

George Mason University
College of Education and Human Development
Masters in Kinesiology

KINE 608.001 – Data Science in Kinesiology
3 Credits, Fall 2024

Thursday: 10:30 am to 1:10 pm, 252 Katherine Johnson Hall – Science and Technology Campus

Faculty

Name: Dr. Joel Martin

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Prerequisites/Corequisites

Admission to the Kinesiology MS graduate program or approval of course instructor.

University Catalog Course Description

Introduction to practical and applied aspects of both descriptive and inferential statistics in kinesiology.

Course Overview

The course provides a comprehensive exploration of data science in the field of Kinesiology. Students will master statistical tools and methodologies for analyzing and interpreting Kinesiology-related data. The course will cover topics of data hygiene, management, visualization, and inferential statistics, and provide an understanding of fundamental statistical terminology used in Kinesiology research. Through examining commonly used statistical approaches, students will develop the ability to select and apply appropriate techniques to address research questions in the field of Kinesiology.

Course Delivery Method

This course will be delivered using lecture, lab, seminar formats and hybrid online formats.

Learner Outcomes or Objectives

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

1. Describe common statistical terminology used in the field of Kinesiology
2. Examine statistical approaches commonly used in the field of Kinesiology.
3. Interpret statistical results from common analyses.
4. Apply statistical techniques to Kinesiology-related data sets.
5. Design appropriate statistical analyses to address research questions in the field of Kinesiology.

Required Texts

Weir J, Vincent W. *Statistics in Kinesiology, 5th Edition*. Human Kinetics; 2021. ISBN-13: 9781492560715

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

Exams and Final Exam – Each student will be required to complete one mid-term exam and one final exam. The final exam will be cumulative. The format for all exams will be multiple choice, true/false, short essays, and problem-solving questions. Examinations represent inquiries regarding student knowledge of fact regarding course content. Examinations demonstrate that the student can remember and apply facts as well as demonstrate a hierarchy of knowledge information.

HW – HW assignments will complement material covered throughout the semester. Students will be given the opportunity to apply concepts and theory to data provided.

Final Project – Each student will be required to complete a final project paper on the analysis and interpretation of a kinesiology related data set.

Final Project Oral Presentation – Students will give an oral presentation associated with their final project in which the student will provide an overview of their processing, analysis and interpretation of data.

Other Requirements

- **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.
- **Alternate Schedule**
 - This course may have professionals from the field as guest speakers. Due to their professional responsibilities, guest speakers may not be able to attend a scheduled class time. Therefore, this course may require meeting outside of regularly scheduled class times and/or travel to sites off campus. Students will be informed of such meetings one week in advance of the scheduled class meeting. Students will be expected to arrange transportation to and from the meeting site.
- **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. Please address the subject line for all email pertaining to this course as: *KINE 608: Last Name – purpose of email*. The following is an appropriate professional format:

Subject: KINE 608: Help with (fill in blank)

Dear Dr. Name, (*Introductory salutation*)

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

Regards, (*Ending Salutation*)

Mr./Mrs. Student (*Your name*)

Note: All email will be responded to in the order in which it is received. Students should allow 48 hours for a response.

Grading

This course will be graded on a point system, with a total of 100 possible points.

ASSESSMENT METHOD	NUMBER	POINTS	POINTS
Midterm Examination	1	10	10
Final Examination	1	20	20
HW	5	10	50
Final Project	1	10	10
Final Project Oral Presentation	1	10	10
TOTAL			100

Grading Policies

The student's final letter grade will be earned based on the following scale:

Grade	Percentage
A	94 – 100%
A-	90 – 93%
B+	88 – 89%
B	84 – 87%
B-	80 – 83%
C	70 – 79%
F	0 – 69%

Note: Although a B- is a satisfactory grade for a course, students must maintain a 3.00 average in their degree program.

Use of Generative AI

Use of Generative AI tools should be used following the fundamental principles of Mason's Academic Standards. This includes being honest about the use of these tools for submitted work and including citations when using the work of others, whether individual people or Generative AI tools.

Professional Dispositions (CEHD Student Guide)

Throughout study in the College of Education and Human Development, students are expected to demonstrate behaviors that reflect the positive dispositions of a professional. See

<https://cehd.gmu.edu/current-students/cehd-student-guide>.

Students are expected to exhibit professional behaviors and dispositions at all times.

Class Schedule

Week / Date	Topic	Chapter/Assignment Due Date
1 / Aug 29	Introduction to Data Science in Kinesiology / Measurement, Statistics, and Research / Data Management – Organizing, Naming and Metadata, Storing and Backup R: Getting Started with R studio	Weir & Vincent Chapter 1 Articles on Blackboard
2 / Sep 5	Setting up and scoring surveys in Qualtrics / Data cleaning and organizing	Articles on Blackboard HW 1 Due Sunday at Midnight
3 / Sep 12	Data visualization fundamentals	Weir & Vincent Chapter 2 Articles on Blackboard
4 / Sep 19	Percentiles, Measures of Central Tendency / Measures of Variability / The Normal Curve	Chapter 3, 4, 5, 6 Articles on Blackboard HW 2 Due Sunday at Midnight
5 / Sep 26	Fundamentals of Statistical Inference	Chapter 7 Articles on Blackboard
6 / Oct 3	Correlation and Bivariate Regression	Chapter 8 HW 3 Due Sunday at Midnight
7 / Oct 10	Multiple Correlation and Multiple Regression	Chapter 9
8 / Oct 17	Mid-term	Mid-Term Examination
9 / Oct 24	The <i>t</i> Test: Comparing Means From Two Sets of Data	Chapter 10 Articles on Blackboard
10 / Oct 31	Analysis of Variance	Chapter 11, 12, 15 Articles on Blackboard HW 4 Due Sunday at Midnight
11 / Nov 7	Workday for final projects	

12 / Nov 14	Analysis of Nonparametric Data / Quantifying Reliability and Agreement	Chapter 16 / 13 HW 5 Due Sunday at Midnight
13 / Nov 21	Workday for final projects	
14 / Nov 28	No Class - Thanksgiving	
15 / Dec 5	Final Project Presentations	Final Project Due Sunday December 8
Dec 12	Final Exam (10:30 am to 1:10 pm)	

Note: Faculty reserves the right to alter the schedule as necessary, with notification to students.

CEHD Commitments

The College of Education and Human Development is committed to fostering collaboration and community, promoting justice and equity, and advancing research-informed practice. Students are expected to adhere to, and contribute to, these commitments, the CEHD Mission, and Core Values of George Mason University. More information can be found here: <https://cehd.gmu.edu/about/culture/>

GMU Policies and Resources for Students

Policies

- Students must adhere to Mason's Academic Standards (see <https://catalog.gmu.edu/policies/academic-standards/>)
- 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 VIA should be directed to viahelp@gmu.edu or <https://cehd.gmu.edu/aero/assessments>.
- Questions or concerns regarding use of your LMS should be directed to:
 - Blackboard Learn: <https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/>
 - Canvas: <https://its.gmu.edu/service/canvas/>
- For information on student support resources on campus, see: <https://ctfe.gmu.edu/teaching/student-support-resources-on-campus>
 - TimelyCare: <https://caps.gmu.edu/timelycare-services/>
 - Writing Center: <https://writingcenter.gmu.edu/>
- For additional information on the College of Education and Human Development's Student Success Resources, please visit: <https://cehd.gmu.edu/students/>.

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

As a faculty member, I am designated as a “Non-Confidential Employee,” and must report all disclosures of sexual assault, sexual harassment, 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 or support measures from Mason’s Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.