YORK UNIVERSITY

FACULTY OF HEALTH

SCHOOL OF KINESIOLOGY AND HEALTH SCIENCE

HH KINE 2050 3.0 Analysis of Data in Kinesiology

Winter 2020 (2019/2020)

Description

An introduction to the statistical analysis of experimental data. Students will simulate a variety of simple experiments involving behavioural concepts relevant to kinesiology and analyze the data using basic descriptive and inferential statistics. Computer analysis of data will be introduced. Emphasis is on the use of statistics as a scientific tool and only the most elementary mathematical knowledge is required for entrance into the course.

Prerequisites   KINE 2049 3.0 (Research Methods in Kinesiology)

Course Instructors   Dr. Denise Henriques   305 Calumet College
deniseh@yorku.ca

Prof. Durdana Khan   361   Bethune   College
drkhan@yorku.ca

Prof. Akinkunle Oye-Somefun
akin247@yorku.ca

Office Hours: By appointment (please email the instructor) or as posted on moodle.

Computer Accounts: All students require a Moodle account, and a
FAS [File Access Service] account. It is expected
that students will check their Moodle accounts **daily**.
http://moodle.yorku.ca

Lab Instructors   T.B.A.

Course Hours   Lectures:
(Section M)   M W   11:30 AM - 12:20 PM in CLH - I
(Section N)   M W   12:30 PM - 1:20 PM in CLH - I

Labs: 125, 125A, & 163 Chemistry Building

Labs begin the week of January 13, 2018

Required Texts and Equipment

An Introduction to Basic Statistics (Horvath, T.).

KINE 2050 3.0 Laboratory Manual (2020 Edition).

Note: lecture notes will be posted to the course moodle site on a week-by-week basis.

Every student is required to have a portable calculator.

 CALCULATORS ARE REQUIRED IN EVERY LECTURE AND LAB.

Graph paper is required for all figures/graphs done for lab assignments.

Course Evaluation
Two written exams during the term (optional)	40%
Quiz #1 [20%] – **February 12**, 2020	
Quiz #2 [20%] – **March 18**, 2020	
Laboratory assignments (optional)	10%
Final exam (**compulsory**)	50% - 100%

Students who do not write Quiz #1 waive their right to receive "a specific percentage of graded feedback" prior to the drop date for the Winter term.

The percentage allocated for any course work not attempted/completed will be added to the final exam.

Each exam may include material from the lectures, readings and labs, however, exams focus primarily on information covered in lectures and the labs.

In the event a midterm quiz is missed the percentage allocated to that test will be added to the Final Exam. There are no make-up tests in the course.

- Please note that students have one week after the posting of quiz results and answers to contact Dr. Denise Henriques about marking concerns.

Although numerical marks are assigned to each piece of work in this course there should be no assumption that a total number of marks translates directly to a lettergrade. Lettergrades will be determined by the descriptions in the York University Undergraduate Calendar.

Lecture Topics

1. Introduction to Statistics, Levels of Measurement, Population and Sample, Random Sampling, Accuracy of Measurement, Implied Limits [Instructor: Khan]
2. Frequency Distributions, Graphs [Instructor: Khan]
3. Measures of Central Tendency [Instructor: Khan]
4. Measures of Dispersion [Instructor: Khan/Oye-Somefun]
5. Normal Distribution [Instructor: Oye-Somefun]

6. Z Scores [Instructor: Oye-Somefun]
7. Probability [Instructor: Henriques]
8. Sampling Distributions [Instructor: Henriques]
9. Hypothesis Testing [Instructor: Henriques]
10. The Difference Between Means (T-Test) [Instructor: Henriques]
11. The Relationship Between Variables – Correlation [Instructor: Henriques]
12. Prediction – Regression [Instructor: Henriques]
13. Analysis of Variance – (ANOVA) [Instructor: Henriques]
14. Chi Square [Instructor: Oye-Somefun]

In addition, topics covered during the labs will include: 1) the use of computer software (Excel) to calculate descriptive, inferential and correlation statistics; 2) the collection, presentation and interpretation of data; 3) observational and experimental studies; 4) independent and dependent variables; 5) control and experimental groups; 6) conceptual and operational definitions.

Lab Instructors: Teaching Assistants are available for 2 hours each week during your lab time. It is your responsibility to ensure that you understand the weekly assignment BEFORE you leave the lab.

Drop Date: The last day to drop a Winter term course without receiving a grade is: **March 13, 2020**.

Withdrawal Period: March 14 - April 5, 2020

Lecture Capture:
Lectures will be digitally recorded and posted online. Please note the York University policy regarding this technology.

The York University Student Code of Conduct specifically prohibits theft of intellectual property, which includes recording a course director's lecture without his/her permission or taking lecture material provided on line, modifying it, and/or using it for your own personal use or gain. The material provided is only to be used for your personal study when you take the course for which it was created. Use in any other way will result, at the minimum, in sanctions in accordance with the York Code and, at the maximum, will be breaking federal, provincial or municipal laws and will be acted on accordingly.

IMPORTANT COURSE INFORMATION FOR STUDENTS

All students are expected to familiarize themselves with the following information, available on the York University Secretariat webpage (see Policies, Procedures and Regulations) http://www.yorku.ca/secretariat/policies/index-policies.html

• York's Academic Honesty Policy and Procedures/Academic Integrity Website

• Ethics Review Process for research involving human participants

• Course requirement accommodation for students with disabilities, including
    physical, medical, systemic, learning   and psychiatric disabilities

- Student Conduct Standards

- Religious Observance Accommodation

Learning Expectations:

After completion of KINE 2050 3.0 [Analysis of Data in Kinesiology], students will understand fundamental statistical concepts and some of their basic applications in science and society. Students will be able to:

a) identify the level of measurement represented by a dataset.

b) calculate the appropriate descriptive statistics (measures of central tendency and variability), for a dataset.

c) construct the appropriate figure(s), (histograms, line charts, and scatterplots) to represent a dataset graphically.

d) describe the normal curve and solve word problems utilizing the z-score concept.

e) solve basic probability word problems.

f) state the null hypothesis for a given research problem.

g) select the appropriate statistical significance test to analyze a dataset.

h) calculate a test statistic and determine the associated p-value.

i) utilize a statistical software package to analyse data.

j) write a summary paragraph to describe the results of a significance test.

Weekly schedule. Note: The lecture topics and dates are approximate.

Week Beginning	Monday	Wednesday	Readings [Horvath text]	Laboratory
January 6	Introductory class [Admin]	Intro to "Stats" Levels of measurement	Pages 1 - 15	Labs start week of January 14th.
January 13	Organizing & Displaying data	Measures of Central Tendency	Pages 16 - 81	Lab 1
January 20	Measures of Variability	Percentiles & Z scores	Pages 82 - 112	Lab 2
January 27	Percentiles & Z scores	Percentiles & Z scores (continued)	Pages 113 - 138	Lab 3
February 3	SEM Confidence Intervals	Probability	Pages 139 - 155	Lab 4
February 10	Probability	**Quiz 1**	Pages 156 - 168	Lab 5
February 17	Reading Week (Study break)	Reading Week (Study break)	Reading Week (Study break)	Reading Week (Study break)
February 24	Hypothesis testing	T-Tests	Pages 169 - 206	Lab 6
March 2	T-Tests	Correlation Regression	Pages 256 - 302	Lab 7 & 8
March 9	Correlation Regression	ANOVA	Pages 207 - 255	Lab 9
March 16	ANOVA	Quiz 2	Pages 303 - 332	Lab 10 & 11
March 23	Chi Square	Chi Square		Lab 12
March 30	Review	**Review**		Submit Lab 11 & 12
April 5-20	Exam Period	Exam Period	Exam Period	Exam Period