

**PSYCH 211: Experimental Methods and Data Analysis I \***  
**Fall, 2008 (Sections B & C)**

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**\*NOTE: This syllabus is subject to change at the discretion of the instructor**

**Course Overview:**

This course focuses on scientific methodology as the means by which knowledge within the field of psychology (and others) is advanced. Students will learn about, and develop skills in employing principles of research methodology and statistical analyses, the main tools of the research psychologist.

The course will be highlighted by an intensive individual independent research proposal, which will become an actual research project complete with data analysis and presentation in the Spring semester. The course is also writing intensive. We will explore and use several styles and functions of writing with major emphasis on scientific writing and American Psychological Association (APA) format.

**Course Objectives:**

1. To provide you with a thorough **knowledge base** in the scientific process, research methodology and the statistical tools used to summarize and interpret data, and the ability to use this knowledge to **make good decisions** regarding the choice and use of methodological and statistical principles.
2. To help you to understand the important **connection between research design and statistical analysis**, and the foundation they provide for real-world applications.
3. To **appreciate the critical, but limited role, of science** in helping us to understand our world.
4. To stimulate and challenge you to **think critically** and independently about the course material, and subsequently about information presented in studies and the media so that you will be educated consumers of knowledge. Specifically, to enable you to critique research studies.
5. To improve your **communication skills** (written, verbal, & listening) through various opportunities provided during the course. Although various types of writing will be nurtured; particularly, you should develop greater skills in writing research reports in a "scientific" style, and in compliance with APA format.
6. To master the basics of **SPSS** (Statistical Package for Social Scientists) and **APA style writing**.
7. To foster the **abilities** to critique a piece of research, create a well developed research project independently, to write a proposal in APA format.

The following outcome competencies further specify expectations of student abilities:

## **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
- Explain the common terms in a statistical formula
- Understand the distinction between theoretical 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 scattergram for each of the following: positive correlation, negative correlation, nonlinear correlation, no correlation
- Be able to calculate and interpret simple and multiple linear regression analyses

### **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

**Required texts (THESE TEXTS WILL BE USED IN PS212 ALSO):**

- 1) American Psychological Association. (2001). Publication manual (5th ed.). Washington, DC: Author. [referred to in syllabus as APA]
- 2) Dunn, Dana S. (2004). *A Short Guide to Writing About Psychology*. N.Y., Pearson. [referred to in syllabus as DD]
- 3) Heiman, Gary W. (2001). *Understanding Research Methods and Statistics* (2<sup>nd</sup> ed.). N.Y.: Houghton Mifflin Company. [referred to in syllabus as H]

**Other requirements:**

- 1) Accessibility to your computer account file on the X drive, e-mail, and registration in Blackboard.
- 2) Two FOLDERS (NOT Binders): one to serve as a **RESEARCH FOLDER** in which to organize: Research project notes, outlines, drafts, & final version of your individual paper. The second folder will be for **WORK & ASSIGNMENTS** (described below) and SPSS Exercises. Folders should be clearly labeled with your name and the proper boldface title for each respective folder. Improper organization and labeling can reduce the grades for these components.  
*Keep all the above materials in the folder at all times as they will be collected periodically. I cannot accept work that is not in a folder (no binders) with your name on it.*

**Course Graded Requirements:****Three EXAMS (16, 16, & 18%):**

The format for tests will be multiple choice, short answer essays, application / critical thinking tasks, and computational problems. Except for the final, the tests will cover all material covered in the lectures and in the required readings for that period of time. However, you should realize that the material is cumulative by nature even if the tests are not. Therefore, DON'T fall behind! In addition, for the third and final exam will be cumulative and you will be required to complete a number of take home questions. You will bring your response for each question to the final exam.

**QUIZZES (5%)**

Periodically I will provide pop quizzes. As much as this tool creates high anxiety, it is the most effective way to provide the proper incentive for students to keep up with the work.

**MINI LAB APA WRITE UPS [BOTH Draft and Final Version are graded] (10%):**

To help prepare for the research proposal, provide some early insight into APA style writing and to help provide a big picture of the scientific process in the context of independent research, early in the semester you will be asked to complete a rather smaller version of an empirical study and write up. Details regarding this lab assignment will be distributed and discussed in class.

**RESEARCH PROPOSAL [BOTH Draft and Final Version are graded] (20%):**

Most of you will carry out a study, an actual experiment in the spring semester as part of your PS212 requirement. Independently, each student will write a coherent, APA style research proposal based on the research project. As you will see, this research project is the foundation of the course. It occupies a central role within the course schedule. This grade will also be reduced if you miss any individual research conference. Details regarding the research project will be distributed on a separate handout.

**FOLDER OF STATISTIC PROBLEMS / WRITING ASSIGNMENTS (10%)**

Throughout the semester some written reaction assignments and conferences will be **required** in order to facilitate the learning process. Odd numbered problems have answers in the back of the book and you will also be able to use SPSS to check your manual calculations. **You must clearly LABEL EACH ASSIGNMENT WITH NAME, DATE, and a BRIEF DESCRIPTION OF THE ASSIGNMENT (page numbers and problem numbers) in the top left hand corner of each assignment or problem. Without this information, assignments will only receive half credit.** Many of the written reaction questions will not be graded per se (A, B, C, etc.), but they must be completed and handed in at the proper times to receive full credit. Improper organization and labeling can reduce the grade for this component. This folder will be periodically collected and graded. You will be able to monitor this grade on Blackboard but note that the weightings may change as additional assignments may be incorporated depending upon the dynamics of the course. **YOU MUST PARTICIPATE IN TWO STUDIES AS A HUMAN SUBJECT** (or request an alternative assignment). Details to follow.

Other assignments are **recommended**. These I will leave to your mature decision-making, but encourage you to do the work you need to learn in order to master the material. For instance, we will have class time to discuss SOME of the problems in the back of the chapters, but the chapter questions are mainly to help you to reinforce the material and bolster your studying efforts. Your grade for this portion will be based upon the “practice” work you work through in order to prepare for the exams, as well as the quality of the completed required assignments.

**HSIRB PROPOSAL (5%)**

This is a formal proposal that is required of all research studies conducted at Moravian College involving human subjects. After evaluated by me, and revised, your proposal will be reviewed by the college’s HSIRB (Human Subject Institutional Review Board). Thus, there is an additional critical audience for this course. The guidelines are available on the P drive under HSIRB, and will be discussed in class. If this proposal is not done well, there may be significant problems if you are thinking of continuing in PS212.

**Course Policies:****CRITICAL INFORMATION NOTE:**

**According to the policy of the Psychology Department, approved by the college, you MUST earn a grade of C or better in order to advance to PS212.**

### 1) ACTIVE LEARNING:

Active learning involves questioning the text and lecture material, contributing to discussion, sharing ideas and alternative perspectives. As a prerequisite to the active learning that will take place in the classroom, please arrive to class on time and prepared by having read the assigned chapter(s), and completing the assignments. Class participation is expected and highly encouraged. This is the best strategy for achieving many of the objectives laid out for the course. Those who commit themselves to such active learning are scholars. It is for this reasoning that excessive absences will be penalized as stated in policy #4 below.

Given the complex nature of statistics and research methodology, you **MUST** commit to actively engaging in the course material, especially during class time, by reflecting on the material, making connections, asking and answering questions to the best of your ability. The prevalent passive approach to “course absorption” will not work well with this material.

### 2) LATE ASSIGNMENTS:

Assignments and projects may be handed in **up to two class days late** (5 points deducted from the grade each day late). **When handing in an assignment late please indicate the amount of days late on the front cover along with your signature** – **without this late assignments will be considered incomplete ( I )**. Assignments may not be handed in after the second class day late. Please, do not ask me to deviate from this policy. If you must miss class, drop off the assignment earlier, or send it with a classmate. **YOU MAY NOT E-MAIL ME ASSIGNMENTS** - as evidence by past experience – too much can go wrong. I encourage you not to procrastinate, and be sure to use your file on the student X: drive and back up your work!

### 3) MAKE-UP TESTS:

In order to avoid receiving a zero on a missed test you must provide notification and verification. Notify me beforehand, or as soon as possible. Notification more than two days after the exam is **not acceptable**. Also, if you miss a test you **MUST** provide appropriate documentation (Drs.' note, court order, family note upon death of a family member, etc.) at the time of the make-up exam or beforehand. **I ENCOURAGE YOU TO CONTACT AND WORK WITH STUDENT SERVICES IF YOUR ABSENCE WILL BE EXTENSIVE**. Due to the awkwardness, in some cases I will not ask for such documentation; however, realize **that if such documentation is not presented, the highest score that can be achieved on a test is a 60**. I reserve the right to schedule make-up tests for 7:30AM on any day suitable to my schedule. **Pop quizzes cannot be made up and cannot be handed in late after collected, especially due to late arrival**.

### 4) ATTENDANCE:

Class attendance is expected. Class lectures and demonstrations will supplement text material. Excessive absences will impact directly on your final grade. After three missed classes, each class missed will reduce your final grade by two points. You are responsible for getting missed notes, assignments, and relevant in-class announcements in a timely manner. If you miss a day when we are meeting as research groups without a valid excuse, your final grade will be deducted by five points. **PLEASE USE STUDENT SERVICES IF YOU MUST MISS MULTIPLE CLASSES FOR EXTENUATING CIRCUMSTANCES**.

NOTE: Any student who misses their individual research conferences will lose three points from their final grade. If you are late for any of the conferences, you will lose one point.

#### 5) **ACADEMIC INTEGRITY:**

Academic integrity is a core value of the college and is expected. Cheating and plagiarism will not be tolerated. It is my contractual agreement with the college that I am to report all suspected cases of plagiarism and cheating. Plagiarism is the intentional misrepresentation of someone else's work as your own. This includes transcribing sentences or paragraphs belonging to another author directly from another written source and suggesting they are your own words, quoting directly from a published work without giving the author credit (i.e. proper citation), using or "borrowing" another student's work, buying a paper from a professional service, etc. The policy of the department is that the student must keep all note cards and rough drafts until given a grade for that course!!! Again, be sure to back up computer disks. Evidence of plagiarism and cheating will be dealt with in accordance with the college policy on academic honesty in the *Student Handbook*.

#### 6) **EXCUSES:**

Given the nature of the course and its emphasis on mastery skills that are critical for upper level study in psychology, I can not pardon work or substitute with extra credit other than that which is relevant to the course and offered to all. 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. If you are thinking of asking for an exception to the polices, first ask yourself – “Am I willing to ask my classmates to support my exception to the rules of the course?”

#### 7) **SPECIAL ACCOMMODATIONS:**

Should you require special accommodations for a disability, please arrange an appointment with the instructor at the beginning of the semester. Documentation of a disability will be required for special accommodations to be arranged in conjunction with the Learning Services Office.

##### **Students with Disabilities**

Students who wish to request accommodations in this class for support of learning disabilities and/or ADHD, should contact Mrs. Laurie Roth, Director of Learning Services, 1307 Main Street (ext. 1510). Students who wish to request accommodations for support of other disabilities, should contact Dr. Ron Kline, Director of the Counseling Center, 1307 Main Street (ext. 1510).

Accommodations cannot be provided until authorization is received from the appropriate disability support provider on campus.

#### 8) **SUMMARY OF GRADING SYSTEM:**

EXAMS 1 & 2	16% each →	32%
FINAL EXAM		18%
QUIZZES		5%
MINI APA LAB REPORT & REWRITE		10%
RESEARCH DRAFT & FINAL PROPOSAL		20%
HSIRB PROPOSAL		5%
FOLDER OF WORK/SHORT WRITING ASSIGN.		10%

9) The following GRADING SCALE will be used in the course:

A :	92.4 – 100	A-:	89.7 – 92.4		
B+:	86.7 - 89.65	B :	82.7 - 86.65	B-:	79.7 - 82.65
C+:	76.7 - 79.65	C :	72.7 - 76.65	C-:	69.7 - 72.65
D+:	66.7 - 69.65	D :	62.7 - 66.65	D-:	60 - 62.65
F :	Below 60				

Assigned letter grades can be interpreted numerically by the midpoint of the range above.

#### 10) **EXTRA CREDIT:**

Human Subject Participation:

Extra credit may be received for voluntarily participating in research conducted by fellow students beyond a “TWO study” requirement. More details will be provided in class. **Three points for each hour participation (up to four hours worth) will be added to your score on the FINAL EXAM (NOT THE FINAL GRADE OVERALL).**

#### 11) **Minimum expectations for student learning & study practices for PS211:**

- a) As a prerequisite for upper level courses in psychology and due to its rigor of combining both statistics and methodology – this course should have a high priority for you in terms of your time management.
- b) You **MUST** have basic math skills. If you have difficulty with it, you may need to rethink taking this course right now.
- c) You must allocate a time and place to study for this course. Studying cannot be done in snippets. I recommend **at least** five study sessions of **at least** one hour (take a break if working longer in a single session) per week. What is needed may vary from individual to individual. This is in addition to the assignments and independent research work, and any group study work recommend under (e).
- 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) You have had a basic writing course (e.g., EN100 or WR100). 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) 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.
- h) **USE THE APA MANUAL AND WRITING CENTER AS VALUABLE RESOURCES!**

## 12) CELL PHONES AND CALCULATOR TECHNOLOGY

All cell phones are to be turned off and put away during any class period. You may NOT use anything but basic calculator functions on the computer calculator (multiplication, division, subtraction and addition) during class exercises, and especially during exam times. While working on computers during class time, you may NOT surf the web, or use other programs / applications other than the ones we use in class. If you complete a computer based assignment early, please use the time to review the notes and the text. In other words, please use PS211 class time toward advancing your competency in PS211 outcomes.

### Relevant Quotes:

*There has been more information produced in the last 30 years than during the previous 5,000 . . . A weekday edition of The New York Times contains more information than the average person was likely to come across in a lifetime during 17th-century England.*

---Richard Saul Wurman, *Information Anxiety*

*It is not what the man of science believes that distinguishes him, but how and why he believes it. His beliefs are tentative, not dogmatic. They are based on evidence, not authority.*

---Bertrand Russell, *The Impact of Science on Society*

*There are three types of lies: lies, damn lies, and statistics.*

---Mark Twain

*Probability is like the cane that the blind man uses to feel his way. If he could see, he would not need the cane, and if I knew which horse was the fastest, I would not need probability theory.*

---Stanislaw Lem

**COURSE SCHEDULE**

<b>DATE</b>	<b>TOPIC</b>	<b>REQUIRED READING</b>	<b>ASSIGNMENTS</b>
Mon. 8/25	Introduction & Course Themes Epistemology: Ways of Knowing		
Wed. 8/27	Philosophy of Science The Scientific Method Theories and Hypotheses	Read Syllabus CAREFULLY! H: Chpt. 1 DD: Preface, bottom of p. 65 - 67	Register for Blackboard
Fri. 8/29	Complete PsycInfo Tutorial and Assessment	DD: Chpt. 2	Hand in Data for Mini APA Lab
Mon. 9/1	LABOR DAY – NO CLASS		
Wed. 9/3	Designing a Study, Variables and Researcher Objectives Scales of Measurement,	H: Chpt. 2 H: pp.134-139	Hypotheses Assignment
Fri. 9/5	APA Style – Empirical Writing	DD: Chpt. 3 & pp. 81 - 113 Sample Papers in DD & APA	Mini APA Lab Articles Due Lit Search Exercise Due
Mon. 9/8	APA style continued	Bring APA Public. Manual to class Review DD Chpt. 7 to check exercise	APA Ref exercise
Wed. 9/10	Working with APA Mini Lab		Draft of Intro
Fri. 9/12 copies	Hypotheses and Research Project Discussion  Induction – Deduction: The theory – hypothesis relationship revisited		Final Copy Due – 2
Mon. 9/15 Wed. 9/17	Reliability & Validity (continued)	H: Chpt. 3	Reaction to Prisoners of Silence Dissection of Studies Assign.

Fri. 9/19	Frequencies & Percentiles	H: 139-157	Study Proposal Due
Mon. 9/22	Central Tendency	H: Chpt. 7	Stat problems
Wed. 9/24	Variability	H: Chpt. 8	Stat problems
Fri. 9/26	Descriptive Statistics – Wrap Up		Stat problems
Mon. 9/29	Review for EXAM ONE		Stat problems
Wed. 10/1	EXAM ONE		
Fri. 10/3	Introduction to SPSS & Survey Monkey – the basics	Handout on Surveys	
Mon. 10/6	FALL RECESS – NO CLASS		
Wed. 10/8	Ethical Issues	H: Chpt. 4	SPSS Print out
Fri. 10/10	Ethical Issues continued	H: Chpt. 5	Ethics Reactions
Mon. 10/13	Reeves: Workshop on Web-based searches		
Wed. 10/15 & Fri. 10/17	INDIVIDUAL CONFERENCES – guidelines & assignments for this week will be distributed in class.		
Mon. 10/20	Conferences (Continued)		
Wed. 10/22	Results Sections, APA MiniLab Revisited		
Fri. 10/24	Research using z scores	H. Chpt. 9	
Mon. 10/27	Reeves – Library session		Work on proposals!
Wed. 10/29	z scores continued		Stat problems
	PM: Valerie Plame – Cohen Lecture		
Fri. 10/31	Discuss Proposal Drafts	DD. Chpt. 9	Proposal Drafts (2 copies)
Week of Mon. 11/3	Writing in Psychology	DD: Chpt. 1 and Chpts. 4 & 5 (review old material and read new stuff)	
	We will be working with proposal drafts a good bit this week – keep revising and bringing to class.		

Bring your APA Manual this week as well.

Week of Mon. 11/10	Correlations	H: Chpt. 10	Stat problems
Mon. 11/17	Review for EXAM TWO		
Wed. 11/19	EXAM TWO		
Fri. 11/21	Revisiting SPSS Basics		
Mon. 11/24	Linear Regression	H: Chpt. 11	FINAL PROPOSALS DUE
Wed. 11/26	<i>THANKSGIVING BREAK</i>		
Fri. 11/28	<i>THANKSGIVING BREAK</i>		
Mon. 12/1	Regression cont'd		
Wed. 12/3	Regression cont'd		Stat problem
Fri. 12/5	Intro to Inferential Statistics	H: pp. 317-331	
Mon. 12/8	Discuss Revisions & HSIRB Proposals		
Wed. 12/10	Final Wrap Up – Closing Remarks – Review for Final		Submit Revised Research / HSIRB Proposal

**FINAL EXAM – to be scheduled and announced by Registrar's Office**