

EXS 201 - STATISTICS IN EXERCISE SCIENCE
SUNY Cortland
Kinesiology Department

Course Information

Credit Hours: 3.0
Semester/Year: Spring 2012
Lecture Location: PRST 1134
Text(s) Required:

Vincent, W.J. (2005). *Statistics in kinesiology*
(3rd ed.). Champaign, IL: Human Kinetics.
ISBN: 0736057927 or 0736089624
Holcomb, Z.C. (2011). *SPSS Basics* (3rd ed.).
Glendale, CA: Pyczak Publishing.
ISBN: 1884585957

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Web: <http://facultyweb.cortland.edu/hendrick/exs201.htm>

Professor Information

Instructor: Joy L. Hendrick, Ph.D.

Phone: (607) 753-5707

Office Location: PRST 1154

Office Hours:

Tuesdays 2:30 – 4:00 pm

Th 9 – 10:00, 11-12:00;

F 10-11:00 am; Others by appointment

Professional Studies Dean's Office:

John Cottone, Dean;

Eileen Gravani, Associate Dean;

Professional Studies Bldg. 1175;

phone: 607-753-2701(2)

COURSE DESCRIPTION:

(B) This is an introductory statistics course with applications in exercise science. Content includes descriptive and inferential statistics, including central tendency, variability, correlation, regression, t-tests, analysis of variance and various nonparametric tests. Computerized statistical analyses are imbedded throughout the course. Fulfills GE1. Not open to students who have taken MAT 201, PSY 201, COM 230 or ECO 221. (3 cr. hr.)

COURSE ATTENDANCE POLICY:

Class attendance is required; however, students will not be penalized for up to three (3) unexcused absences. After three (3) unexcused absences, there will be up to a 1/3 letter-grade deduction on the final grade for each additional absence. **Lab attendance (mostly on Fridays) is mandatory.** Illness, travel, appointments, registration, and court appearances are some examples of unexcused absences. Hospitalization, death in the immediate family, away athletic contests and *subpoenaed* court appearances are examples of excused absences. Students are fully responsible for monitoring attendance by signing-in on the attendance sheet during each class period. No handouts, notes or assistance will be given for material distributed or covered during an unexcused absence (or an excused absence without prior written notification. *Students are 100 percent responsible for all work missed, regardless of the type of absence.*

REQUIRED COURSE MATERIALS:

In addition to the two texts listed above, each student must have a **calculator** which can compute square roots, sums of scores ($\sum x$), sum of squared scores ($\sum x^2$), mean (\bar{x}), and standard deviation (σ or s). At no time during class or lab, is the calculator in your cell phone to be used. Students should also have a **flash drive** (any make or size is acceptable) and bring this to all labs.

EVALUATION OF STUDENT PERFORMANCE:

Requirements and Evaluation:

I.	Examinations (12%, 15%, 15%, 15%, 18%)	75%
II.	Assignments (7-10 homework/computer assignments)	<u>25%</u>
Total		100%

EXAMS: No make-ups will be allowed for unexcused absences. Make-ups for excused absences (which may be in a different format) can be arranged only if made prior to the date of the scheduled

exam. Format for exams will be a combination of objective questions and short problem calculations and/or short answer and sometimes may involve using SPSS. Minimum requirements for passing course include: completion of 80% of all written work (including computer assignments) and passing grades on at least 3 exams (including the final exam).

CLASSROOM/LAB ATMOSPHERE: Because texting and cell phones have become such an annoyance in college classrooms, the Kinesiology Department has discussed the following policy for our classes: “***Out of respect for your fellow students, your professor and the educational process, cell phones, MP3 players and other electronic devices must be turned off and put away before class begins. Please clear any necessary exceptions, such as a potential emergency situation, with the professor before class. Also, while drinking water is acceptable, eating is inappropriate and a distraction to others. Please eat your meals before and after class.***” Failure to comply with the above policy could result in point deductions on the next exam.

ASSIGNMENTS: No assignments/handouts will be given out after the class session in which they were distributed, unless previous arrangements had been made. All assignments will be collected at the beginning of class on the day it is due. No late work will be graded for credit. All work due on the day of an excused absence is still expected to be turned in on time, unless previous arrangements have been made. Each student is expected to submit his/her own work, including calculations and computer assignments (refer to section 340 in the *College Handbook* on Academic Integrity).

EXPECTATIONS: Students are expected to **bring a calculator to all classes and bring SPSS text to all labs**. For students to be successful, the expectations include: fully completing all practice problems, coming prepared and on-time to all classes, practicing with formulae and SPSS outside of class, staying up-to-date and studying all assignments (this equates to **at least 1-2 hours of out-of-class time between each class session, with additional time for studying before each exam**), turning in all assignments on-time, and seeking help and asking questions *as soon as* problems arise.

TECHNOLOGY: There is a computer component to this course. Students will be learning and using statistical software to organize and analyze data. Specific computer assignments will be required throughout the semester. Support will be provided for instruction on running the associated software. Students are also encouraged to frequently check their on-campus email account for class messages. Announcements and reminders may be distributed via email at various times throughout the semester. Occasionally in class, references to web sites will be made. Class materials will be accessible on the web at address: <http://facultyweb.cortland.edu/hendrick/exs201.htm>

ACADEMIC INTEGRITY: The College is an academic community which values academic integrity and takes seriously its responsibility for upholding academic honesty. All members of the academic community have an obligation to uphold high intellectual and ethical standards. Students will not cheat or plagiarize in this course. Plagiarism, a serious academic offense, is defined as expropriating the ideas of others and using them as one’s own without due credit. For more information on academic integrity and how academic dishonesty can occur, please refer to the *College Handbook* (Chapter 340), *Code of Student Conduct and Related Policies*, the following web site: <http://www.cortland.edu/copyright/> or ask the instructor. Any work submitted (in part or whole) that is not unique will be considered plagiarized and will be treated as such per academic policy. This includes, but is not limited to, material retrieved from references; therefore proper documentation of cited material, especially in projects (using quotation marks with associated page numbers) in APA is a must!

GENERAL EDUCATION OBJECTIVES:

This course satisfies the General Education Category 1 requirement. “The goal of this category is to develop mathematical and quantitative reasoning skills. The learning outcomes are that students will demonstrate the ability: to interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics; to represent mathematical information symbolically, visually, numerically and verbally; to employ quantitative methods, such as arithmetic, algebra, geometry or statistics, to solve problems; to estimate and check mathematical results for reasonableness; to recognize the limits of mathematical and statistical methods.” (2011 -2012 SUNY Cortland Undergraduate Catalog).

OBJECTIVES OF THE COURSE: The student will be able to:

1. exhibit an understanding of basic statistical concepts and techniques that are consistent with contemporary and valid research in the field of exercise science.
2. effectively organize data and accurately calculate appropriate statistics for specific research applications.
3. exhibit an understanding of specific factors which affect validity, reliability and subjectivity of various data gathering techniques.
4. exhibit knowledge of how to analyze and interpret data using current appropriate technology.
5. interpret performance and fitness data in order to make appropriate and relevant conclusions.

COURSE OUTLINE:

- I. Introduction to Measurement, Statistics and Research in Exercise Science
 - A. Types of variables
 - B. Hypothesis Testing
 - C. Statistical Inference
- II. Organizing and Displaying Data in Exercise Science
 - A. Frequency Distributions
 - B. Histograms
 - C. Graphing
- III. Descriptive Statistics (including)
 - A. Central tendency
 - B. Variability
 - C. Percentiles
- IV. Normal Distributions
 - A. Normal Curve
 - B. Probability and Sampling Error
 - C. Standard Scores
 - D. Relevant examples of and applications made to exercise science and fitness data
- V. Relationships among variables in exercise science
 - A. Correlation
 - B. Simple Regression
 - C. Multiple Regression
- VI. Comparing means in exercise science
 - A. T-tests
 - B. ANOVA
 - C. Repeated Measures ANOVA
- VII. Nonparametric techniques utilized in exercise science
 - A. Contingency Tables
 - B. Chi-Square Tests
 - C. Spearman-Brown

Tentative Class Schedule:

<u>Date</u>	<u>Lecture Topic</u>	<u>Assigned Reading*</u>
W 1/18	Introduction	Vincent: Chapter 1
F 1/20	Types of Variables, Organizing Data	Vincent: Chapter 1; SPSS: Chp. 1
M 1/23	Math Review	
W 1/25	Calculator 101	
F 1/27	LAB: Intro to SPSS	SPSS: Chapter 2
M 1/30	Organizing Data, Graphing	Vincent: Chapter 2
W 2/1	Percentiles	Vincent: Chapter 3
F 2/3	LAB: Frequency Distribution	SPSS: Chapter 3
M 2/6	Central Tendency and Variability	Vincent: Chapters 4 & 5
W 2/8	Variability continued	“ Chapter 5
F 2/10	LAB: Graphing	SPSS: Chapters 4 & 5
M 2/13	Normal Curve	Vincent: Begin Chapter 6
W 2/15	EXAM 1	
F 2/17	LAB: Descriptive Stats	SPSS: Chapters 6 & 7
M 2/20	Standard Scores	Vincent: Chapter 6
W 2/22	Sampling Error	“
F 2/24	LAB: Sampling Error	SPSS: Chapter 8
M 2/27	Correlation	Vincent: Chapter 7 (thru p. 112)
W 2/29	Simple Regression	“
F 3/2	LAB: Prediction and Association	SPSS: Chapters 9, 10, 11
<i>Spring Break 3/3 – 3/11</i>		
M 3/12	Regression continued	
W 3/14	EXAM II	
F 3/16	Hypothesis Testing	Vincent: Chapter 1(pp. 8-9, 12-14)
M 3/19	T-Tests	Vincent: Chapter 8
W 3/21	Dependent T-tests	“
F 3/23	LAB: T-tests and Inferential Statistics	SPSS: Chapters 12, 13, 14, App. A
M 3/26	Analysis of Variance	Vincent: Chapter 9
W 3/28	EXAM III	
F 3/30	LAB: Between Subjects ANOVA	SPSS: Chapter 15
M 4/2	ANOVA continued	Vincent: Chapter 9
W 4/4	ANOVA continued	“ Chapter 10 (thru p. 194)
F 4/6	LAB: Repeated Measures ANOVA	
M 4/9	ANOVA continued	Vincent: Chapter 11
W 4/11	ANOVA continued	“
F 4/13	Nonparametric Statistics	Vincent: Chapter 13 (pp. 240-248)

Tentative Class Schedule continued:

<u>Date</u>	<u>Lecture Topic</u>	<u>Assigned Reading*</u>
M 4/16	EXAM IV	
W 4/18	Nonparametrics continued	
F 4/20	LAB: Nonparametrics	SPSS: Chapters 16 & 17
M 4/23	Validity	
W 4/25	Reliability	Vincent: Chapter 10 (pp. 194-199)
F 4/27	Reliability continued	
M 4/30	LAB: Reliability Analysis	
W 5/9	Final Exam (8:00 – 10:00 am)	

* Unless noted, class readings correspond to chapters in *Statistics in Kinesiology* text by W.J. Vincent

** LAB readings correspond to chapters in the *SPSS Basics* text by Z. C. Holcomb
(BRING THIS TEXT TO ALL LABS)

STUDENTS WITH DISABILITIES: SUNY Cortland is committed to upholding and maintaining all aspects of the federal Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973. If you are a student with a disability and wish to request accommodations, please contact Disability Services located in Van Hoesen Hall or call (607)753-2066 for an appointment. Any information regarding your disability will remain confidential. Because many accommodations require early planning, requests for accommodations should be made as early as possible. Any requests for accommodations will be reviewed in a timely manner to determine their appropriateness to this setting.