MISSISSIPPI STATE UNIVERSITY
COLLEGE OF EDUCATION

DEPARTMENT of KINESIOLOGY
COURSE SYLLABUS

Course Prefix & Number: KI 8313

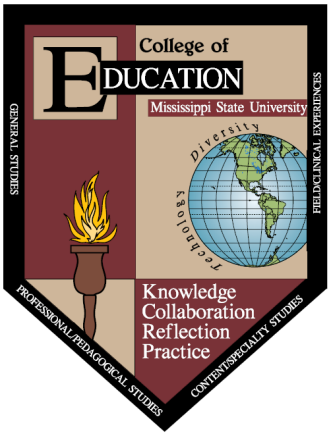
Course Title: Interpretation of Data in Kinesiology

Credit Hours: Three (3) semester hours

Course Type: Lecture

Catalog Description: Statistical interpretation of qualitative and quantitative data in the various disciplines of kinesiology.

College of Education Conceptual Framework:



The faculty in the College of Education at Mississippi State University are committed to assuring the success of students and graduates by providing superior learning opportunities that are continually improved as society, schools, and technology change. The organizing theme for the conceptual framework for the College of Education at Mississippi State University is educational professionals **-** dedicated to continual improvement of all students' educational experiences. The beliefs that guide program development are as follows:

1. **KNOWLEDGE** - Educational professionals must have a deep understanding of the organizing concepts, processes, and attitudes that comprise their chosen disciplinary knowledge base, the pedagogical knowledge base, and the pedagogical content knowledge base. They must also know how to complement these knowledge bases with the appropriate use of technology.
2. **COLLABORATION** - Educational professionals must continually seek opportunities to work together, learn from one another, forge partnerships, and assume positions of responsibility.
3. **REFLECTION** - Educational professionals must be willing to assess their own strengths and weaknesses through reflection. They must also possess the skills, behaviors, and attitudes necessary to learn, change, and grow as life-long learners.
4. **PRACTICE** - Educational professionals must have a rich repertoire of research-based strategies for instruction, assessment, and the use of technologies. They must be able to focus that array of skills on promoting authentic learning by all students or clients, while exhibiting an appreciation and commitment to the value and role of diversity.

Course Objectives:

The student will:

- Demonstrate an understanding of the proper application of statistical methods for specific forms of research within the discipline of kinesiology. **CFPO #1, 4, 6, 10, 11, & 12; InTASC # 1**
- Demonstrate the ability to interpret data generated by various statistical treatments. **CFPO #1, 2, 4, 5, & 12; InTASC # 1**
- Demonstrate the ability to critique research investigations. **CFPO # 1,3,5**
- Demonstrate an understanding of the basic principles of measures of central tendency, variability, and normal distributions of data. **CFPO #1, 2, 4, 5, & 12; InTASC # 1**
- Demonstrate an understanding of the use of correlation research and regression in an effort to explain relationships between different variables. **CFPO # 1: InTASC # 9**
- Demonstrate an understanding of the use of t Tests and analysis of variance (ANOVA) in comparing sets of data. **CFPO #1: InTASC # 9**
- Demonstrate the ability to use the statistical software package SPSS. **CFPO # 1, 7; InTASC # 9**

Topics to Be Covered:

A. Measurement, Statistics, and Research (Chapter 1)
   1. What is Measurement?
   2. The Process of Measurement
   3. Variables and Constants
   4. Research Design and Statistical Analysis
   5. Statistical Inference

B. Organizing and Displaying Data (Chapter 2)
   1. Organizing Data
   2. Displaying Data

C. Percentiles (Chapter 3)
   1. Common Percentile Divisions
   2. Calculations Using Percentiles

D. Measures of Central Tendency (Chapter 4)
   1. The Mode
   2. The Median
   3. The Mean
   4. Relationships Among the Mode, Median, and Mean

E. Measures of Variability (Chapter 5)
   1. Range
   2. Interquartile Range
   3. Variance

4. Standard Deviation
5. Calculating Standard Deviation for a Sample

F. The Normal Curve and Sampling Error (Chapter 6)
1. Z Scores
2. Standard Scores
3. Predicting Population Parameters Using Statistical Inference
4. Estimating Sampling Error
5. Levels of Confidence and Probability of Error
6. Calculating Skewness and Kurtosis

G. Correlation, Bivariate Regression, and Multiple Regression (Chapter 7)
1. Correlation
2. Calculating the Correlation Coefficient
3. Bivariate Regression
4. Multiple Regression

H. The t Test: Comparing Means From Two Sets of Data (Chapter 8)
1. t Tests
2. Assumptions for the t Test
3. Comparing Two Independent Samples (A Between Comparison)
4. Repeated Measures Design (A Within Comparison)
5. The Magnitude of the Difference (Size of Effect)
6. Type I and Type II Errors
7. Two- and One-Tailed Tests
8. Determining Power and Sample Size

I. Simple Analysis of Variance: Comparing Means Among Three or More Sets of Data (Chapter 9)
1. Assumptions in ANOVA
2. Sources of Variance
3. Calculating F
4. Determining the Significance of F
5. Post Hoc Tests
6. The Magnitude of the Treatment (Size of Effect)

Required Texts:

Cronk, B. C. (2008). *How to Use SPSS.* (5th ed). Glendale, CA: Pyrczak Publishing.

Vincent, W. J. (2012). *Statistics in Kinesiology.* (4th ed). Champaign, IL: Human Kinetics.

Methods of Instruction: Lecture

MSU Honor Code:

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Upon accepting admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code. For additional information please visit: http://www.msstate.edu/dept/audit/PDF/1207.pdf

Cellular Phones: It is expected that students will show respect for the instructor as well as their peers by turning off their cellular phones before entering the classroom.

Technology:
Technology will not be addressed in this course.

Diversity:
It is important to help students understand the significance of the diverse learner. We will address professionalism and how to help individuals or groups who are diverse in age, disability, ethnicity, gender, race, sexual orientation, socioeconomic class, and other characteristics. We will address these issues in our topics to be covered.

Disability:

Field Component: None

Evaluation of Student Progress:

The grade for each student is based upon:

A.	Written exams (2)	200 points
B.	Class Assignments (10)	100 points
C.	Class Presentation*	15 points
		315 total points

Exams**:** There will be a midterm exam during the semester that will be announced at least one week in advance. There will be a final exam held during our last class meeting on Tuesday, April 26th. Questions on exams may include calculations, definitions, multiple choice, short answer, and essay.

Late and Missed Exams: Any student late for an exam will not be allowed to take the exam after the first person has finished. Any student missing an exam must submit an acceptable written excuse to the instructor the first day of return. Failure to submit a written excuse with

proper documentation, or failure to make up the exam will result in a zero for the exam. Acceptable excuses are discussed in the *Academic Operating Policy and Procedure Manual*. Acceptable absences include, but are not limited to: participation in an activity appearing on the university's authorized activity list; death or major illness within the student's immediate family, religious observance; and, personal sickness that is too severe or contagious for the student to attend class as determined by the Health Center or off-campus physician.

Class Assignments: There will be ten assignments that will be relevant to the information covered in class. These will vary in format and some will be completed in class while others will be done outside of class.

Late Assignments: Failure to complete an assignment on time will result in a grade reduction for that assignment. Failure to complete an assignment will result in a zero for the assignment.

Presentation: An individual presentation is required for the class. Presentations should be made using PowerPoint software. Dates and details for presentations will be determined during the first half of the semester.

Attendance: Class attendance and participation are expected for all classes. Students who will be representing the University in an official documented capacity should see the professor at the beginning of the semester.

Grading Scale

A = 90 – 100%
B = 80 – 89%
C = 70 – 79%
D = 60 – 69%
F = 59% or less

Bibliography:

Baumgartner, T. A., Strong, C. H., & Hensley, L. D. (2005). *Conducting and Reading Research in Health and Human Performance.* (4th ed). Boston: McGraw-Hill.

DeGroot, M. H. & Schervish, M. J. (2001). *Probability and Statistics,* (3rd ed). Boston: Addison Wesley.

Huck, S. W. (2007). *Reading Statistics and Research.* (5th ed). Boston: Allyn & Bacon.

* May be excluded from course