

**Experimental Methods and Data Analysis II**  
**Spring 2010**

Art Lyons, PHAC - 226  
610-861-1564  
610-691-1330, until 9:30 p.m.  
lyonsa@moravian.edu

**Psychology 212**

Statistical techniques that build on concepts introduced in Psychology 211. Mastering inferential statistics and nonparametric statistical procedures. Students will carry out the research study outlined in their proposals from Psychology 211 and complete an APA-style research paper. This course must be taken in the semester immediately following Psychology 211 and with the same instructor. Prerequisite: Psychology 211

**Relevant Quotes**

“The true scientist does not find security in the knowledge which has been accumulated, because s/he knows that any day that knowledge may be contradicted by some new finding. Her/his security lies in the SCIENTIFIC METHOD, a PROCESS of arriving at approximations of the truth.”

C. Rogers

“The real purpose of the scientific method is to make sure that nature hasn’t misled you into thinking you know something you don’t actually know.”

R. Pirsig

“One thing I have learned in a long life: that all our science, measured against reality, is primitive and childlike – and yet it is the most precious thing we have.”

A. Einstein

“We have a society which is built on science and technology and which uses science in every one of the aspects of national life, and in which the public, the executive, the legislature and the judiciary have very little understanding of what science is about. This is a clear disaster signal. It has to be suicidal.” C. Sagan

**Course Objectives**

1. To have you develop an understanding of, a sophistication with, and an appreciation for the scientific method.
2. To provide you with active experiences in the constructive application and evaluation of research designs in psychology.
3. To stimulate and reinforce divergent thinking in each of you by:

- \* establishing a classroom climate that encourages divergent ideas;
  - \* communicating an attitude which regards scientific thinking as a creative endeavor;
  - \* instilling in each of you a confidence in your ability to solve problems in psychological research design.
4. To have you come to an appreciation of the role of statistics in scientific research and develop an understanding of the proper usage and limitations of each statistical tool and the ability to interpret them correctly.
  5. To have you successfully master perhaps the most vital course in which you will enroll as a Psychology major or minor.

### **Course Materials**

#### **Required**

Dunn, Dana S. (2004). *A Short Guide to Writing About Psychology*. N.Y., Pearson.

Green, Samuel B. & Salkind, Neil J. (2008). *Using SPSS for Windows and Macintosh*. (5<sup>th</sup> ed.). N.J.: Pearson Prentice Hall

Heiman, Gary W. (2001). *Understanding Research Methods and Statistics* (2<sup>nd</sup> ed.). N.Y.: Houghton Mifflin Company.

Publication Manual of the American Psychological Association. (2009). (6th. ed.). Washington D.C.

A good calculator, which I invite you to bring to every class. This calculator should have the ability to do square roots, a summation key, and a memory capacity.

#### **Summary of Grading Criteria**

|                                     |     |
|-------------------------------------|-----|
| Test 1                              | 15% |
| Test 2                              | 15% |
| Quizzes                             | 10% |
| Final                               | 15% |
| Note: the final is optional!        |     |
| Homework & out of class assignments | 10% |
| Class attendance & participation    | 10% |
| Research Project Presentation       | 5%  |
| Research Project Paper              | 20% |

## **Grading Mechanics**

Our task for this course is to develop a sophisticated awareness of the scientific method and the ability to apply it! Because of the perceived difficulty level of this material the grading structure has been designed to have multiple inputs to give you the best chance to demonstrate mastery of the material. Opportunities for extra credit will also be announced in class.

## **Tests**

The tests will be comprehensive and encompass all assigned reading and material presented in class up to that point in time. As we move further along in the course the second test will primarily focus upon the material covered in that part of the semester. Please note that all later material builds on the preceding content. You need to build a solid foundation early on in the course in order to master the course content. The precise format of each test will be explained to you in class as the test date approaches. Test dates appear on the class calendar.

## **Final Exam**

The comprehensive final exam serves as the last opportunity for you to demonstrate mastery of this material. It is scheduled for either Tuesday 5/4 at 1:30 pm for PS211B or Friday 5/7 at 8:30 am for PS211C. This exam also serves as an automatic make-up exam for either test that was missed due to an approved legitimate excuse earlier in the semester. As an additional incentive to perform well on this test if you have taken both in-class exams and if the grade is higher on this final exam than on your lowest test grade it will be used instead of the test grade in computing your final course average. If the final exam grade is lower than your lowest test grade then it will just be weighted at the assigned weight of 15% input into your final grade.

## **Quizzes**

On-line quizzes for most chapters in our primary textbook, *Understanding Research Methods and Statistics*, will be assigned in class. They are to be taken outside of class. The due dates are posted on Blackboard. These are timed quizzes that are to be taken in a closed book fashion.

## **Make-up Tests**

It is expected that you will be present for all tests. If you are too ill to take the test, please inform me before the test (Phone numbers are on the first page.) and verify the illness with a written doctor's excuse. You will then plan to take the final exam as a mandatory make-up test.

## **Homework**

One of the best ways to learn and to gain a thorough understanding of this material is to apply it, and therefore homework assignments will occur systematically throughout the semester. Homework assignments are also an excellent way for you to discover areas that you need assistance with in order to master the material. Please feel free to visit me during office hours if you are having difficulty with a particular assignment. Some of these assignments will be announced in class so make sure that you pair up with a fellow student who can fill you in on that rare occasion where you might miss a class. Some of the homework assignments are deliberately designed to help you in learning how to conduct your own original research and also to learn how to write it up in APA format. I will also use Blackboard as a mechanism for making homework assignments. It is your responsibility to check this class feature on a regular basis.

### **Class attendance and participation**

Attendance and participation at all regularly scheduled classes is both desired and expected. Our class size has been deliberately limited in order to allow our classes to be interactive with you playing an active role in your own learning. We will explore material in class that is not covered in our textbook. In addition, class problems may be assigned as homework. You are expected to have all homework assignments and reading specified on the class calendar done **before** class meets. Missing class is not an acceptable excuse for missed assignments.

In order to earn a superior grade for this component of the course you must demonstrate a consistent high level of engagement with the material during class, i.e. volunteer to participate regularly, contribute regularly to class discussions, come to class prepared, and be willing to help your classmates also master the material. Passive participation, i.e. attending all classes, taking good notes, being alert in class, avoiding sidebar conversations, and demonstrating non-verbal cues that indicate a sincere effort to master the material. Will be reinforced with an above average grade.

### **Research Paper**

This paper, in APA format, is due on 4/14. You will find that appendix C, Empirical research Reports in Psychology, in the Heiman textbook will be very helpful in writing this report. In addition to the Dunn text you will find that the APA Publication Manual will also be especially useful.

NOTE: Late materials will be devalued 10 points for each day late. Assignments must be typed using APA format and style. Grades will be based on content and style. Content refers to the information presented, the use of appropriate references, a demonstrated understanding of the problem studied, the appropriateness of the analysis, and the quality of the discussion. Style refers to how well the content is presented including grammar, punctuation, spelling, and adherence to APA format.

### **Note:**

Please note that it is within the instructor's purview to apply qualitative judgment in determining grades for any assignments and for the course final grade.

Please note while I will try to hold to the flow of the syllabus it is subject to change over the course of the semester.

### **Students with Disabilities**

Students who wish to request accommodations in this class for a disability should contact Mr. Joe Kempfer, Assistant Director of Learning Services for Disability Support, 1307 Main Street (extension 1510). Accommodations cannot be provided until authorization is received from the office of Learning Services.

### **Human Participants for Psychological Research**

There is an approved college wide policy with respect to use of human subjects in research projects. This policy spells out the correct ethical procedures to follow. We will go over this policy in detail in class at the appropriate time in the semester.

In addition, since many of you will be using the departmental participant pool it is important to know and follow the departmental guidelines for their use. Note that some of the below may be modified as a function of the new college wide policy. The departmental guidelines are:

Participants are recruited via sign-up sheets on the bulletin board directly across from the departmental secretary's desk. All sign-up sheets must include: a brief title and description of the project and what will be expected of the subject; the name of the experimenters and how to contact them; the approximate length of time the subject will need to commit (minimum is 30 minutes); the time, date, and place to which the subject will need to report to participate; and the initials of your instructor which certify that the sign-up criteria have been met and that the design meets ethical standards.

Participants who complete your study are given the bottom half of the informed consent form, completed and signed by you, the experimenter. This form is then presented to the departmental secretary with the course noted that the subject is applying the extra credit to. Subjects who fail to report as scheduled should be reported to me and their names will be forwarded to the instructor of their course for appropriate action. Please also keep a master list of all subjects that have participated in the experiment and turn this in with the final project. Those students who delay the data collection process should expect to have to recruit volunteers outside of the subject pool in order to complete their experiments.

Student researchers who fail to be present for a scheduled session with subjects, or who fail to follow the subject pool guidelines, will risk the loss of subject pool privileges.

## **Blackboard Course Site**

We will continue to use Blackboard as the primary mechanism for communicating with one another outside of class. We will also use Blackboard for each chapter quiz.

## **Policy on Plagiarism**

The Moravian College faculty have become increasingly concerned about the occurrence of plagiarism on campus. The Psychology Department's policy on this subject is important for students to understand. Simply put, plagiarism is the intentional misrepresentation of someone else's work as your own. This includes such diverse situations as quoting directly or paraphrasing from a published work without giving the author credit, having your roommate write the paper, "borrowing" from fraternity or sorority files, buying a paper from a professional service and so on. Students are to keep all notes and rough drafts of a paper until the grade is assigned. The instructor may request these materials, along with the source materials, at any time. Evidence of plagiarism will be dealt with in accordance with the college policy on academic honesty, copies of which are available at the departmental secretary's desk.

## **Office Hours**

|           |                |
|-----------|----------------|
| Monday    | 3:00 – 4:30    |
| Tuesday   | by appointment |
| Wednesday | 3:00 – 4:30    |
| Thursday  | 10:45 – 11:45  |
| Friday    | by appointment |

If you need to see me at some other time, both office and home phone numbers are listed on the first page. My email address is also listed there. Please contact me and we will arrange for a mutually convenient time to get together.

## **Class Calendar**

Our class calendar and assignments will continue to be posted on Blackboard on a weekly basis.

**Reading & Homework Assignment** Please read  
Chapter 12 - Probability and Making Decisions  
about Chance Events - Due 1/25

Homework: Chap 12 #s 14, 20, 24, & 26 - Due 1/27  
□□1/20 **Short presentations of research proposals** □ Today will be devoted to individuals making short presentations of their research

proposals and to exploring the cost/benefit ratio of conducting collaborative research. Please be sure to prepare a brief presentation of your research proposal for class discussion.

☐ **Chap 12 - Quiz - Due by 1/27, 7 am** ☐ This quiz is composed of 12 items. You have 20 minutes to complete the quiz in a closed book fashion. Good luck!

☐☐**Reading & Homework Assignment** ☐Chapter 13 - Overview of Statistical Hypothesis Testing: the Z test -Due 1/27

Homework: Chap 13 #s 12,14, 16, 20, & 24 - Due 2/1

☐☐**Chapter 13 quiz = Due by 7 am on 2/1** ☐This quiz is composed of 12 items. You have 20 minutes to complete the quiz in a closed book fashion. Good luck!

☐☐**2/3 Review of materials to be submitted for HSIRB approval**☐ In class we will review the materials that are required for submission to the HSIRB. These materials in final form are due at the start of class on 2/10!

☐☐**Reading Assignment - Due 2/8** ☐ Please read Chapter 14: The Single-Sample Study: Testing a Sample Mean or Correlation Coefficient .

☐☐**Quiz Chapter 14 - Due by 7 am on 2/10** ☐This quiz is composed of 12 items. You have 20 minutes to complete the quiz in a closed book fashion. Good luck!

☐☐**Homework problems for chapter 14 - Due 2/10**  
☐Chap 14 #s 14, 20 & 22

☐☐**HSIRB proposal - Due 2/10** ☐

☐☐**Reading Assignment Due 2/15** ☐ Please read Chapter 15 - The Two-Sample Between-Subjects Experiment

☐☐**Quiz Ch 15 - Due by 7 am on 2/17** ☐This quiz is composed of 12 items. You have 20 minutes to

complete the quiz in a closed book fashion. Good luck!

☐☐**Homework Problems - Due 2/17** ☐ Chapter 15 #s 16 & 20

☐☐**Reading Assignment - Due 2/22** ☐ Please read Chapter 16 The Two-Sample Within-Subjects Experiment and the Dependent Samples t-test

☐☐**Homework Chap 16 - Due 2/24** ☐ Chapter 16 #s 18 & 24

☐☐**Quiz Ch 16 Due by 7 am on 2/24** ☐ This quiz is composed of 12 items. You have 20 minutes to complete the quiz in a closed book fashion. Good luck!

☐☐**3/1 Review of material in preparation for test 1** ☐ Please bring to class two questions or problems that would be good test questions to help us review the material.

☐☐**Test 1 - 3/3** ☐

☐☐**3/8 - 3/10** ☐ No class - Spring Break

☐☐**Reading Assignment - Due 3/15** ☐ Please read Chapter 17: The One-Way Between-Subjects Experiment and the One-Way Analysis of Variance

☐☐**Quiz Chapter 17 - Due by 7 am on 3/17** ☐ This quiz is composed of 12 items. You have 20 minutes to complete the quiz in a closed book fashion. Good luck!

☐☐**Homework - Chap 17 - Due 3/17** ☐ Please complete problems 21, 22, & 24 in chapter 17.

☐☐**Reading Assignment - Chap 18 - Due 3/22**  
☐ Please read and review Chapter 18: The Two-Way Between Subjects Experiment and the Two-Way



## Analysis of Variance

- **Quiz Chapter 18 - Due by 7 am on 3/24** This quiz is composed of 12 items. You have 20 minutes to complete the quiz in a closed book fashion. Good luck!
- - Homework - Chap 18 - Due 3/24** □ Please complete item #s 13, 24 & 26
  - Reading Assignments Chap 19 & Dunn - Due 3/29** □ Please read Chapter 19: Within-Subjects Experiments and Other Multifactor Designs. The quiz assigned for this chapter is optional. Please read Dr. Dunn's book on writing up your results and discussion sections.
  - Quiz for Chap 19 - Due by 7 am on 3/31**  
□ This quiz is composed of 12 items. You have 20 minutes to complete the quiz in a closed book fashion. Good luck!
  - 4/5 No School - Easter Break**□
  - Reading Assignment - Chap 20 - Due 4/7**  
□ Please read Chapter 20: Quasi-Experiments and Single-Subject Designs. The quiz assigned for this chapter is optional.
  - Quiz for Chapter 20 - Due by 7 am on 4/12**  
□ This quiz is composed of 12 items. You have 20 minutes to complete the quiz in a closed book fashion. Good luck!
  - 4/12** □ There will be no formal class on this date. This time can be devoted to coming in for consultations on your SPSS data analysis and for a review of rough drafts of results and discussion sections of your paper.
  - Reading Assignment - Chap 21 - Due by 4/14**  
□ Chapter 21: Chi Square and Other Nonparametric Statistical Procedures
    - Major Assignment - Paper Due - 4/14** □
    - Quiz for Chapter 21 - Due by 7 am on 4/19**

This quiz is composed of 12 items. You have 20 minutes to complete the quiz in a closed book fashion. Good luck!

☐☐Homework Problems - Due 4/19 ☐ Chapter 21:  
Problems 13, 15, & 17

- ☐☐Test 2 - 4/21
- ☐☐4/26 Presentations of research
- ☐☐4/28 Course feedback & course evaluations & review of final
- ☐☐5/4 212B final at 1:30 pm
- ☐☐5/7 212C final at 8:30 am ☐