

George Mason University
College of Education and Human Development
Kinesiology

KINE 350.002-Exercise Prescription and Programming
3 Credits, Fall 2019

Monday, Wednesday/10:30-11:45am, Katherine G. Johnson Hall 131 – SciTech Campus

Faculty

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Prerequisites/Co-requisites

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.
5. Recognize the importance of exercise session documentation.
6. Apply metabolic calculations to determine the intensity, duration and caloric expenditure of

exercise.

7. Analyze the utility of wearable physical activity monitors.

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.
1.3.20	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

1.7.1	Knowledge of the relationship between the number of repetitions, intensity, number of sets, and rest with regard to strength training.
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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
1.7.11	Knowledge of and the ability to describe exercises designed to enhance muscular strength and/or endurance of specific major muscle groups.
1.7.12	Knowledge of the principles of overload, specificity, and progression and how they relate to exercise programming.
1.7.13	Knowledge of the various types of interval, continuous, and circuit training programs.
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 phase, cool-down, muscular strength and/or endurance, and flexibility).
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
1.7.33	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 disease.
1.7.43	Ability to evaluate flexibility and prescribe appropriate flexibility exercises for all major muscle groups.
1.7.44	Ability to design training programs using interval, continuous, and circuit training programs.
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

Required Texts

Griffin, JC (2015). Client-Centered Exercise Prescription. 3rd Edition. Human Kinetics. ISBN-13: 9781450453325

ACSM's Guidelines for Exercise Testing and Prescription. 10th Edition. Lippincott Williams & Wilkins (2017). ISBN-13: 9781496339065

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).

Evaluation

Evaluation Type	Points	Total
Assignments (6)	30	180
Attendance, Participation, and Professionalism	30	30
Client Project (1)	100	100
Client Project Check In (4)	10	40
Quizzes (5)	50	250
Final Exam (1)	100	100
		700

Description of Evaluation

Assignments

Assignments will be given throughout the semester which will pertain to subject matter being covered. Details will be provided during class time. (Objectives 1, 2, 3, 4, 5, 6, 7)

Attendance, Participation, & Professionalism

Your attendance, participation and professionalism in class will be recorded. If a significant number of classes are missed or your behavior is not engaged and professional, points will be deducted from your grade. (Objectives 1, 2, 3, 4, 5, 6, 7)

Client Project

Students will work with a client and provide a consultation, fitness assessment and design an exercise prescription appropriate for the client. Students will present case study to class. (Objectives 1,2,3,4,5,6)

Quizzes

Quizzes will be multiple choice, T/F, short answer format and given periodically throughout the semester. (Objectives 1, 2, 3, 4, 5, 6)

Final Exam

The final exam will be cumulative exam covering material throughout the semester. This material will be similar to that presented on the quizzes throughout the semester. This exam will help you have a better understand of certification tests that you will be required to take in the future. (Objectives 1, 2, 3, 4, 5, 6, 7)

Grading Scale

A = 94 – 100	B+ = 87 – 89	C+ = 77 – 79	D = 60 – 69
A- = 90 – 93	B = 84 – 86	C = 74 – 76	F = 0 – 59
	B- = 80 – 83	C- = 70 – 73	

Final letter grades do not round up. For example, a final percentage of 89.99% will result in a B+.

Professional Dispositions

See <https://cehd.gmu.edu/students/polices-procedures/>

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Class Schedule

Week	Topic	Readings/Assignments
1	Syllabus; Review of Fitness Assessments; Behavioral Theories & Strategies for Promoting Exercise	ACSM Ch.12
2	Behavioral Theories & Strategies for Promoting Exercise	ACSM Ch. 12 Griffin – Ch. 1 & 2
3	Activity Counseling Quiz #1	Goal Setting Assignment Due
4	Principle of Program Design: FITT-VP Lab #1 Physical Activity Monitors	
5	Physical Activity Monitor Presentations Exercise Rx – Cardiorespiratory Fitness	ACSM Ch. 6 Griffin Ch. 6
6	Exercise Rx – Cardiorespiratory Fitness Lab #2: Cardio Rx	Case Study #1 Due

7	Exercise Rx - Cardiorespiratory fitness & H.I.I.T. Quiz #2	
8	Exercise Rx – Resistance Training	ACSM Ch. 6 Griffin Ch. 7
9	Exercise Rx – Resistance Training Lab #3: Muscular Fitness Rx	Case Study #2 Due
10	Quiz #4 Exercise Rx – Flexibility & Neuromotor	ACSM Ch. 6 Griffin Ch. 8
11	Exercise Rx – Weight Management Lab #4: Flexibility, NeuromotorRx	Case Study #3 Due
12	Quiz #5 Environmental concerns for exercise programming	Case Study #4 Due ACSM Ch. 8
13	Prevention of Injuries Catch Up/Review	
14	Client Project Presentations	Client Projects Due
15	Final Exam	

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>