

PSYCH 211: Experimental Methods and Data Analysis I *

Fall, 2015

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Office Hours: M & W 2:30 – 3:30pm and T & TH 10:15 – 11:15
(or by appointment)

*NOTE: Course schedule and other aspects of syllabus are subject to change.

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, basic research methodology and basic statistical tools used to summarize and correlate 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 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; 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

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
- 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 (Note: THESE TEXTS WILL BE USED IN PS212 ALSO):

American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

[REFERENCE: use as needed, bring to class when asked]

Dunn, D. S. (2011). *A short guide to writing about psychology* (3rd ed.). Boston, MA: Longman / Pearson Publishers. [referred to in syllabus as DD]

Jackson, S. J. (2012). *Research methods and statistics: A critical thinking approach* (4th ed.). Belmont, CA: Wadsworth Cengage Learning Publishers. [referred to in syllabus as RMS]

Other requirements:

1) Accessibility to your computer account files, e-mail, and registration in Blackboard for PS211 (password is DATAPOWER).

2) Three FOLDERS / BINDERS with pockets (NOT manila folders):

A) **RESEARCH WRITING FOLDER** in which to organize: Research project notes, Ideas Assignment, “Working Design” Sheets, outlines, drafts, & final version of your individual paper.

B) **RESEARCH MATERIALS FOLDER** – HSRIB proposal, materials for your study (e.g., surveys, measures, stimuli, etc.), articles used (unless storing articles electronically).

C) **WORK ASSIGNMENTS** – those assignments done in hard copy (and others if you prefer)

Folders or binders should be clearly labeled with your name and the proper boldface title for each respective folder. Improper organization and labeling will reduce the grades for these components. *Keep all the above materials in the folder at all times in order to stay optimally organized.*

Course Graded Requirements:

Three EXAMS (17, 17, & 17%):

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! You are encouraged to form study groups. The final exam will be cumulative, and may have a take-home portion.

INTRO DRAFT & APA MANUSCRIPT RESEARCH Proposal (22%):

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, the process of writing this proposal occupies a central role within the course schedule. Details regarding the research project will be discussed throughout the semester at each step of the way. You must put a high level of effort and prioritization into doing this well, as it is the type of writing, style and format required in most 300 level psychology courses. Be sure to use the models provided by Jackson & Dunn, the APA Manual, and Purdue OWL (On-line Writing Lab) as valuable and frequently consulted resources as your guide. If you rely on internet-based software to format your references – that will be no excuse if they are incorrect.

EXPERIMENT MATERIALS & HSIRB PROPOSAL (5%)

All research projects are required to be experiments, thus at least one variable manipulated, one variable measured in a reliable & valid manner, and control strategies to eliminate all other possible confounding variables. This will require you to find and/or create / craft the materials you will use to achieve these ends in your study. We will discuss the to-do list for these in the context of an out-of-class meeting on your empirical research project. Do NOT procrastinate on this To-Do list. These materials will be critical parts of your study that will need to be fully and clearly described in your APA manuscript and possibly attached as appendices.

The HSIRB PROPOSAL is a formal proposal required of all research studies involving human subjects conducted at Moravian College. After evaluated by me, and revised, your proposal will be reviewed by the college's HSIRB (Human Subject Institutional Review Board) next semester, if you are continuing in PS212. Thus, there is an additional critical audience for these courses. If this proposal is not done well, there may be significant problems if you are thinking of continuing in PS212.

ASSIGNMENTS (22%)

Throughout the semester you will complete assignments to reinforce your understanding of the material. Many of these assignments are from the ending of the Jackson text (RMS) chapters, some are from the Dunn text, and others I will have created. Typically these assignments will be submitted on Blackboard while other times you will bring them to class to be collected or to be pulled up on the computer (e.g., SPSS assignments). It is critical that these assignments be completed prior to the class when they are due as they will not be accepted late, even for partial credit.

ALSO, YOU MUST PARTICIPATE IN TWO STUDIES AS A HUMAN SUBJECT (or request an alternative assignment – see extra credit policy). To avoid deductions in this grade you must complete your research participation and submit pink sheet(s) on the final class day with completed information regarding research studies in which you participated.

NOTE: Other assignments (RMS: fill in blanks, critical thinking reviews and multiple choice at end of chapter) are **recommended**, not required. 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.

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. 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. 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.

2) LATE ASSIGNMENTS:

Assignments ARE DUE AT THE START TIME OF THE CLASS. **Assignments cannot be handed in late.** Research proposals may be handed in **up to three days late** (Days, NOT CLASS SESSIONS) 5 points deducted from the grade each day late). **IF handing in your research paper late please indicate the amount of days late on the front cover along with your signature – without this late assignments will be considered incomplete.** If you must miss class, drop off the assignment earlier, scan & e-mail it to me requesting a read receipt, or send it with a classmate. YOU MAY NOT E-MAIL ME LATE ASSIGNMENTS - as evidence by past experience – too much can go wrong. I encourage you not to procrastinate, and be sure to back up your work! Do not ask me to deviate from this policy.

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.**

4) ATTENDANCE:

Class attendance is expected. Class lectures and demonstrations will supplement text material. Therefore, excessive absences will necessarily 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 research paper grade and two points from their *final grade*.

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 your files. Evidence of plagiarism and cheating will be dealt with in accordance with the college policy on academic honesty in the *Student Handbook*. PLEASE BE SURE TO REVIEW THIS THOROUGHLY AND BOOK MARK THE CITE USING THE FOLLOWING LINK:

<http://www.moravian.edu/studentLife/handbook/academic/academic2.html>

6) EXCUSES & COMMUNICATION:

Given the nature of the course and its emphasis on mastery skills 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 policies, first ask yourself – “Am I willing to ask my classmates to support my exception to the rules of the course?”

You do NOT need to e-mail me if you must miss class. Be sure to work with a classmate to get any materials you miss and feel free to make an appointment or come by during office hours to go over material after you get the notes from a classmate. I understand and respect life stressors you may be faced with; but keep in mind that grades reflect essential standards and cannot be adjusted based on extenuating circumstances.

7) SPECIAL ACCOMMODATIONS:

Students who wish to request accommodations in this class for a disability should contact the Academic Support Center, located on the first floor of Monocacy Hall (610-861-1401). Accommodations cannot be provided until authorization is received from the Academic Support Center.

8) SUMMARY OF GRADING SYSTEM:

EXAMS 1 & 2	17% each →	34%
FINAL EXAM		17%
INTRO DRAFT, FINAL PROPOSAL		22%
EXPERIMENT MATERIALS & HSIRB PROPOSAL		5%
ASSIGNMENTS		22%

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:

You will be required to participate in two research projects. This experience allows you to view the research process (a critical tool for the discipline of psychology) first-hand in various experimental contexts. All the research studies will have been reviewed and approved by a Human Subjects Institutional Review Board (HSIRB) Committee; however, if you have objections to participating in research, you may arrange to complete an alternative, written assignment, which will involve reading a psychological article. In order to do the alternative assignment, you must meet with me to arrange it **by Friday, October 9th**. After that point, you may still have the opportunity to complete the research

requirement by participating in experiment sessions, but you will not be able to do a written assignment to fulfill this requirement. More information about research participation (e.g., how to sign up) will be provided later in the semester, when experiment opportunities start to become available. Failure to complete the required participation (or the alternative assignment) will result in a **reduction of your class grade by 1/3rd letter grade** (e.g., from a B to a B-). The entire required hour needs to be completed to avoid this deduction (i.e., completing 1/2 hour only will still result in the full deduction).

When you sign up for a research experiment, please be sure to record the time and location of the session, and all other relevant information on the pink sheet that will be provided. This information will need to be completed on the pink form and submitted toward the end of the semester. As many experiments require that students begin a task at the same time, please plan to show up on-time for your sessions. Showing up late may result in your not being able to participate in the experiment!

If you fail to attend an experiment session for which you signed up, the required hours of research participation will increase to 2 hours. If you then fail to show up a second time for a scheduled experiment session, then you will forfeit all extra credit opportunities (including extra research hours you already completed for extra credit in the course) and will face a **reduction of your class grade by 1/3rd letter grade** (e.g., from a B to a B-).

No other forms of extra credit are available for this course; please do not ask for such.

Extra Credit via Research Participation:

Students may earn up to four hours of *ADDITIONAL* extra credit for participating in research beyond the requirements outlined above. Each hour of credit earned will increase your final exam grade (or any exam since all weighted equally) by 3 points (thus capped at 12 points).

11) CELL PHONES, CALCULATORS, & 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.

12) TESTING EXPECTATIONS

Unfortunately due to increasingly creative attempts at cheating and dishonesty, please abide by the following conditions:

- a) Except calculators, all electronic devices, including head phones, must be turned off and kept put away in a bookbag.
- b) Unless you have a documented accommodation, once the exam begins, you may not leave the room unless your exam is completed and submitted (or between open and closed book sections).
- c) You can only ask questions of clarification during the exam. I am not able to discuss various interpretations and attempts at fishing.

13) Minimum expectations / recommendations for student learning & study practices for PS211:

- a) 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. The logic of the statistical mastery is that you will read an example in the text, observe an example done in class, then complete a problem independently via assignments. If you do not have that independent mastery, you will not be prepared for the open book sections of the tests.
- c) You must allocate a time and place to study for this course, and make studying an ongoing, distributed practice, rather than cramming which will not work for this material.
- 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) Having already had a basic writing course, I expect strong writing to be displayed in your projects. Spelling, grammar, and structure are always relevant and expected as a given part of your writing style.
- 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!**

PLEASE do not seek advice for improving in the course unless you have first dedicated yourself and committed to the practices above.

Relevant Quotes:

Science is the belief in the ignorance of the experts.

--Richard Feynman, 1965 recipient of the Nobel Prize in Physics

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*

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

A prudent question is one half of wisdom.

-- Francis Bacon

When I sat down to write a letter I didn't have time to write a short one, so I wrote a long one instead.

--Mark Twain

**Fall 2015, PS 211
Course Schedule**

DATE	TOPICS	READINGS	ASSIGNMENTS
Week 1			
Session 1 8/31 or 9/1	Epistemology & Science		
Session 2 9/2 or 3	Theory & Hypotheses	RMS Chpt. 1 & Dunn pp. 51-56 Read syllabus thoroughly!	Intro Sheet and Data Questionnaire Calculation Assignment – answers submitted on Blackboard as a quiz format
FRI 9/4	Student Panel / Research Project	RMS pp. 54 – middle of p. 62	
Week 2			
SESSION 1 9/7 or 8	NO CLASS – extended office hours for possible brainstorming meetings		RMS: p. 25 #1, 3 – 8 on Blackboard by 2:30pm on T 9/8
SESSION 2 9/9 or 10	Variables: Measurement & Manipulation Operational Definitions		* Variable Assignment on Blackboard * Bring hard copies of your Possible Hypotheses and your brainstorming for IDEAs Assignments
FRI 9/11	NO CLASS		RMS p. 71 #1 & 2 and other questions on Blackboard
Week 3			
SESSION 1 9/14 or 15	Experimental Designs	RMS: pp. 231 – top of 244	Draft of Possible Hypotheses – bring up file on computer in class (NO hard copy!)
SESSION 2 9/16 or 17			Confounds Assignment & RMS pp. 252 #1 – 3, on Blackboard
F 9/18	PSYCH Info Database	RMS: pp. 30 – 39; Dunn Chpt. 2	Refined Hypotheses & Variable / Op Def [“Working Design” Sheet]

Week 4			
SESSION 1 9/21 or 22	APA Style / Reading Empirical Research Articles	Dunn Chpt. 3 Empirical Research Article Example	Dunn p. 50 #3 – bring reactions to class
SESSION 2 9/23 or 24	APA Style and Consuming Research - continued	Experiment with Dunn's suggestions and trial methods in #4 & 5 (p. 50)	APA Style Reference List (hard copy): At least 6 empirical journal articles (Reference & abstracts), at least 2 secondary sources (only References)
F 9/25	NO CLASS		
Week 5			
SESSION 1 9/28 or 29	APA Manuscript Introductions	RMS: Chpt. 15 & Appendix E Dunn: pp. 58-65; Chpt. 5	APA Style Track Changes Assignment on Blackboard
SESSION 2 9/30 or 10/1	APA Intros - continued		
F 10/2	NO CLASS	Work on Research Project Intros → Embed this into a Trick Draft Framework (Dunn p.62)	Due Midnight Sunday night 10/4 via email. Submit to me with file name and email subject line need to start with your last name in CAPs: Example: BRILL Intro Work Performance
Week 6			
SESSION 1 10/5 or 6	Reliability & Validity	RMS: pp. 62 – end of chpt. 3	Hard copy – paragraph outline of your APA Intro
SESSION 2 10/7 or 8	Continued and possible review		RMS: p. 70 – critical thinking questions, and p. 71-72 #1 & 2 on Blackboard
F 10/9	EXAM ONE		
Week 7			
SESSION 1 10/12,13	Fall Recess – No Class		
SESSION 2 10/14 or 15	Descriptive Methodologies; Intro to SPSS	RMS: Chpt. 4	

F 10/16	NO CLASS		
Week 8			
SESSION 1 10/19 or 20	Organizing Data & Descriptive Stats continued	RMS: Chpt. 5	RMS p. 101 #1 – 9 on Blackboard
SESSION 2 10/21 or 22	z scores Schedule Empirical Research Project Meetings for next week		RMS p. #4 but also calculate statistical measures of variation (range, var., SD) for the same data set in first problem. Do this on hard copy and bring to class.
F 10/23	Continued		* Updated “Working Design” Sheet – bring hard copy to class * Due midnight on Sunday 10/25: RMS p. 138 #7, 8, & 9 (on Blackboard) Bring hard copy of work to project meetings
Week 9			
10/26 to 10/29 – No formal class, but . . .	Empirical Research Project Meetings – scheduled, be on time! We will collaborate to generate “To Do List” of measures, stimuli, and other materials needed to be found / crafted by 11/23		
F 10/30	Correlation	RMS: Chpt. 6	Descriptive Stats SPSS Assignment on Blackboard
Week 10			
SESSION 1 11/2 or 3	Correlation – SPSS		RMS: p. 167 complete #1 through 4, and bring that in hard copy to class.
SESSION 2 11/4 or 5	Continued Regression Preview - SPSS		RMS: p. 167 #5 – create data file in SPSS, and output file. Save both and bring it up on computer when you come to class.
F 11/6	Regression	Review RMS pp. 164 - 166	
Week 11			
SESSION 1 11/9 or 10	continued		* RMS: p. 168 #6 on Blackboard * SPSS assignment – pull up output file in class

SESSION 2 11/11, 12	Finish and possibly review		
F 11/13	EXAM TWO		
Week 12			
SESSION 1 11/16 or 17	Ethics	RMS pp. 39 – end of Chpt. 2	
SESSION 2 11/18 or 19	HSIRB Proposal Form		Ethics Scenarios on Blackboard
F 11/20	Probability & Hypothesis Testing	RMS: Chpt. 7	
Week 13			
SESSION 1 11/23	Hypothesis Testing continued		Full APA Proposal Due in hard copy: Title Page, Revised Intro, Method section and Materials attached as Appendices
11/25 – 11/27	Thanksgiving Recess		
Week 14			
SESSION 1 11/30 or 12/1	HSIRB Proposal Form continued		
SESSION 2 12/2 or 3	Inferential Statistics	RMS: pp. 202 – middle of 215	RMS: pp. 197-198 #8 – 13 on Blackboard
F 12/4	The first inferential stat: z-test		RMS: p. 223 #2, 3, & 4 on Blackboard
Week 15			
SESSION 1 12/7 or 8	z-tests continued on SPSS & Confidence Intervals		
SESSION 2 12/9 or 10	Topic TBA		RMS: p. 224 #6 – create & save data set and output file – open on computer when you get into class.
F 12/11	Finish up and Possible Review		

FINAL EXAM:**PS211A (M/W): MONDAY, 12/14 at 1:30PM****PS211C (T/THR): FRIDAY, 12/18 at 8:30AM**