Chapter 6
12 (11/11 & 11/13)	Designing Resistance Training Programs / Compatibility between aerobic and resistance exercise	1) Chapter 7 2) Muscular Assessment Lab Report Due
13 (11/18 & 11/20)	Assessing Body Composition / Designing Weight Management and Body Composition Programs	Chapters 8 & 9
14 (11/25)	HIIT training and weight loss / Multi-modal training and workout design	1) Article on Blackboard 2) Weight Management Homework Due
15 (12/2 & 12/4)	HIIT training and weight loss / Multi-modal training and workout design / Electrocardiogram	Article on Blackboard
Finals Week	Exam 3, Thursday, 12/11, 7:30 – 10:15 am	

Note: Faculty reserves the right to alter the schedule as necessary.

Student Expectations

- Students must adhere to the guidelines of the George Mason University Honor Code [See <http://oai.gmu.edu/honor-code/>].
- Students with disabilities who seek accommodations in a course must be registered with the George Mason University Office of Disability Services (ODS) and inform their instructor, in writing, at the beginning of the semester [See <http://ods.gmu.edu/>].
- Students must follow the university policy for Responsible Use of Computing [See <http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>].
- Students are responsible for the content of university communications sent to their George Mason University email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.
- Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.

Campus Resources

- The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance [See <http://caps.gmu.edu/>].
- The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing [See <http://writingcenter.gmu.edu/>].
- For additional information on the College of Education and Human Development, School of Recreation, Health, and Tourism, please visit our website [See <http://rht.gmu.edu/>].

PROFESSIONAL BEHAVIOR: Students are expected to exhibit professional behaviors and dispositions at all times.

CORE VALUES COMMITMENT: The College of Education and Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles.

