

George Mason University
College of Education and Human Development
Kinesiology

KINE 380.DL1 - Exercise Prescription and Programming for Special Populations
3 Credits, Spring 2021
Online

Faculty

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Prerequisites/Corequisites

KINE 310, KINE 350

University Catalog 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 Overview

Not Applicable.

Course Delivery Method

This course will be delivered online (76% or more) using an asynchronous 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 Sunday, January 24th.

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 will need a headset microphone for use with the Blackboard Collaborate web conferencing tool.
- 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:
Because asynchronous courses do not have a “fixed” meeting day, our week will start on Tuesday at noon and finish on Tuesday at noon.
- 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.
- 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. 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.

Professional Standards (Commission on Accreditation of Allied Health Education Programs (CAAHEP))

Upon completion of this course, students will have met the following professional standards:

Knowledge-Skill-Ability (KSA)	Description	Lecture, Lab, or both
	GENERAL POPULATION/CORE: EXERCISE PHYSIOLOGY AND RELATED EXERCISE SCIENCE	
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
	GENERAL POPULATION/CORE: PATHOPHYSIOLOGY AND RISK FACTORS	

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
	GENERAL POPULATION/CORE: HEALTH APPRAISAL, FITNESS AND CLINICAL EXERCISE TESTING	
1.3.22	Ability to modify protocols and procedures for cardiorespiratory fitness tests in children, adolescents, and older adults.	Lecture
	GENERAL POPULATION/CORE: ELECTROCARDIOGRAPHY AND DIAGNOSTIC TECHNIQUES	
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
	GENERAL POPULATION/CORE: PATIENT MANAGEMENT AND MEDICATIONS	
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
	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.	Lecture
1.7.7	Knowledge of and ability to describe the unique adaptations to exercise training in children, adolescents, and older participants with	Lecture

	regard to strength, functional capacity, and motor skills.	
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
	GENERAL POPULATION/CORE: HUMAN BEHAVIOR AND COUNSELING	
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
	GENERAL POPULATION/CORE: SAFETY, INJURY PREVENTION, AND EMERGENCY PROCEDURES	
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
	GENERAL POPULATION/CORE: PROGRAM ADMINISTRATION, QUALITY ASSURANCE, AND OUTCOME ASSESSMENT	
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
	CARDIOVASCULAR: PATHOPHYSIOLOGY AND RISK FACTORS	

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
	PULMONARY: PATHOPHYSIOLOGY AND RISK FACTORS	
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
	METABOLIC: PATHOPHYSIOLOGY AND RISK FACTORS	
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
	ORTHOPEDIC/MUSCULOSKELETAL: PATHOPHYSIOLOGY AND RISK FACTORS	
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
	NEUROMUSCULAR: PATHOPHYSIOLOGY AND RISK FACTORS	
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
	IMMUNOLOGIC: PATHOPHYSIOLOGY AND RISK FACTORS	
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

Required Texts

Ehrman, J.K., Gordon, P.M., Vistch, P.S. & Keteytan, S.J. (2018). *Clinical Exercise Physiology*, 4th Ed. Human Kinetics, Champaign, IL.

*You must also obtain the WEB RESOURCE, which includes the case studies.

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**

Examinations (4) (55%)

Exams will be T/F and multiple-choice. Each exam will cover approximate one quarter of the semester's material. Exams will be administered on Blackboard.

Case Studies, Homework, and Quizzes (18) (30%)

Case study scenarios relating to specific diseases or conditions will be given with discussion questions to follow. Quizzes will be administered on Blackboard. Other homework assignments, such as discussion board questions, will be assigned throughout the semester.

Infographic (10%)

Students will create an infographic detailing a peer reviewed-research article related to exercise and a special population.



- **Other Requirements**

Professionalism (5%)

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.*

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.*

- **Grading**

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/>

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.**

Class Schedule

Week	Content	Chapter	Assignments
Week 1	Introductory Post Review of general exercise prescription guidelines The Profession of Clinical Exercise Physiology		Introductory Blog Post
Week 2	Licensure of CEP Common ECG Dysrhythmias Graded Exercise Testing (GXT)	Chapter 5	Licensure Debate Questions Chapter 5 GXT Case Study
Week 3	Diabetes	Chapter 7	Chapter 7 Diabetes Case Study A
Week 4	Obesity	Chapter 8	Chapter 8 Obesity Quiz
Week 5	Hypertension Exam	Chapter 9	Chapter 9 Hypertension Case Study A Exam
Week 6	Dyslipidemia Metabolic Syndrome	Chapter 10 Chapter 11	Chapter 10 Dyslipidemia & 11 Metabolic Syndrome Quiz
Week 7	Acute Coronary Syndromes	Chapter 13	Chapter 13 Acute Coronary Syndromes Case Study
Week 8	Revascularization	Chapter 14	Chapter 14 Revascularization Case Study A
Week 9	Chronic Heart Failure Exam	Chapter 15	Chapter 15 Chronic Heart Failure Case Study A Exam
Week 10	Cardiac Electrical Pathophysiology	Chapter 17	Chapter 17 Cardiac Electrical Pathophysiology Quiz
Week 11	Chronic Obstructive Pulmonary Disease (COPD) Cancer	Chapter 18 Chapter 21	Chapter 18 COPD Case Study B Chapter 21 Cancer Quiz
Week 12	Arthritis Osteoporosis	Chapter 23 Chapter 24	Chapter 23 Arthritis Quiz Chapter 24 Osteoporosis Case Study
Week 13	Exam Children	Chapter 31	Exam Chapter 31 Children Case Study B
Week 14	Older Adults Depression	Chapter 32 Chapter 33	Chapter 32 Older Adults Case Study B

Week 15	Female Specific Issues Exam		Exam
Week 16	Infographic		Infographic due

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 University Honor Code (see <https://catalog.gmu.edu/policies/honor-code-system/>).
- 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://ds.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 <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/> .