Psychology 211A: Experimental Methods and Data Analysis I
Fall 2009

Instructor: Dr. Sarah Johnson **When:** T/R 7:30-9:45am
Phone: 610-625-7013 **Where:** PPHAC 112
Office: 224 PPHAC **Office hours:** T & W 2:30-4:30pm
Email: skjohnson@moravian.edu R 10-11:30am
Website: http://blackboard.moravian.edu/ or by appt.
 Pwd: methlab

Overall Course Goal: This course will foster understanding of how researchers in psychology go about studying the way individuals think, feel, act, etc. The primary focus of this first course in the 2-part series of 211-212 is on the scientific method as the means through which knowledge advances in psychology. You will learn how to develop and test hypotheses, collect reliable data, use some basic statistical procedure, and interpret/report the results of those statistical tests. You will also begin to learn the skills and tools used by psychologists in their work, including descriptive and inferential statistics, spreadsheets and graphing, the Statistical Package for the Social Sciences (SPSS), and writing in American Psychological Association (APA) format. Further understanding of more advanced statistical procedures will be the focus of Psyc 212, in which you will actually implement a study of your own design. The proposal of the design for your own study will be the major project of the current class. This course is a writing and computing intensive course for the major in Psychology. Prerequisite: PS 120.

THE SECOND HALF OF THE COURSE (I.E., 212 IN THE SPRING SEMESTER) WILL FOLLOW THE SAME SCHEDULE (SAME TIME/SAME DAYS) AS OUR FALL SCHEDULE.

Specific Course Objectives: By the end of this course, you should be able to:

1. Appreciate the strengths and weaknesses of scientific method as a way of knowing

2. Understand and apply the APA Principles of Ethical Conduct to the research process

3. Think critically about all phases of the research process in order to critique your own research and the research of others (i.e., recognizing potential design flaws), as well as to become a better consumer of information

4. Use appropriate on-line (e.g., PsycInfo) and library resources in the research process

5. Design a study to answer a specific research question of your own choosing

6. Understand the connection between research design and statistical analysis

7. Use basic statistical procedures appropriately, involving both hand-calculation and applying SPSS (Statistical Package for the Social Sciences), as well as graphing the data using either SPSS or Excel

8. Write a research proposal in following the guidelines set forth by the American Psychological Association Publican Manual (i.e., APA format)

Required Textbooks: Any additional readings will either be handed out during class or made available via Blackboard. Readings may be added that are not currently on the class schedule.

American Psychological Association (2001). *Publication Manual of the American Psychological Association* (5th ed.). Washington, DC: APA.

Heiman, G. W. (2001). *Understanding Research Methods and Statistics* (2nd ed.). New York: Houghton Mifflin Company.

Expectations for the Course: Preparation and Commitment

a) As a prerequisite for upper level courses in psychology and due to its rigor of combining both statistics and methodology – you must be willing to give preparation for this course a high priority in terms of your time management.

b) You MUST have basic math skills. If you have difficulty with math, you may need to rethink taking this course right now.   Help is available through Learning Services (see below).

c) You should allocate a time and place to study for this course. Your studying will not be successful if done in 10 or 15 minute segments, late at night or at the last minute. I recommend several study sessions of one hour per week, although what is needed may vary from individual to individual. This time is in addition to the time required to complete assignments, quizzes, independent research work, and group study sessions. I strongly encourage you to form study groups and meet on a regular basis in order to review homework problems and to capitalize on different perspectives and examples.

d) You must read before class or you will not fully comprehend the lectures. Your reading and studying goal should go beyond comprehending – you must eventually be able to speak the language of research.

e) Form study groups and meet on a regular basis in order to capitalize on different perspectives and examples.

f) I assume that all of you have had a basic writing course (WR100 or equivalent). Therefore, I expect strong writing to be displayed in your assignments and projects. Spelling, grammar, and structure are always relevant, and will therefore be a large source of the grading of assignments and the project.

g) USE THE APA MANUAL AND WRITING CENTER AS VALUABLE RESOURCES!

h) Commit to the policies, procedures, and spirit of the syllabus. Please consult the relevant parts of the syllabus when necessary before discussing concerns with me.

In the spirit of fairness to ALL students I must be consistent with the policies laid out in this syllabus and ask you to be familiar with and respectful of them.

Calculator: You will need a calculator for many class meetings, so please bring it *every* class. At a minimum, you should have a calculator that includes a square root button. Calculators that allow you to save new equations or that automatically calculate any of the statistical tests we cover are not permitted. If you aren't sure whether your calculator is appropriate, you can bring it to me for approval. **If a prohibited calculator is used for an exam, the exam will receive a grade of zero.** If you forget a calculator for an exam, it is not guaranteed that there will be one for you to borrow, in which case you may earn a lower grade for the statistics portion.

Course Evaluation:

      Class Participation: The attendance requirement is necessary for two reasons: 1) The coursework is extremely layered and missing one day can put you behind for future meetings and assignments; 2) Your fellow students rely on your presence, for providing feedback or participating in group activities. Each student has up to **2 allowed absences** (there is no distinction made between excused and unexcused absences. Exceptions for absences beyond the allowed 2 will be made, on a case-by-case basis, only in cases of documentable emergencies. For each absence beyond that, your final course grade will be reduced by $1/3^{rd}$ letter (e.g., B+ → B). If you have special circumstances that will result in missing more than two classes, you should see me and contact the Learning Services Office. There are some class activities that, if missed, cannot be made up. In addition, I expect all assigned readings to be done in advance.

I reserve the right to adjust final grades based on quality of participation, as follows:

+	A student who arrives on time and prepared for *every* class, participates in discussion frequently, has clearly read in advance, is highly active in all group activities, and who generally contributes high quality ideas during class, may receive a boost of $1/3^{rd}$ letter grade to his/her final course grade.
No adj.	A student who arrives on time and prepared for most classes, answers questions in class sufficiently and occasionally adds his/her own comments or questions, has clearly read in advance, and participates adequately in group activities will not receive any adjustment to his/her final course grade. I expect the majority of the class to fall in this category.
–	A student who shows up late to class several times, does not contribute in class discussions/group activities, is poorly prepared (e.g., has not done assigned readings), or who repeatedly fails to follow instructions for an in-class activity may receive a reduction of $1/3^{rd}$ letter grade to his/her final course grade. If a reduction of grade is warranted, a warning note will be given to the student privately prior to the end of the semester.

    1. Assignments: There will be some in-class and some take-home assignments due over the course of the semester. Take-home assignments should be typed—excluding computational problems, which may be written by hand—and proofread for clarity, spelling and grammar, etc, as appropriate. Unless otherwise noted, take-home assignments are due at the beginning of class, and in-class assignments are due before leaving class. Late assignments will ***not be accepted*** (NO exceptions). If you miss an in-class assignment due to absence and you cannot document the reason for the absence, you will not be permitted to make it up. If you miss an in-class assignment due to an excused absence, we will, if possible, arrange an extension in proportion with the excuse, as determined on a case-by-case basis. However, there are some in-class activities/assignments that cannot be made up if missed.

2. Online quizzes: You will be expected to complete a quiz through Blackboard for every chapter of the course that we cover (excluding Ch. 1). These quizzes will be timed and will be available starting two days before the corresponding chapter is to be covered. Once you start the quiz, you must complete it at that time. The quizzes will be entirely multiple-choice, and you are expected to complete them without collaborating with other students, but you may use your notes. Your lowest quiz score will be dropped, and additionally you have the option of retaking one quiz immediately after we have covered the chapter in class (re-takes arranged through me).

3. Exams: There will be three exams given throughout the semester and one cumulative exam given during finals period. Exam format may include multiple choice, short answer/identification, short essay, and/or computational problems. Exams can include questions on anything in the assigned text chapters and handouts even if not discussed in lecture. Study guides with important terms to know for the exam and sample exam questions will be posted on Blackboard as each exam approaches. You will be allowed to use the grade on the cumulative final to replace a lower score from the earlier exams or to substitute for a missed exam provided you had an *extraordinary* and *documentable* excuse for missing the exam, as determined on a case-by-case basis. If you use the final exam to substitute for another exam, the final itself will then count twice in determining your final course grade.

      Missed exams: If you have an extraordinary and documentable excuse for missing an exam, contact me as soon as possible and we will arrange to either administer a make-up exam or to have you skip that exam and use the cumulative final to substitute for it. If you know in advance that you will be absent during an exam (e.g., because of travel for a sports team or an interview) then you need to let me know as soon as possible <u>before</u> the exam. You may not use the cumulative final to replace a missed exam if you skipped the exam without legitimate reason.

4. Proposal: You will be working throughout the semester on a proposal for a study to be implemented next semester (in Psyc 212). This project has multiple components that will build on each other, culminating in a final research proposal, with at least 8 references, written in APA style. Some portions of the project will be ungraded (e.g., "Topics of interest" list, methods draft); these ungraded portions must be turned in on time or a reduction will be applied to the graded portion of the proposal. Further information regarding the expectations for and grading of homework assignments, and proposal components will be given in separate handouts.

Late Policy: Except in rare cases, late homework and ungraded proposal assignments will not be accepted. Late papers will be accepted for <u>up to four calendar days</u> after the due date and, unless otherwise noted, will result in a ***reduction of 1 letter grade for every day late*** beginning <u>at 5pm</u> on the assignment's due date. After the four-day period, the paper will not be accepted and a grade of 0 will be applied. No exceptions will be made to this rule for minor technical difficulties. Situations involving documentable excuses will be taken on a case-by-case basis. I will only accept work by email if you have arranged with me to do so for that assignment.

Note that it is within my purview to use qualitative judgment in assigning grades for various components of the course (e.g., participation, homework assignments, exam essays, papers, etc.).

Overall grades- Breakdown:

Homework/In-class assignments (total)	15%
Online quizzes (total)	10%
Exams (3 @ 10% each)	30%
Final exam	10%
Proposed Research Outline	10%
Proposal draft	10%
Final proposal	15%
	Total 100%

Unless otherwise noted, I will use the following scale for calculating grades:

Letter	Score	Grade range	Letter	Score	Grade range
A	100	95-100	C	75	73-76
A-	92	90-94	C-	71	70-72
B+	88	87-89	D+	68	67-69
B	85	83-86	D	65	63-66
B-	81	80-82	D-	61	60-62
C+	78	77-79	F	0	0-59

PLEASE NOTE: THE POLICY IN THE PSYCHOLOGY DEPARTMENT STATES THAT, IN ORDER TO MOVE ON TO THE SECOND COURSE IN THIS SERIES (PSYC 212), YOU MUST EARN AT LEAST A C (72.6) IN THIS COURSE. BOTH 211 AND 212 ARE REQUIRED FOR PSYCHOLOGY MAJORS.

Plagiarism and cheating: Any work that you turn in for this class must be entirely your own work. Any sources used must be properly documented, and I will ask you not to use any direct quotes in assignments or papers. For more information on plagiarism and cheating, refer to the Student Handbook and the following website regarding academic responsibility at Moravian College: http://www.moravian.edu/studentLife/handbook/academic2.htm. As this site clearly explains, the consequences for cheating or plagiarism can range from failing the assignment to receiving an F for the final course grade to expulsion, depending on the severity of the case and prior history of offenses. Although I am not generally opposed to your discussing assignments with fellow students from the class, all of the work you submit to me must be entirely your own, except where explicitly noted that collaboration is allowed.

Disabilities: The Americans with Disabilities Act (ADA) provides for some accommodations to be made for students with certain disabilities. If you have such a disability and are willing to disclose it, you may take advantage of such accommodations. In order to do so, you are required to meet with Mr. Joseph Kempfer in the Office of Learning Services. Accommodations cannot be provided until I have received authorization from Mr. Kempfer. You should also consider taking advantage of the Learning Services Office if you are having difficulty academically in this (or any other) class. The office is located at 1307 Main St. (phone: 610-861-1510). They coordinate Statistics tutors (including students specifically from previous Psych statistics courses, when there are volunteers available).

Extra credit: Extra credit opportunities (including participation in experiments) will be available throughout the semester. I will inform you of these opportunities as they approach. However, do come and see me at any point during the semester if you feel you could be doing better than you are. We can work together to improve your performance.

Pre-Stats: Our class will start at 8am on most days. On a few days we may start at the scheduled time of 7:30 in order to accomplish enough to stay on track re: our schedule of material—these days will always be announced in class and on blackboard.

On the late-start days, I will always be in the classroom starting at 7:30. Students who are having trouble with material should strongly considering coming to class at the earlier time on those days to receive extra help. In particular, once we begin covering calculations and using SPSS, that 7:30-8am time will be geared towards providing some extra time for asking questions and doing practice problems. In class, I will sometimes cut short our time working on practice problems so that the majority of the class is not waiting for a few students who are having difficulty. Coming to the Pre-Stats sessions is one way to get the full time and help you need, and to do so without feeling like you are slowing anyone else down.

The pre-stats time is also a good time to come in if you need to take a make-up quiz, or if you are taking a Blackboard quiz and have some kind of technical difficulties. I will have hard copies of the quizzes that you can take under the same rules as the on-line quiz.
I reserve the right to change this aspect of the schedule if it is not working out.

Class Schedule (This schedule is tentative. I reserve the right to make announced changes, including adding readings with sufficient notice.):

Week:	Class topic/activities:	Text Chs/Assignments:
1		
Sept 1 T	Introduction and course overview	
Sept 3 R	Scientific Methods	Ch. 1
2		
Sept 8 T	Research Design	Ch. 2
Sept 10 R	Reliability & Validity	Ch. 3
3		
Sept 15 T	Design issues & Ethics (experiments)	Ch. 4
Sept 17 R	Cont'd	**Potential project questions due**
4		
Sept 22 T	Design issues & Ethics (descriptive)	Ch. 5
Sept 24 R	APA lab	*Design issues assignment; APA lab part a (in-class)*
5		
Sept 29 T	*Library workshop*	
Oct 1 R	Design critique lab	[assigned articles, TBA]; *Design critique assignment (in-class);* **Beginning literature search due**

Week:	Class topic/activities:	Text Chs/Assignments:
6		
Oct 6 T	**Exam 1**	
Oct 8 R	SPSS lab	*SPSS lab; APA lab part b due (take-home)*
7		
Oct 13 T	**No class [Fall break]**	
Oct 15 R	Frequency distributions & Percentiles; Central tendency	Chs. 6-7
8		
Oct 20 T	Central tendency cont'd	**Proposed Research Outline due**
Oct 22 R	In-class proposal design critiques; Discussion of methods writing	*Central tendency assignment*
9		
Oct 27 T	Variability	Ch. 8
Oct 29 R	Variability cont'd	*Variability assignment* (due Friday)
10		
Nov 3 T	**Exam 2**	
Nov 5 R	In-class peer review of methods/ SPSS lab	**Proposal methods draft due in-class**
11		
Nov 10 T	z-scores	Ch. 9; **Proposal draft w/commentary**
Nov 12 R	Correlation	Ch. 10*; z-score assignment*
12		
Nov 17 T	Correlation cont'd	*Correlation assignment [Due by 5pm]*
Nov 19 R	**No class [Prof. Johnson away]**	*Writing center sessions req'd this week*
13		
Nov 24 T	Regression	Ch. 11; **Proposal final draft** [due by 5pm]
Nov 26 R	**No class [Thanksgiving]**	
14		
Dec 1 T	Catch-up/review day	*Regression assignment*
Dec 3 R	**Exam 3**	
15		
Dec 8 T	Probability	Ch. 12
Finals Wk	Final exam Dec 11th at 1:30pm	

Exam 1: Chs. 1-5
Exam 2: Chs. 6-8
Exam 3: Chs. 9-11
Final exam: Cumulative + Ch. 12

Required Competencies for Students Completing PS 211

Competency Area 1: **Research Methodology**
At the conclusion of the course, the student should be able to. . . .
- Understand scientific method as distinct from other ways of knowing
- Identify from an abstract or short description of an empirical study: the relevant theory, hypotheses, independent & dependent variables, operational definitions of variables, study design, potential confounding variables
- Critique a study with respect to its reliability & validity, and suggest potential improvements to a flawed study design
- Distinguish between a population and sample of scores
- Describe the ways of obtaining a random sample & merits of each type of sample
- From the description of a study, identify ethical concerns & suggest potential solutions
- Describe the key points that must be included in the Informed Consent for a study

Competency Area 2: **Statistical Concepts**
At the conclusion of the course, the student should be able to. . . .
- Identify the scale of measurement used to measure a variable
- Identify and compute the appropriate descriptive statistics for a distribution of scores
- Create the proper graph to portray a distribution of scores
- Explain the common terms in a statistical formula
- Understand the distinction between theoretical (or definitional) and computational formulas
- Explain the concept of the standard normal distribution
- Compute & interpret z-scores and understand their use in psychology
- Compute & interpret the strength & direction of a correlation coefficient
- Explain, give an example, & sketch the scatterplot for each of the following: positive correlation, negative correlation, nonlinear correlation, no correlation
- Understand how linear regression can be used to predict the score on one variable from the knowledge of the obtained score on a second variable

Competency Area 3: **Computer Applications**
At the conclusion of the course, the student should be able to. . . .
- Code and enter a multiple variable data set using SPSS
- Transform variables using compute & recode functions
- Create graphs using SPSS and/or Excel
- Compute and interpret SPSS output for Frequencies and Correlation
- Use Microsoft Word to produce APA format documents

Competency Area 4: **Writing & APA Format**
At the conclusion of the course, the student should be able to. . . .
- Identify & correct errors in APA format for references & citations within the text
- Identify & correct common errors highlighted in the APA Manual in the format, structure, grammar and style of manuscripts