

George Mason University
College of Education and Human Development
Kinesiology

KINE 350.B01-Exercise Prescription and Programming
3 Credits, Summer 2019
TR 10:30AM-1:10 PM Colgan Hall 204 – 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.
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.

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

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

Recommended

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

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

Mid-Term Exams

Exams will be T/F, multiple choice and short answer. Each exam will cover approximate one half of the semester's material (Objectives 1,2,3,4,5,6,7)

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. (Objectives 1,3,4,6,7)

Homework

Homework will expose students to research related to topics covered in class (Objectives 1,2,3,4,6,7)

Client Case Study

Students will be provided data from a fictitious client and design an exercise prescription appropriate for the client. Students will present case study to class at the end of the semester. (Objectives 1,2,3,4,5,6)

Attendance, Participation & Professionalism (Objectives 1,2,3,4,5,6,7)

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:

- **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. Students missing more than 30% of the classes will not receive a passing grade. Attendance is taken at the start of class.

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

- **Other Requirements**

- **Due Dates**
 - Late assignments will not be accepted unless students are able to provide evidence of legitimate reason(s) for not being able to submit the assignment on time. The instructor will use their discretion to determine if the reasons provided are valid.
- **Attendance**
 - Students are expected to be on time, attend all class meetings and be prepared for in class assignments and projects. Excused absences include the following: illness (must bring a receipt or note from a doctor), family death, athletic/academic event, and others at the discretion of the instructor. For known upcoming absences, students must contact the instructor at least one week in advance to the missed class to make up work. In the case of illness or some other unforeseen absence, the student must contact the instructor via e-mail or telephone. At the next attended class meeting the student will discuss material that is to be completed. It is the student's obligation to pursue any make-up work.
- **Academic Load**
 - Although many students must work to meet living expenses, employment and personal responsibilities are not acceptable reasons for late arrivals, missed classes, or incomplete assignments. Employment must not take priority over academic responsibilities. For additional information on this subject, please see the GMU Academic Catalog (http://catalog.gmu.edu/content.php?catoid=5&navoid=104#Registration_attendance). Students failing to observe these guidelines should expect no special consideration for academic problems arising from the pressures of employment.

- **Honor Code**
 - Students are held to the standards of the George Mason University Honor Code (see <http://honorcode.gmu.edu> for details). Violations, including cheating and plagiarism, will be reported to the Honor Committee. Student assignments may be put through plagiarism detecting software.

- **Written Assignments**
 - All assignments must be typed in Microsoft Word, and formatted as follows (*unless otherwise specified*): double spaced, 12 point Times New Roman font, 1 inch margins, your name and title in the running header at top left hand corner, continuous line numbers on left margin, and page numbers centered in footer. Failure to comply with any or all parts of this format will result in an unacceptable assignment, which corresponds to zero (0) points.
 - Pay close attention to spelling and grammar as these will count towards your grade on written assignments. American Medical Association Manual (AMA) of Style (10th edition) format must be used for all written work in this class (e.g., in referencing, creation of tables, and formatting headers for paper sections).
 - Assignments must be turned in on Blackboard/MyMason Portal by the beginning of class on the specified date due (*unless otherwise specified*). No late assignments will be accepted. It is recommended that students keep copies of all submitted work.

- **Technology Use During Class**
 - As per GMU policy, all sound emitting technology is required to be turned off during the class meeting time. No sound emitting technology (e.g., cell phones, smart phones, iPads, Tablets, pagers, etc.) is allowed at any time during the class period. Students who are observed using any form of technology inappropriately (e.g., sending text messages from cell phones, visiting social networking sites from laptops, etc) will be dismissed from class for the day, counted as an absence, and not permitted to make up missed assignments. Additionally, no laptop computers (e.g., netbooks, notebooks, etc.) will be permitted for use during class time unless with permission from the instructor.

- **E-mail Correspondence**
 - Only messages that originate from a George Mason University address will be accepted. *Emails with no text in the body will not be acknowledged.* Note: All email will be responded to in the order in which it is received. Students should allow 48 hours for a response.

• **Course Performance Evaluation Weighting**

Evaluation Type	Number	Percentage of Grade
Exams	2	30%
Lab Activities and Reports	4	20%
Homework	5	10%
Attendance, Participation, and Professionalism	-----	10%
Client Case Study	1	30%

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	

Notes:

- 1) Although a B- is a satisfactory grade for a course, students must maintain a 3.00 average in their degree program and present a 3.00 GPA on the courses listed on the graduation application.
- 2) Any student asking for their grade to be rounded up, increased a letter grade, extra credit only for themselves at the end of the semester, etc. may have their final average reduced by up to 2 points at the discretion of the instructor.

Professional Dispositions

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

Class Schedule

Date	Topic	Assignments & Readings
1-June 4	Course Introduction The Science and Art of Prescribing Exercise Programs Preliminary Health Screening and Risk Classification	ACSM Position Stand: Quantity & Quality of Exercise ACSM Chapter 2, 3 pp 44-45
2-June 6	Exercise Program Adherence	ACSM Chapter 12 Griffin – Chapter 1, 2
3-June 11	If You Are Not Assessing You Are Guessing: Principles of Assessment to Prescribe Exercise Lab #1: Assessing Movement Lab – Common Flexibility Tests, FMS, Squat & Running Screen	ACSM Chapter 4 Griffin – Chapter 3, 4 Lab 1 Readings on Blackboard HW 1 Due
4-June 13	Common Movement Impairments & Corrective Exercise Techniques	Readings on Blackboard
5-June 18	Basic Principles of Training Program Design Client-Centered Cardiovascular Exercise Prescription Model / Metabolic Equations	Lab 1 Due ACSM Chapter 6 pp 143-160 Griffin – Chapter 5, 6
6-June 20	Lab #2: Cardiorespiratory Program Design Lab – Part 1 & 2 <i>Location: 204 Colgan / Freedom Center</i>	Lab 2 Readings on Blackboard
7-June 25	Review for Exam 1 Exam 1	HW 2 Due Lab 2 Due
8-June 27	<i>Client Case Study Presentations #1: Client Assessment</i>	Client Presentation #1
9-July 2	Client-Centered Weight Management Prescription	ACSM Position Stand on PA for Weight Loss ACSM Chapter 10 pp 287-291 Griffin – Chapter 9
10-July 4	No Class – July 4	

11-July 9	Designing ACSM Guideline Based Resistance Training Programs Lab #3: Resistance Training Workout & Program Design Lab – Part 1	ACSM Position Stand: Progression Models in Resistance Training for Healthy Adults ACSM Chapter 6 pp 161-166
12-July 11	Lab #3: Resistance Training Workout & Program Design Lab – Part 2 <i>Location: Freedom Center</i> Compatibility Between Aerobic and Resistance Exercise - Concurrent Training	Articles on Blackboard
13-July 16	HIIT & Functional Multi-modal Exercise Programs Lab #4: HIIT & Functional Multi-modal Exercise Program Design <i>Location: Freedom Center</i>	Client Exercise Program Due Articles on Blackboard
14-July 18	Client Case Study Feedback / Workday	HW 4 Due Lab 3 Due
15-July 23	<i>Client Case Study Presentations #2: Programs</i>	Client Presentation #2 Due
16-July 25	Exam 2	HW 5 Due Lab 4 Due
July 25	Client Case Study Due by 5 pm	

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/>.
- For information on student support resources on campus, see <https://ctfe.gmu.edu/teaching/student-support-resources-on-campus>

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