

# Statistics

## *Course Syllabus*

*Winter 2005*

### Instructor Information

#### **Karl N. Kelley, Ph.D.**

##### **PSY 250: Statistics**

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Office Hours	MWF 1:00 –2:00 TTH 10:30 – 12:00 And by appointment
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### Course Texts

#### **Required**

Gravetter, F. J. & Wallnau, L. B. (2004). Statistics for the behavioral sciences (6<sup>th</sup> edition). Belmont, CA: Wadsworth/Thompson Learning.

#### **Suggested**

Gravetter, F. J. (2004) Study guide for Gravetter & Wallnau's statistics for the behavioral sciences 6<sup>th</sup> edition. Belmont, CA: Wadsworth/Thompson Learning.

#### **Other Suggested Material**

- Small calculator
- Pencils
- 2 notebooks

### Purpose & Objectives

**W**elcome to Statistics. The purpose of this course is to introduce you to basic statistical procedures for organizing, describing, and evaluating data. We will explore the logic behind various statistical procedures and how to use them. To accomplish this goal, this course will address three interrelated objectives:

- to become familiar with the logic and use of several descriptive and inferential statistics
- to become a critical consumer of statistical information
- to be able to use a computer statistical package to analyze data

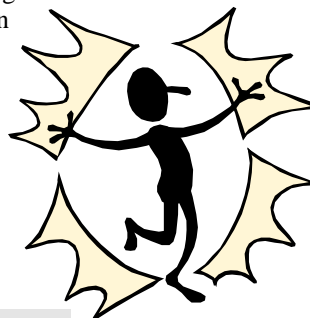
## Statement of Philosophy



- This course is about empowering you to take charge of interpreting and assessing quantitative data. We live in a quantitative world and the better you understand statistics the less likely you will be manipulated by others.
- You must work very hard to understand this material. Anyone I know who understands anything well has worked very hard.
- In this course we will use basic mathematical tools to solve problems related to the organization and interpretation of data.

## Suggestions for Success

- Focus on understanding rather than memorizing
- Keep a positive attitude and make the work fun
- Ask questions
- Read more than the required assignments
- Do more problems than those assigned
- Organize and attend study sessions
- Visit your instructor during office hours
- **Get a good night sleep before the exams**
- Try to never miss a class
- Keep up with your work



## Class Policies

### Attendance

Class time represents an important aspect of the learning experience and I expect you to attend all classes. I reserve the right to adjust final grades on the basis of your attendance and participation.

### Exams

You will enjoy four exams, custom designed for this course by your instructor. Exams will include definition, computation, and interpretation problems. The first exam will be worth 50 points, the second two will be worth 100, and the final will be worth 150 points. All exams are cumulative.

### Formula Sheet & Exam Materials

For every exam you are encouraged to bring your calculator, two or three sharp pencils, and a formula sheet. The formula sheet may contain any information **except words**. If you have a question about the content of this sheet, please check with me **before** the exam. You are required to turn in your formula sheet with your exam.

*NOTE: Cell phones or calculators that can store text information will not be allowed during the exam*

### Quizzes

There will be 4 short quizzes during the term worth 5 points each during the term. There will be no make-ups for missed quizzes.

### Journals

During the course of this term, I encourage you to keep a journal for assigned projects. The Statistics Intranet Page contains a list of suggested problems. You must show all of your work for these projects. Please bring your journal with you when you visit my office.

### Projects

You will write four short papers for this class. All papers are formal and must adhere to the style requirements attached to this syllabus. The first two projects will be worth 10 points and the second two will be worth 15 for a total of 50 project points.

### Statistics Guide

During this course you will develop a Statistical Guide for terms, formulas and examples.

The assumption behind this guide is that you will have an easy-to-use reference to take with you as you move on. The First Guide will be due week 5 and will be worth 15 points. The Final Guide will be due on the day of the final exam and will be also be worth 15 points.

These guides must include a glossary of terms, a list of formulas, and a decision guide to help you select the appropriate analysis for your data. Creativity will be rewarded.

### Exam & Assignment Extension Policy

All students must adhere to the scheduled times for exams and assignments. Only under extraordinary circumstances will a make-up exam be administered. Project papers are due at the beginning of class on the due date. If you turn them in later that day, you will lose 20% of the grade. Papers will not be accepted after the due date unless prior arrangements have been made with the professor.

### Grading

There are 500 possible points for this course (400 exam, 20 quiz, 50 project, and 30 study guide points). The following are the criteria for each grade:

Percentage		Grade
93%	100%	<b>A</b>
<b>90%</b>	<b>92%</b>	<b>A-</b>
87%	89%	<b>B+</b>
<b>83%</b>	<b>86%</b>	<b>B</b>
80%	82%	<b>B-</b>
<b>77%</b>	<b>79%</b>	<b>C+</b>
73%	76%	<b>C</b>
<b>70%</b>	<b>72%</b>	<b>C-</b>
60%	69%	<b>D</b>
	<b>59%</b>	<b>OOPS</b>

# Schedule

	Topic	Specific Areas	Assignment	Reading
1	Understanding & Summarizing Univariate Data Introduction to SPSS	<ul style="list-style-type: none"> <li>• Basic terminology</li> <li>• Graphs</li> <li>• Central tendency</li> </ul>		1, 2, 3
2	Descriptive Univariate Techniques	<ul style="list-style-type: none"> <li>• Dispersion</li> <li>• Basic probability</li> <li>• Probability distributions</li> </ul>	Friday: Descriptive Paper	4, 5, 6
3	Probability, Probability Distributions & Sampling Distributions	<ul style="list-style-type: none"> <li>• z-transformations</li> <li>• Sampling Distributions</li> <li>• Standard error</li> <li>• Maximum error of estimate</li> </ul>	Monday: Exam 1	6, 7
4	Introduction to Hypothesis Testing: One Sample Hypothesis Tests	<ul style="list-style-type: none"> <li>• Logic of hypothesis testing</li> <li>• Hypothesis errors</li> <li>• One sample z-test</li> </ul>		8
5	Analysis of Effect Size and Estimation	<ul style="list-style-type: none"> <li>• One sample t-tests</li> <li>• Cohen's d (effect size)</li> <li>• Estimation</li> </ul>	Friday One sample paper.	9, 12
6	Two Sample Hypothesis Tests	<ul style="list-style-type: none"> <li>• Independent sample tests</li> <li>• <math>F_{\max}</math> Test of variance</li> <li>• Dependent sample tests</li> </ul>	Monday Exam 2 Friday SG1	10
7	Introduction to Bivariate Techniques	<ul style="list-style-type: none"> <li>• Correlation</li> </ul>	Monday: T-test paper	11
8	Bivariate Techniques	<ul style="list-style-type: none"> <li>• Regression</li> </ul>	Friday Exam 3	16
9	Introduction to ANOVA	<ul style="list-style-type: none"> <li>• One-way ANOVA</li> <li>• Post-hoc analysis</li> </ul>		13
10	Chi-square	<ul style="list-style-type: none"> <li>• Chi-square tests</li> </ul>	Monday: ANOVA paper	17
11	Final Exam SG2		