

GEORGE MASON UNIVERSITY  
School of Recreation, Health, and Tourism

KINE 380- 001 - Exercise Prescription and Programming for Special Populations (3)  
Fall 2014

DAY/TIME: T/Th 1:30-2:45pm LOCATION: BRH 246  
PROFESSOR: Dr. Charlie Robison EMAIL ADDRESS: crobiso4@gmu.edu  
OFFICE LOCATION: Bull Run Hall 205 PHONE NUMBER: 703-993-7115  
OFFICE HOURS: M/W 1:30pm- 3:00pm FAX NUMBER: 703-933-2025  
or by appointment

PREREQUISITES  
KINE 310, KINE 350

#### COURSE DESCRIPTION

This course provides study of the pathophysiology of common diseases and conditions with concentration in the design and implementation of exercise programs.

#### COURSE OBJECTIVES

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

1. Demonstrate knowledge about the pathophysiology, diagnosis and treatment of the major chronic diseases and conditions.
2. Understand how special populations respond to acute and chronic exercise.
3. Design appropriate exercise programs for individuals with chronic diseases and conditions.

#### COURSE OVERVIEW

Students are held to the standards of the George Mason University Honor Code. You 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**.

#### 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
	<b>GENERAL POPULATION/CORE: EXERCISE PHYSIOLOGY AND RELATED EXERCISE SCIENCE</b>	
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.	Lecture
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.	Lecture

	<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).	Lecture
1.2.3	Knowledge of risk factors that may be favorably modified by physical activity habits.	Lecture
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.	Lecture
1.2.5	Knowledge of plasma cholesterol levels for adults as recommended by the National Cholesterol Education Program.	Lecture
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.	Lecture
1.2.7	Knowledge of the atherosclerotic process, the factors involved in its genesis and progression, and the potential role of exercise in treatment.	Lecture
1.2.8	Knowledge of how lifestyle factors, including nutrition and physical activity, influence lipid and lipoprotein profiles.	Lecture
	<b>GENERAL POPULATION/CORE: HEALTH APPRAISAL, FITNESS AND CLINICAL EXERCISE TESTING</b>	
1.3.22	Ability to modify protocols and procedures for cardiorespiratory fitness tests in children, adolescents, and older adults.	Lecture
	<b>GENERAL POPULATION/CORE: 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.	Lecture
1.4.3	Knowledge of the basic properties of cardiac muscle and the normal pathways of conduction in the heart.	Lecture
	<b>GENERAL POPULATION/CORE: 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.	Lecture
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.	Lecture
	<b>GENERAL POPULATION/CORE EXERCISE PRESCRIPTION AND PROGRAMMING</b>	
1.7.2	Knowledge of the benefits and precautions associated with exercise training in apparently healthy and controlled disease.	Lecture
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.	Lecture
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.	Lecture
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.	Lecture
1.7.26	Ability to describe modifications in exercise prescriptions for individuals with functional disabilities and musculoskeletal injuries.	Lecture

1.7.34	Ability to modify exercises based on age, physical condition and cognitive status.	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
1.7.41	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.	Lecture
1.7.46	Ability to modify exercise programs based on age, physical condition, and current health status.	Lecture
	<b>GENERAL POPULATION/CORE: HUMAN BEHAVIOR AND COUNSELING</b>	
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.	Lecture
	<b>GENERAL POPULATION/CORE: SAFETY, INJURY PREVENTION, AND EMERGENCY PROCEDURES</b>	
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).	Lecture
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.	Lecture
	<b>GENERAL POPULATION/CORE: PROGRAM ADMINISTRATION, QUALITY ASSURANCE, AND OUTCOME ASSESSMENT</b>	
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.	Lecture
	<b>CARDIOVASCULAR: PATHOPHYSIOLOGY AND RISK FACTORS</b>	
2.2.2	Knowledge of the pathophysiology of myocardial ischemia and infarction.	Lecture
2.2.3	Knowledge the pathophysiology of stroke, hypertension, and hyperlipidemia.	Lecture
2.2.4	Knowledge the effects of the above diseases and conditions on the cardiorespiratory responses at rest and during exercise.	Lecture
	<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.	Lecture
	<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.	Lecture
	<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.	Lecture
	<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.	Lecture
	<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.	Lecture

#### NATURE OF COURSE DELIVERY

Face to face

#### REQUIRED READINGS

Ehrman, J.K., Gordon, P.M., Vistch, P.S. & Keteyan, S.J. (2013). *Clinical Exercise Physiology*, 3<sup>rd</sup> Ed. Human Kinetics, Champaign, IL.

#### EVALUATION

Requirements	Percentage
Written Examinations (4) <i>Exams will be T/F, multiple-choice and short answer. Each exam will cover approximate one quarter of the semester's material (Objectives 1,2,3)</i>	55
Case Studies (8) <i>Scenarios relating to specific diseases or conditions will be given with discussion questions to follow. Students will respond in paragraph form (Objectives 1,2,3)</i>	30
Journal Article Review <i>Students will write a report detailing a peer reviewed-research article related to exercise and a special population (Objectives 1,2)</i>	10
Professionalism <i>Kinesiology students are expected to behave in a professional manner. Depending upon the setting professionalism may appear different, but typically consists of similar components. For undergraduate Kinesiology students in a classroom setting professionalism generally comprises the following components: <b>Attendance</b> – Show up on time to class and pay attention. If you cannot attend a class for a legitimate reason please notify the instructor ahead of time. If you have to unexpectedly miss a class due to something out of your control, contact the instructor within 24 hours to notify them what happened and to see if there is anything you need to do to make up your absence. <b>Communication</b> – When communicating with the instructor and classmates, either face-to-face or via the assigned George Mason University email address, students should address the other person appropriately, use appropriate language and maintain a pleasant demeanor. <b>Participation</b> – Participate in class discussions and activities. Demonstrate that you have an interest in the subject matter. <b>Responsibility/Accountability</b> – Professionals take responsibility for their actions and are</i>	5

accountable. This can occur at multiple levels but generally consists of completing assignments on time, submitting work that is of the appropriate quality, honoring commitments and owning up to mistakes.

**Honesty/Integrity** – Students are expected to be honest with the instructor, classmates and themselves. Professionals keep their word when committing to something and act in an ethical manner.

**Self-Improvement/Self-awareness** – One should be aware of their strengths/weaknesses and constantly seek to improve. Professionals regularly seek out opportunities to increase their knowledge and improve their current skill set. (Objectives 1,2,3)

### Grading Scale

A = 94 – 100	B+ = 88 – 89	C+ = 78 – 79	D = 60 – 69
A- = 90 – 93	B = 84 – 87	C = 74 – 77	F = 0 – 59
	B- = 80 – 83	C- = 70 – 73	

### TENTATIVE COURSE SCHEDULE

Week	Topic	Reading/Assignment
1	Course Introduction, Graded Exercise Testing	Chapter 5
2	Acute Coronary Syndromes, Revascularization	Chapter 12 & 13, Case Study
3	Chronic Heart Failure, Cardiac Electrical Pathophysiology	Chapter 14 & 16, Case Study
4	<b>Exam</b> , Hypertension	Chapter 8
5	Dyslipidemia, Diabetes	Chapter 9 & 6, Case Study
6	Metabolic Syndrome, Obesity	Chapter 10 & 7, Case Study
7	<b>Exam</b>	
8	Chronic Obstructive Pulmonary Disease	Chapter 17 & 18
9	Asthma, Cystic Fibrosis	Chapter 18 & 19, Case Study
10	Cancer	Chapter 20, Case Study
11	Pregnancy	Posted on Blackboard
12	Children, Aging, <b>Exam</b>	Chapter 29 & 30, Case Study
13	Depression, Intellectual Disabilities	Chapter 31 & 32, Case Study
14	Stroke, Arthritis, Osteoporosis	Chapter 28, 22 & 23
15	Nonspecific Low Back Pain, <b>Exam</b>	Chapter 24
	Student Presentations, December 16, 1:30-4:15pm	Journal Article Review due

*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/the-mason-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.

