



OTRP online

Office of Teaching Resources in Psychology

Psychology 220: Quantitative Methods in Psychology

Fall 2004

Dr. Meredyth Krych Appelbaum

Montclair State University Psychology Department

Class Info

Time: Wed. & Fri. 11am-12:40pm
Location: **W. DI-283A & F. DI-280**
Office Hours: Wed. 12:45-2:30pm
Friday, 12:45-2pm or by appointment

Instructor Info

Email: krychm@mail.montclair.edu
Office: Rm 243, Dickson Hall
Phone: (973) 655-4336

Welcome to Quantitative Methods in Psychology (otherwise known as statistics)! This course is designed so that you can develop a good basic knowledge of statistics and their application to the social sciences, particularly psychology. Statistics play a crucial role in scientific understanding and developing new knowledge within psychology. In this course, we will cover a variety of methods for analyzing (breaking down) data. You should gain an understanding of why these statistical tests are important, the underlying conceptual purpose of the statistical tests, and ways to choose tests that are appropriate for particular situations. Psychology is a social *science* in which we apply scientific principles in order to discover causes and consequences of behavior. The discipline of statistics is thus a major tool in order to facilitate our understanding of behavior. You can gain a great deal from learning Statistics!

Fundamental goals:

You should be able to:

1. Understand the various statistical techniques conceptually so that you could explain them to others, as well as accurately use the techniques.
2. Develop an understanding of the logic of hypothesis testing and its role in the research process.
3. Develop computer skills associated with SPSS, a statistical programming language.
4. Develop the ability to review, understand, synthesize and interpret output from statistical analyses.
5. Be prepared for more advanced courses in statistics.
6. Further your critical and analytical thinking skills through problem solving and lab assignments.

Required Materials:

- Gravetter, F. J. & Wallnau, L. B. (2004). *Essentials of statistics for the behavioral sciences* (5th ed.). Pacific Grove, CA: Wadsworth.
- SPSS 12.0
- Study guide
- Calculator (nothing fancy-- calculators that allow you to input text are not allowed...)

Course Requirements:

| | |
|-------------------------------|--------------------------|
| 3 exams X 100 per exam | = 300 points (60%) |
| Final exam | = 125 points (25%) |
| Homeworks/quizzes | = <u>75 points (15%)</u> |
| | 500 points (100%) total |

Exams

There will be four (4) exams in this course. Because students have different learning styles and strategies, I use multiple methods to assess learning.

You can expect the following kinds of questions on the exams: computational problems, fill-in the blanks (to assess recall of material) as well as multiple choice questions which require active thinking. Grading the computational problems will be based on the type of errors (minor mistakes will lead to small deductions, whereas more major errors will result in large deductions.)

It is very important that you do not simply try to memorize material but *understand* the material so that you can explain it to someone else... I highly recommend that you **form study groups** and work with other students.

Each exam will be scheduled on the date assigned. **You MUST take the exams on the date scheduled** in order to be fair to your fellow students. If you have a conflict with an exam date, you MUST tell Professor Appelbaum as soon as possible. If you do need to miss an exam due to serious illness, you should notify me IN ADVANCE of the exam and provide me with a doctor's note in order to be able to make up the exam. Otherwise, you may not be allowed to make up the exam.

Blackboard website

The information for the labs and homeworks will be placed on Blackboard. Blackboard is a helpful resource for our class to post important information over the course of the semester—whether it be your syllabus, lab homeworks, exam information, etc. You can access Blackboard by going to the following website: <http://montclair.blackboard.com>

At the prompt, type in your username and password as you would if you were logging into your Montclair email account (such as your webmail account.)

Sample username for Jen Smith: Username: smithj1

Click on Psych 220, and you will find that a copy of your syllabus is posted on-line. We will use blackboard to supply further information and handouts this semester.

Important Note: If you don't know your username and password, go to <http://netid.montclair.edu> and complete the form.

Lab Homeworks

In psychology, we use statistics as a tool to answer questions that we are interested in solving. In this course, we will use computers both to demonstrate visually some of the theoretical concepts we learn in class as well as apply this knowledge to problems.

In the lab assignments we will use SPSS as a tool to enable us to find answers to questions. For example, do you think that the romantic beliefs of college students today is the same as the overall population of the United States? Why or why not? As a class we might fill out a questionnaire to assess our individual beliefs about romance. We can find our individual scores on the questionnaire, input the data into SPSS, and analyze the data to see if our class's mean is different from the overall population or we might conduct a correlation to examine the relationship between age and people's scores. In any case, you will be asked to make a specific prediction of what you expect to find and explain why and then explain the results you found using SPSS and how they lead you to the conclusion you make. Also as a part of the homeworks, you may be asked to integrate material to explain how concepts from different chapters relate to one another.

- You will have **4 lab homeworks** each due **one week** after the relevant lab. The labs are due in class on the date the relevant lab is due. On the *rare* occasion that you accidentally forgot to bring your lab with you, you should get my permission and you may be allowed to email it to me by 11:59pm that day. The lab homework should be TYPED and be your own best work. You may handwrite calculations and formulas but all else should be typed. You **MUST** submit your homework on time in order to receive credit, so if you are sick and cannot attend class, make sure to email me at krychm@mail.montclair.edu the day it is due or **fax** it to the department -- Attn: Dr. Meredyth Appelbaum, Fax#: 973-655-5121). Otherwise, it will be considered late. This is in fairness to all of the students who work hard to submit their work on time.

Lateness Penalty.

I will deduct 10% per day late. So if the assignment is due on Monday and you submit it on Thursday, the maximum you can earn will be 70%). Your **top 3** homework scores will count, so if you turn in a lab late, you can make up for it by doing very well on the other 3 assignments.

Practice Book Problems and Study guide.

For each *Essentials of Statistics* chapter, you should do **the odd-numbered chapter problems** at the end of each chapter (as well as the comprehension questions at the end of each section of reading). The *answers to the odd numbered questions are in the back of your book*, so that you can check on how well you are doing.

Q: “Why do I need to do practice problems?”

- You can only find out what you truly “know” and recall by doing the problems yourself.
- It enables you to pinpoint places where you are having trouble.

Though the book problems will not be corrected and graded, doing the problems will definitely help increase your comprehension and ultimately your grade on exams will benefit from the practice.

Grading:

| | | |
|---------|---|------|
| 93-100% | = | A |
| 90-92 | = | A- |
| 88-89 | = | B+ |
| 83-87 | = | B |
| 80-82 | = | B- |
| 78-79 | = | C+ |
| 73-77 | = | C |
| 70-72 | = | C- |
| 68-69 | = | D+ |
| 63-67 | = | D |
| < 63 | = | Fail |

Office hours.

My office hours are in Dickson, Rm 243. Please feel free to visit me during office hours or email me if you have questions about the course, or if you want to clarify points that you don't understand. You may also call me at 973-655-4336 if it is more convenient to ask your question by phone. If you cannot make these hours, you may make an appointment for another time. You can set up the appointment by emailing me or talking to me during a class break.

Questions?

During class, if you have a question related to class, I encourage you to ask. Chances are that someone else in the class has the same question. When you want to speak, please *raise your hand* to be called on, so that we can all easily hear each other.

Punctuality and submitting work on time.

Make sure to come to class on time and to submit all work on time. The role of a student is just like any other job. It is important to be prompt and submit your work on time. Imagine a clergyman telling a congregation, “Sorry, no sermon today, I had a late night last night”. Or a doctor skipping out on seeing a patient, because he had other things he decided were more important...

In this class, your goal is to succeed and everyone can succeed so long as they are willing to work. Therefore, out of respect to everyone, make sure to be prompt and submit your work on time. Lateness will affect your grade.

Student responsibility and Honor code.

The University code of conduct is at the following web site.
<http://www.montclair.edu/pages/deanstudents/regulations1.html> Just like any other job, success in statistics requires that you do your own work (though you may certainly study with others). You are to do your own work -- with honor, responsibility, and integrity—whether for readings, labs, homeworks, or exams. For example, you should not copy any one else's homeworks or exams. If you copy someone else's work, both students will receive a zero for the assignment and will not be allowed to make it up. Not only is copying wrong, but it is unfair to your colleagues (who likewise are busy but made the effort) and it hurts yourself (since you don't learn). Cheating of any kind (including plagiarism) will not be tolerated and will be brought before the Dean...

Tips -- How to succeed in this course: Prepared Attendance

- Come prepared to all classes
- Participate in class
- Read chapter readings both before and after each lecture.
- Try to understand the material well enough so you can teach someone else.
- Try to **form a study group** with some fellow students in the class. Those who do form study groups tend to do best in this course. You can pinpoint what you still have questions on by talking to others and often you learn information best if you try to explain it to others,

Q: Why is keeping on top of the readings and assignments so important in Statistics?

Unlike some of your other courses, this course uses what we learn in the beginning and builds on it throughout the course. **This means that what you learn in week 3 really will be important in week twelve.** Simply attending class is not enough. You must come to class prepared – ready to answer questions and to actively participate during discussions and labs. Be sure to do all of the assigned reading so that you can get more out of your time spent in lecture and labs, and more effectively contribute to this course...

If you do need to miss a class:

It is your responsibility to find out what you missed from another student (or two). There is only one of me but many of you, so your colleagues are an important resource for you. Make sure that you know exactly when assignments are due. Also, you may want to check Blackboard, since occasionally I will have an announcement alerting you to an important document posted to the blackboard site.

Bad weather.

If for some reason, class is cancelled due to the weather, I will post a notice on the blackboard web site that morning (by 7:15am), so in the event of bad weather, you will want to check Blackboard before leaving home.

Math Anxiety.

For some students, this is a difficult course, not so much because the content itself is difficult, but because students often have preconceived notions about statistics and math that interfere with their ability to do well. If you are one of these students, there are plenty of other people who feel the same way. BUT, you need to get over your fear of numbers and test anxiety, so that you can succeed.

Check out <http://www.mathpower.com> ; <http://www.mathanxiety.net>

Other important notes:

No food/drinks in Computer room.

We have been asked not to bring any food or drinks in the computer room, since they could harm the expensive equipment.

Disabilities

Students with disabilities who may need disability-related classroom accommodations need to contact Linda Smith in the Disability Services office in Morehead Hall. She will contact me, and then we can make sure that you are provided with appropriate accommodations.

Info about Professor Appelbaum (formerly Krych):

Welcome back to MSU and to Psych 220 -- my name is Professor Appelbaum and I'm originally from the Philadelphia area. Last year, I was Professor Krych (pronounced "Crick") but I was recently married in July of 2003. I've always loved languages, so I double majored in Psychology and Linguistics as an undergraduate at the University of Pennsylvania and later went on to receive a Ph.D. in cognitive psychology from Stanford University. I love watching football especially the Philadelphia Eagles and believe that dark chocolate should be its own food group... I'm looking forward to a great semester with you!

Course Schedule, Fall 2004:
(approximate)

| Date | Topic | Readings |
|----------------|---|--------------------------------|
| Thursday, 9/02 | Intro. to the course; Brief intro to Blackboard | <i>Essentials</i> Ch. 1 |
| Monday, 9/06 | <i>No Class--Labor Day</i> | |
| Th. 9/9 | Intro. to Statistics: Basic concepts | <i>Essentials</i> Ch. 1 |
| M. 9/13 | (Intro to SPSS & finish core concepts from ch. 1 | |
| Th. 9/16 | Frequency Distributions | <i>Essentials</i> Ch. 2 |
| M. 9/20 | Central Tendency | <i>Essentials</i> Ch. 3 |
| Th. 9/23 | Variability | <i>Essentials</i> Ch. 4 |
| M. 9/27 | Lab#1—Descriptive Statistics | |
| Th. 9/30 | Variability | <i>Essentials</i> Ch. 4 |
| M. 10/4 | Example Quiz & review questions from Chap. 1-4 Preview (Ch.5) on Z-scores if time | Lab #1 due |

| | | |
|-----------|---|--|
| Th. 10/7 | Exam #1 | Covers Chaps. 1-4 |
| M. 10/11 | Z-scores | <i>Essentials</i> Ch. 5 |
| Th. 10/14 | Probability | <i>Essentials</i> Ch. 6 |
| M. 10/18 | Distribution of Sample Means | <i>Essentials</i> Ch. 7 |
| Th. 10/21 | Lab #2 on probability; Sampling distributions (cont.) & Intro to hypothesis testing if time | <i>Essentials</i> Ch. 7 & 8 |
| M. 10/25 | Hypothesis testing | <i>Essentials</i> Ch.8 |
| Th. 10/28 | Hypothesis testing (cont.)/review | Ch.8 (cont.) Lab #2 due |
| M. 11/1 | Exam #2 | Covers Chaps. 5-8 |
| Th. 11/4 | One-sample t-test | <i>Essentials</i> Ch. 9 |
| M. 11/8 | T-statistic lab #3 & t-statistic for related samples | <i>Essentials</i> Ch. 11 |
| Th. 11/11 | T-test for related data (cont.) and for independent data | Ch. 11 (cont.) & Ch. 10 |
| M. 11/15 | T-test for Independent Samples | <i>Essentials</i> Ch. 10 Lab #3 due |
| Th. 11/18 | Intro to one-way ANOVA | <i>Essentials</i> Ch. 13 |
| M. 11/22 | EXAM #3 | Covers Chaps. 9-11 |
| Th. 11/25 | <i>Thanksgiving—No class</i> | |
| M. 11/29 | Review one-way ANOVA and Intro to 2-way ANOVA | <i>Essentials</i> Ch. 13 & 14 |
| Th. 12/02 | ANOVA and interactions (wrap-up) Correlation | <i>Essentials</i> Ch. 14 & Ch. 15 |
| M. 12/06 | Correlation and lab #4 | <i>Essentials</i> Ch. 15 |
| Th. 12/9 | Chi-square | <i>Essentials</i> Ch. 16 |
| M. 12/13 | Wrap-up /Review | Lab #4 due |

FINAL EXAM: Thursday, 12/16 from 11am-1pm.

Cumulative exam (especially covering Chap. 8-16 and 1-4) but with some special emphasis on topics not tested previously (chaps. 13-16).

*Note: The above course outline serves as a guide.
Depending on winter weather, course topics and dates are subject to change.*