

George Mason University
College of Education and Human Development
Kinesiology

KINE 350.002-Exercise Prescription and Programming
3 Credits, Spring 2017
MW 12:00-1:15 Bull Run Hall 249 – Science and Technology Campus

Faculty

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Prerequisites/Corequisites

KINE 200, ATEP 300, KINE 310, KINE 370

University Catalog Course Description

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

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) Certified Exercise Physiologist (EP-C) exam; however, this is NOT a preparation course for the ACSM-EP-C exam.

Course Delivery Method

This course will be delivered using a lecture and lab format.

Learner Outcomes or Objectives

This course is designed to enable students to do the following:

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.

Professional Standards

Upon completion of this course, students will have met the following professional standards: 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
	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.
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.
1.1.13	Knowledge of the heart rate, stroke volume, cardiac output, blood pressure, and oxygen consumption responses to exercise.
1.1.18	Knowledge of the differences in cardiorespiratory response to acute graded exercise between conditioned and unconditioned individuals.
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.
1.1.31	Knowledge of how the principles of specificity and progressive overload relate to the components of exercise programming.
1.1.32	Knowledge of the concept of detraining or reversibility of conditioning and its implications in exercise programs.
1.1.33	Knowledge of the physical and psychological signs of overreaching/overtraining and to provide recommendations for these problems.
	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.
1.3.2	Knowledge of the value of the health/medical history.
1.3.3	Knowledge of the value of a medical clearance prior to exercise participation.
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.
1.3.5	Knowledge of relative and absolute contraindications to exercise testing or participation.
1.3.6	Knowledge of the limitations of informed consent and medical clearance prior to exercise testing.
1.3.10	Knowledge of calibration of a cycle ergometer and a motor-driven treadmill.
1.3.11	Ability to locate the brachial artery and correctly place the cuff and stethoscope in position for blood pressure measurement.
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.

	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.
1.7.10	Knowledge of the recommended intensity, duration, frequency, and type of physical activity necessary for development of cardiorespiratory fitness in an
1.7.12	Knowledge of the principles of overload, specificity, and progression and how they relate to exercise programming.
1.7.14	Knowledge of approximate METs for various sport, recreational, and work tasks.
1.7.15	Knowledge of the components incorporated into an exercise session and the proper sequence (i.e., pre-exercise evaluation, warm-up, aerobic stimulus
1.7.17	Knowledge of the importance of recording exercise sessions and performing periodic evaluations to assess changes in fitness status.
1.7.18	Knowledge of the advantages and disadvantages of implementation of interval, continuous, and circuit training programs.
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.
1.7.25	Ability to identify and apply methods used to monitor exercise intensity, including heart rate and rating of perceived exertion.
1.7.27	Ability to differentiate between the amount of physical activity required for health benefits and/or for fitness development.
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
1.7.30	Ability to identify proper and improper technique in the use of cardiovascular conditioning equipment (e.g., stairclimbers, stationary cycles, treadmills,
1.7.33	Ability to design, implement, and evaluate individualized and group exercise programs based on health history and physical fitness assessments.
1.7.35	Ability to apply energy cost, VO ₂ , METs, and target heart rates to an exercise prescription.
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
1.7.37	Ability to convert between absolute (mL.min ⁻¹ or L.min ⁻¹) and relative oxygen costs (mL.kg ⁻¹ .min ⁻¹ , and/or METs).
1.7.38	Ability to determine the energy cost for given exercise intensities during horizontal and graded walking and running stepping exercise, cycle ergometry,
1.7.39	Ability to prescribe exercise intensity based on VO ₂ data for different modes of exercise, including graded and horizontal running and walking, cycling, and
1.7.40	Ability to explain and implement exercise prescription guidelines for apparently healthy clients, increased risk clients, and clients with controlled
1.7.44	Ability to design training programs using interval, continuous, and circuit training programs.
1.7.45	Ability to describe the advantages and disadvantages of various commercial exercise equipment in developing cardiorespiratory fitness, muscular strength,
1.7.46	Ability to modify exercise programs based on age, physical condition, and current health status.
	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
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Required Texts

Heyward, V.H. (2014). *Advanced fitness assessment and exercise prescription (7th edition)*. Champaign, IL: Human Kinetics. ISBN-13: 9781450466004.

Course Performance Evaluation

Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard, Tk20, hard copy).

• **Assignments and Examinations**

Exams

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)

Lab Activities and Reports

Lab activities will provide students with hands on experience and application of material covered in class. Reports will be submitted approximately 1 week after each lab is performed. (Objective 3)

Homework

Homework will expose students to research related to topics covered in class (Objectives 1,2,3,4)

• **Other Requirements**

Attendance, Participation & Professionalism

Attendance will be documented. Students not participating in class activities will be counted as absent (Objectives 1,2,3,4)

Client Consultation, Assessment and Exercise Prescription Project*

Students will work with a client and provide a consultation, fitness assessment and design an exercise prescription appropriate for the client. (Objectives 1,2,3,4)

• **Course Performance Evaluation Weighting**

Evaluation Type	Number	Percentage of Grade
Exams	3	30%
Lab Activities and Reports	6	20%
Homework	6	10%
Attendance, Participation, and Professionalism	-----	10%
Client Consultation and Exercise Prescription Project	-----	30%

- **Grading**

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	

Professional Dispositions

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

Attendance – 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.

Participation – Participate in class discussions and activities. Demonstrate that you have an interest in the subject matter.

Attendance and Participation Evaluation: Attendance will be documented for all classes.

Communication – 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.

Responsibility/Accountability – Professionals take responsibility for their actions and are 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.

Communication, Responsibility/Accountability, Honesty/Integrity, and Self-Improvement/Self-awareness Evaluation: Violations will be documented and student will be notified. Each violation will result in the loss of 1 point from final grade

Class Schedule

Date	Topic	Assignments Due
Jan 23	Introduction / Physical Activity, Health, and Chronic Disease /	
Jan 25	Preliminary Health Screening and Risk Classification / Exercise Program Adherence	
Jan 30	Principles of Assessment and Prescription, / Flexibility Program Design / Movement Screen Overview	
Feb 1	Flexibility & Movement Screen Lab – Common Flexibility Tests, FMS & Running Screen	HW 1 Due – BB FMS Materials on Blackboard
Feb 6	Assessing Cardiorespiratory Fitness	Flexibility & Movement Screen Lab Due-Hard Copy
Feb 8	Submaximal VO ₂ Lab	HW 2 Due- BB
Feb 13	Assessing Muscular Fitness Lecture	
Feb 15	Assessing Muscular Fitness Lab <i>Location: Freedom Center</i>	Submaximal VO₂ Lab Due –Hard Copy
Feb 20	Basic Principles of Training Program Design /Measures of Intensity, Frequency, and Duration	Client Reflection 1 Due - BB
Feb 22	Cardiorespiratory Workout & Program Design / Lab Part 1	Assessing Muscular Fitness Lab Due – Hard Copy
Feb 27	Cardiorespiratory Workout & Program Design Lab Part 2	
Mar 1	Review Exam 1 / Metabolic Equations	
Mar 6	Exam 2	HW 3 Due - BB
Mar 8	Email instructor client assessment protocol for review/approval	Client Fitness Assessment Proposal - Email

Mar 13	Spring Break	
Mar 15	Spring Break	
Mar 20	Designing ACSM Guideline Based Resistance Training Programs – Lecture pt 1	Cardiorespiratory Program Design Lab Due-Hard Copy
Mar 22	Designing ACSM Guideline Based Resistance Training Programs -Lecture pt 2	Client Reflection 2 – BB;
Mar 27	Resistance Training Workout & Program Design Lab – Part 2 <i>Location: Freedom Center</i>	HW 4 Due - BB
Mar 29	Compatibility Between Aerobic and Resistance Exercise - Concurrent Training	
Apr 3	Assessing Body Composition / Designing Weight Management and Body Composition Programs / Review for Exam 2	Resistance Training Workout & Program Design Lab Due-Hard Copy
Apr 5	Email instructor exercise program for review/approval Exam 2	Client Exercise Program Proposal -E-mail; HW 5 - BB
Apr 10	Corrective Exercise Overview – Common Movement Impairments & Corrective Exercise Techniques Corrective Exercise Overview	
Apr 12	HIIT Training and Weight Loss / Multi-modal Training and Workout Design / HIIT and Multi-modal Training Lab Part 1	
Apr 17	HIIT and Multi-modal Training Lab Part 2 <i>Location: Freedom Center</i>	HIIT & Multi-modal Training Articles on Blackboard
Apr 19	ACSM Practice Test	Client Reflection 3 - BB
Apr 24	Review Exam 3	HIIT/MultiModal Lab Due-Hard Copy
Apr 26	Exam 3	HW 6 Due-BB
May 1	Final Client Presentations	
May 3	Final Client Presentations	Client Reflection 4 Due -BB

Note: Faculty reserves the right to alter the schedule as necessary, with notification to students.

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: <http://cehd.gmu.edu/values/>.

GMU Policies and Resources for Students

Policies

- Students must adhere to the guidelines of the Mason Honor Code (see <http://oai.gmu.edu/the-mason-honor-code/>).
- 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 Mason 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 with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor (see <http://ods.gmu.edu/>).
- Students must follow the university policy stating that all sound emitting devices shall be silenced during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to Tk20 should be directed to tk20help@gmu.edu or <https://cehd.gmu.edu/aero/tk20>. Questions or concerns regarding use of Blackboard should be directed to <http://coursesupport.gmu.edu/>.
- The Writing Center 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/>).
- The 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 Student Support & Advocacy Center staff helps students develop and maintain healthy lifestyles through confidential one-on-one support as well as through interactive programs and resources. Some of the topics they address are healthy relationships, stress management,

nutrition, sexual assault, drug and alcohol use, and sexual health (see <http://ssac.gmu.edu/>). Students in need of these services may contact the office by phone at 703-993-3686. Concerned students, faculty and staff may also make a referral to express concern for the safety or well-being of a Mason student or the community by going to <http://ssac.gmu.edu/make-a-referral/>.

For additional information on the College of Education and Human Development, please visit our website <https://cehd.gmu.edu/>

