George Mason University
College of Education and Human Development
Kinesiology

KINE 350.B01 – Exercise Prescription and Programming
3 Credits, Summer 2021
1:30 – 4:10 PM, Tuesday & Thursday – 130 Katherine Johnson Hall
Online/Hybrid

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 online (76% or more) using a synchronous format via Blackboard Learning Management system (LMS) housed in the MyMason portal. You will log in to the Blackboard (Bb) course site using your Mason email name (everything before @masonlive.gmu.edu) and email password. The course site will be available on May 31, 2021 @ 7 am.

Under no circumstances, may candidates/students participate in online class sessions (either by phone or Internet) while operating motor vehicles. Further, as expected in a face-to-face class meeting, such online participation requires undivided attention to course content and communication.

Technical Requirements

To participate in this course, students will need to satisfy the following technical requirements:

- High-speed Internet access with standard up-to-date browsers. To get a list of Blackboard's supported browsers see: https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#supported-browsers

  To get a list of supported operation systems on different devices see: https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#tested-devices-and-operating-systems

- Students must maintain consistent and reliable access to their GMU email and Blackboard, as these are the official methods of communication for this course.
- Students may be asked to create logins and passwords on supplemental websites and/or to download trial software to their computer or tablet as part of course requirements.
- The following software plug-ins for PCs and Macs, respectively, are available for free download:
  - Adobe Acrobat Reader: https://get.adobe.com/reader/
  - Windows Media Player: https://support.microsoft.com/en-us/help/14209/get-windows-media-player
  - Apple Quick Time Player: www.apple.com/quicktime/download/

Expectations

- Course Week:
  Our course week will begin on the day that our synchronous meetings take place as indicated on the Schedule of Classes.
- Log-in Frequency:
  Students must actively check the course Blackboard site and their GMU email for communications from the instructor, class discussions, and/or access to course materials at least 3 times per week. In addition, students must log-in for all scheduled online synchronous meetings.
- Participation:
  Students are expected to actively engage in all course activities throughout the semester, which includes viewing all course materials, completing course activities and assignments, and participating in course discussions and group interactions.
- Technical Competence:
  Students are expected to demonstrate competence in the use of all course technology. Students who are struggling with technical components of the course are expected to seek assistance from the instructor and/or College or University technical services.
- Technical Issues:

Students should anticipate some technical difficulties during the semester and should, therefore, budget their time accordingly. Late work will not be accepted based on individual technical issues.

- Workload:
  Please be aware that this course is **not** self-paced. Students are expected to meet *specific deadlines* and *due dates* listed in the **Class Schedule** section of this syllabus. It is the student's responsibility to keep track of the weekly course schedule of topics, readings, activities and assignments due.
- Instructor Support:
  Students may schedule a one-on-one meeting to discuss course requirements, content or other course-related issues. Those unable to come to a Mason campus can meet with the instructor via telephone or web conference. Students should email the instructor to schedule a one-on-one session, including their preferred meeting method and suggested dates/times.
- Netiquette:
  The course environment is a collaborative space. Experience shows that even an innocent remark typed in the online environment can be misconstrued. Students must always re-read their responses carefully before posting them, so as others do not consider them as personal offenses. *Be positive in your approach with others and diplomatic in selecting your words*. Remember that you are not competing with classmates, but sharing information and learning from others. All faculty are similarly expected to be respectful in all communications.
- Accommodations:
  Online learners who require effective accommodations to insure accessibility must be registered with George Mason University Disability Services.

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

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

	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, VO2, 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 VO2 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

ACSM's Resources for the Exercise Physiologist. American College of Sports Medicine (2017) ISBN-13: 9781496322869

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

  - **Case Studies** *(Objectives 1,3,4,6,7)*
    - Case studies will be assigned for each learning module/major topic, they are meant for you to apply the lecture material to "real life" situations. Case studies will be posted on Blackboard.

  - **Quizzes/Homework** *(Objectives 1,2,3,4,6,7)*
    - Homework will expose students to topics covered in class. Quizzes will be used to assess knowledge and obtain feedback prior to mid-term exams. HW are due as scheduled on the syllabus. Quizzes may be unannounced.

  - **Labs** *(Objectives 1,2,3,4,5,6,7)*
    - Laboratory activities will be used throughout the semester to reinforce course learning objectives. For each lab students will submit a formal lab report.

  - **Client Project** *(Objectives 1,2,3,4,5,6)*
    - 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.

- **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 or online setting professionalism generally comprises the following components:

  - ***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 had 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 (10^{th} 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.

- **Grading**

Evaluation Type	Number	Percentage of Grade
Mid-Term Exams	2	20%
Labs	3	15%
Case Studies	5	20%
Quizzes/Homework	5	15%
Client Project	1	20%
Attendance, Participation, and Professionalism	----------	10%
	Total	**100%**

Grading Scale

A+	= >100	B+	= 88 – 89	C+	= 78 – 79	D	= 60 – 69
A	= 94 – 100	B	= 84 – 87	C	= 74 – 77	F	= 0 – 59
A-	= 90 – 93	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) See George Mason University undergraduate grading scale:
https://catalog.gmu.edu/policies/academic/grading/#ap3-1-1

Professional Dispositions
See https://cehd.gmu.edu/students/polices-procedures/

Class Schedule

Week/Dates	Topic	Assignments & Due Dates
1/May 31-June 3	*Video Lecture:* Course Introduction Video *Video Lecture:* Preliminary Health & Pre-participation Screening ***No In-Person Meeting Week 1 – the course will be delivered online asynchronously***	ACSM Position Stand: Quantity & Quality of Exercise ACSM Guidelines Chapter 1, 2, 3 pp 44-45 ACSM Resources Chapter 2
1/June 4-6	*Video Lecture:* Behavior Modification & Exercise Program Adherence **Case Study #1:** Pre-participation Screening	ACSM Guidelines Chapter 12 ACSM Resources Chapter 11 **Case Study 1 Due Sunday a 11:59 pm**
2/June 7-10	*Video Lecture:* Basic Principles of Training Program Design *In-Person:* If You Are Not Assessing You Are Guessing: Principles of Client Assessment to Prescribe Exercise **Lab #1:** Movement Assessment to Rx Exercise	ACSM Guidelines Chapter 4 ACSM Resources Chapter 5 & 6 **HW 1 Due Thursday at 11:59 pm**
2-June 11-13	*In-Person:* Common Movement Deficiencies & Corrective Exercise Techniques **Case Study #2:** Assessing Movement To Prescribe Exercise Case Studies – Common Movement Screens	Readings on Blackboard **Case Study #2 Due Sunday a 11:59 pm**

3-June 14-17	*Video Lecture:* Designing ACSM Based Cardiorespiratory Programs *In-Person:* Cardiovascular Exercise Prescription Model / Metabolic Equations **Lab #2:** Cardiovascular Exercise Program Rx	***Client Project Initial Screening Materials Due*** ACSM Guidelines Chapter 6 pp 143-160 ACSM Resources Chapter 3 **Lab 1 Due Thursday at 11:59 pm**
3-June 18-20	*In-Person:* TBD **Case Study #3**: Cardiorespiratory Program Design	Cardio Program Design Readings on Blackboard **Case Study #3 due Sunday 11:59 pm**
4-June 21-24	***Client Project Presentation #1*** Review for Mid-Term Exam 1	**HW 2 Due Thursday at 11:59 pm** **Lab #2 Due Thursday at 11:59 pm**
4-June 25-27	**Mid-Term Exam 1**	
5-June 28–July 1	*Video Lecture:* Designing ACSM Guideline Based Resistance Training Programs **Lab #3:** Resistance Training Program Rx	ACSM Position Stand: Progression Models in Resistance Training for Healthy Adults ACSM Guidelines Chapter 6 pp 161-166 ACSM Resources Chapter 4 Articles on Blackboard
5-July 2-4	**Deload – July 4 Break**	**HW 3 Due Sunday at 11:59 pm**

6-July 5-8	***No In-Person Meeting Week 6*** **Case Study #4:** Resistance Program Rx	ACSM Position Stand on PA for Weight Loss ACSM Guidelines Chapter 10 pp 287-291 ACSM Resources Chapter 7 **Case Study 4 Due Thursday at 11:59 pm**
6-July 9-11	*Video Lecture:* Interference Between Aerobic and Resistance Exercise - Concurrent Training *Video Lecture:* HIIT Programming	Articles on Blackboard **Lab #3 Due Sunday at Midnight** **HW 4 Due Sunday at 11:59 pm**
7-July 12-15	Neuromotor (Balance) Program Design **Case Study #5:** Core & Balance (Neuromotor) Program Design	Articles on Blackboard
7-July 16-18	Environmental factors influencing exercise Rx ***Client Project Check In – Wrapping up the client project***	**Case Study #5 Due Friday at 11:59 pm**
8-July 19-22	Client Project Presentations	**Client Presentation Due**
8-July 23-24	**Mid-Term Exam 2**	**HW 5 Due Friday at 11:59 pm**
July 24	**Client Project Due by 11:59 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 https://catalog.gmu.edu/policies/honor-code-system/).
- Students must follow the university policy for Responsible Use of Computing (see https://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 https://ds.gmu.edu/).
- Students must silence all sound emitting devices 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 https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/.
- For information on student support resources on campus, see https://ctfe.gmu.edu/teaching/student-support-resources-on-campus

Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking:

As a faculty member, I am designated as a "Responsible Employee," and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

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