

George Mason University
College of Education and Human Development
Kinesiology

KINE 360.002 – Strength Training: Concepts & Applications
3 Credits, Spring 2017

TR/1:30 – 2:45pm in Bull Run Hall 247 – Science and Technology Campus

Faculty

Name: Justin Merrigan MS, CSCS
Office Hours: By appointment.
Email Address: jmerrig2@gmu.edu

Prerequisites/Corequisites

BIOL 124, BIOL125, ATEP 300, KINE 310

University Catalog Course Description

Provides students with an opportunity to develop an in-depth understanding of the principles of strength training and conditioning, including: anatomical and physiological considerations, lifting techniques, equipment selection, program development and evaluation, and weightlifting safety; thus enabling them to teach and train clients.

Course Overview

Emphasis will be placed upon assessment, description, and analysis of sport movement and designing training programs to enhance performance variables. While this course will assist those who desire to sit for the National Strength and Conditioning Association's (NSCA) Certified Strength and Conditioning Specialist (CSCS) Exam, it is NOT a preparation course for the NSCA-CSCS exam. Material for the course will be drawn from the required textbook and assigned readings. Class lectures will be presented in PowerPoint with handouts posted on BLACKBOARD in advance of class meetings.

Course Delivery Method

This course will be delivered in a face-to-face environment, and will consist of lecture and laboratory instruction.

Learner Outcomes or Objectives

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

1. Demonstrate an understanding of the physiological adaptations to resistance training.
2. Explain the role of bioenergetics to metabolic specificity of training.

3. Evaluate and design programs for developing strength, power, speed, and conditioning.
4. Analyze the value of Olympic lifting to athletic performance.
5. Examine the difference between strength training and power training.

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	Lecture, Lab, or both
	GENERAL POPULATION/CORE: EXERCISE PHYSIOLOGY AND RELATED EXERCISE SCIENCE	
1.1.6	Knowledge of the curvatures of the spine including lordosis, scoliosis, and kyphosis.	Lecture
1.1.7	Knowledge of the stretch reflex and how it relates to flexibility.	Lecture
1.1.10	Knowledge of the role of aerobic and anaerobic energy systems in the performance of various physical activities.	Lecture
1.1.14	Knowledge of the anatomical and physiological adaptations associated with strength training.	Lecture
1.1.15	Knowledge of the physiological principles related to warm-up and cool-down.	Lecture
1.1.20	Knowledge of the characteristics of fast and slow twitch muscle fibers.	Lecture
1.1.21	Knowledge of the sliding filament theory of muscle contraction.	Lecture
1.1.22	Knowledge of twitch, summation, and tetanus with respect to muscle contraction.	Lecture
1.1.23	Knowledge of the principles involved in promoting gains in muscular strength and endurance.	Lecture
1.1.24	Knowledge of muscle fatigue as it relates to mode, intensity, duration, and the accumulative effects of exercise.	Lecture
1.1.32	Knowledge of the concept of detraining or reversibility of conditioning and its implications in exercise programs.	Lecture
1.1.33	Knowledge of the physical and psychological signs of overreaching/overtraining and to provide recommendations for these problems.	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
1.1.36	Knowledge of the following terms: progressive resistance, isotonic/isometric, concentric, eccentric, atrophy, hyperplasia, hypertrophy, sets, repetitions, plyometrics, Valsalva maneuver.	Lecture
	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.	Lecture
1.7.3	Knowledge of the benefits and precautions associated with exercise training in across the lifespan (from youth to the elderly).	Lecture
1.7.11	Knowledge of and the ability to describe exercises designed to enhance muscular strength and/or endurance of specific major muscle groups.	Both
1.7.13	Knowledge of the various types of interval, continuous, and circuit training programs.	Lecture
1.7.29	Ability to identify proper and improper technique in the use of resistive equipment such as stability balls, weights, bands, resistance bars, and water exercise equipment.	Both
1.7.31	Ability to teach a progression of exercises for all major muscle groups to improve muscular strength and endurance.	Both
1.7.42	Ability to design resistive exercise programs to increase or maintain muscular strength and/or endurance.	Lecture
1.7.44	Ability to design training programs using interval, continuous, and circuit training programs.	Lecture
1.7.45	Ability to describe the advantages and disadvantages of various commercial exercise equipment in developing cardiorespiratory fitness, muscular strength, and muscular endurance.	Lecture
	GENERAL POPULATION/CORE: SAFETY, INJURY PREVENTION, AND EMERGENCY PROCEDURES	
1.10.5	Knowledge of the physical and physiological signs and symptoms of overtraining and the ability to modify a program to accommodate this condition.	Lecture

Required Texts

Haff, G. Gregory & Triplett, N. Travis (ed.). Essentials of Strength Training and Conditioning (4th edition). Human Kinetics, Champaign, 2016. ISBN: 978-1-4925-0162-6

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).

A. Written Examinations

Unit #1 Exam (Midterm Exam)	20%	(Objectives 1, 2)
Unit #2 Exam (Final Exam)	20%	(Objectives 3, 4, 5)

B. Unannounced Quizzes 20% (Objectives 1 – 5)

C. Laboratory Sessions 10% (Objectives 1 – 5)

D. Project 20% (Objectives 1 – 5)

E. Homework 10% (Objectives 1 – 5)

Grading

This course will be graded on a point system, with a total of 100 possible points. Once your FINAL GRADE, at the end of the semester is posted on mymasonportal/blackboard, you will have 24 hours to inquire about it. After that period, your grade will be posted as final on Patriot Web.

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	

Professional Dispositions

Kinesiology students are expected to exhibit professional behaviors and dispositions at all times. Depending upon the setting professionalism may appear different, but typically consists of similar components. For Kinesiology students in a classroom setting, professionalism generally comprises the following components:

- **Attendance** – Students are expected to attend class, be on time, and pay attention. A grade of zero will be assigned to any missed assignment without prior permission from the instructor. Late assignments will receive a letter grade deduction for each 24-hour period past the deadline. If you cannot attend a class for a legitimate reason please notify the instructor in advance via email. If you have to unexpectedly miss a class due to something out of your control, contact the instructor within 24 hours to notify them of what happened and to see if there is anything you need to do to make up your absence. Students will not be allowed to make up quizzes that are missed due to unexcused absences, and students who arrive more than 5 minutes late on quiz days will forfeit the chance to take the quiz.

- **Communication** – When communicating with the instructor and classmates, either face-to-face or via email (see below), students should address the other person with respect, use appropriate language, and maintain a pleasant demeanor. Students who fail to do so may be asked to leave class, and will receive a grade of zero for all assignments or activities missed during that class period.

E-mail Correspondence - Messages must be in a professional format and originate from a Mason address:

Dear Professor Merrigan, (*Beginning salutation*),

I have a question regarding one of the assignments. (*Text body*)

Respectfully, (*Ending Salutation*)

Sam Student (*Your name*)

- **Classroom Demeanor and Participation** – Students are expected to attend all class sections, participate in class discussions and activities, complete in-class exercises, and fulfill all assignments. Demonstrate that you have an interest in the subject matter. Participation in lab activities is mandatory and will comprise the majority of the lab grade. Anyone exhibiting inappropriate behavior may be asked to leave and/or not receive credit for class activities that day (e.g. sleeping in class, texting, or using laptops/tablets for recreational use). University policy states that all sound emitting devices (e.g. cell phones) shall be turned off during class unless otherwise authorized.
- **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. Late assignments will accrue point deductions hourly after the deadline.
- **Academic Honesty/Integrity** – Kinesiology 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. Students are held to the standards of the George Mason University Honor Code. Students are expected to honestly represent their work. The possible situations when a student could violate these expectations range from incorrectly citing or failing to cite references/footnotes within papers and projects to cheating on an examination or assignment. Academic integrity is the responsibility a student assumes for honestly representing all academic work. This includes but is not limited to quizzes, examinations, projects, and other forms of oral and written endeavors. Students who are caught cheating on exams, quizzes, or assignments will receive a grade of zero and will be reported to the office of Academic Integrity.
- **Self-Improvement/Self-awareness** – One should be aware of their strengths/weaknesses and

constantly seek to improve. Professionals regularly seek opportunities to increase their knowledge and improve their current skill set.

Class Schedule

Date	Topic	Readings/Assignments
1/23	Course Introduction	
1/25	Neuromuscular System	Essentials Text: CH 1
1/30	Neuromuscular System	Essentials Text: CH 1
2/1	Biomechanics	Essentials Text: CH 2
2/6	Biomechanics	Essentials Text: CH 2
2/8	Lab 1: Warm-up and Flexibility	Essentials Text: CH 14. <i>Please dress appropriately and be prepared to participate.</i>
2/13	Biomechanics, Bioenergetics	Essentials Text: CH 2, 3
2/15	Bioenergetics	Essentials Text: CH 3
2/20	Bioenergetics	Essentials Text: CH 3
2/22	Endocrine Responses	Essentials Text: CH 4
2/27	Endocrine Responses	Essentials Text: CH 4
3/1	Lab 2: Kettlebells	Essentials Text: CH 16 pp. 419-421, 433-435. Turkish Get-up article. <i>Please dress appropriately and be prepared to participate.</i>
3/6	Anaerobic Training Adaptations	Essentials Text: CH 5
3/8	Midterm	Bring Scantron Sheet
3/12- 3/18	Spring Recess	No class meetings
3/20	Age- and Sex-related Differences	Essentials Text: CH 7
3/22	Performance Testing	Essentials Text: CH 12, 13
3/27	Performance Testing	Essentials Text: CH 12, 13
3/29	Lab 3: Performance Assessment	Essentials Text: CH 13 pp. 268-271, 280-282, 287. <i>Please dress appropriately and be prepared to participate.</i>
4/3	Resistance Training	Essentials Text: CH 15, 16, 17
4/5	Resistance Training	Essentials Text: CH 15, 16, 17
4/10	Plyometrics	Essentials Text: CH 18
4/12	Speed and Agility	Essentials Text: CH 19
4/17	Lab 4: Squat, DL progressions	Essentials Text: CH 15 pp. 380-383, 389-391. <i>Please dress appropriately and be prepared to participate.</i>
4/19	Periodization	Essentials Text: CH 21
4/24	Periodization	Essentials Text: CH 21
4/26	Periodization	Essentials Text: CH 21

5/1	Final Project Presentations	Business casual dress is required when presenting: http://www.entrepreneur.com/article/249188
5/3	Final Project Presentations	Business casual dress is required when presenting: http://www.entrepreneur.com/article/249188
5/15	Final Exam	1:30 – 4:15pm BRH 247 – Science and Technology Campus

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://coursessupport.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/>.

