

## PSY 2224: 02 Psychological Methods and Statistics II

**Instructor:** Dr. Anna Babarczy  
**E-mail:**  
**Office hours:** Before or after class

**Overview and course format:** This course is designed to give you a detailed understanding of how statistics and scientific methods can be used to help answer questions in psychological research. We will cover the empirical research process from designing and implementing data collection through data analysis using statistical software packages to interpreting and reporting the results of the analysis. The course is divided into two semesters: the first semester focuses on research design, simple descriptive statistics and graphical data presentation while the second semester covers more advanced inferential statistical methods. Much of the class will be lecture, but discussion and questions are strongly encouraged. In a typical class, we will review material from the previous class, discuss new concepts, and work through examples, sample problems, and exercises to illustrate the new concepts. Reading assignments will be given to allow you to go over material at your own pace, homework assignments will be given to reinforce material covered in the text, and exams will be used to test your mastery of the material. High fives (or fist bumps) will be given for instances of brilliance.

### **Main Course Goals:**

1. To understand the basic principles of statistics
2. To see how these basic principles are used in everyday life
3. To gain a deeper understanding of scientific practices.
4. To improve your writing, speaking, critical thinking, and time-management skills.
5. To develop data collection and analysis skills.
6. To improve your ability to work and communicate with others.

The acquisition of these skills will allow you to understand, plan, and critically evaluate scientific research in the field of Psychology.

### **How this Course Meets the General Education Outcomes at McDaniel College**

#### **Outcome 1. Critical Thinking. Students successfully frame questions, gather and evaluate information from experience and appropriate sources, and support their own conclusions.**

- We will continue the discussion (from PSY 2223) of research methods and statistical analyses used in the field of psychology, focusing predominantly on experimental methodologies and inferential statistical procedures.
- We will discuss and evaluate theories of psychology both in class and through assignments through the lens of newly discussed methodologies.
- Additionally, in both the class and lab periods we will evaluate the rigor of specific experimental methodologies used in the field of psychology and learn to apply these findings appropriately.

#### **Outcome 2. Creative Expression and Problem-Solving. Students are creative thinkers and problem-solvers; they express themselves creatively and have the ability to interpret creative products.**

- Student will learn new methodologies for use in answering empirical questions, with a special focus on experimental methodologies. Furthermore, students will learn which of these methods is most appropriate in any given set of circumstances.

#### **Outcome 3. Communication. Students express themselves in writing and speech at a level appropriate to their class standing and their major field(s) of study.**

- Through multiple writing, homework, and classroom assignments students will learn a variety of ways to present and discuss research methods and findings in a manner appropriate to the field of psychology. There will be a special focus on APA style.

**Pre-requisites:** For this course, students must have satisfactorily completed PSY-2223.

**Required Texts:** *Fundamental Statistics for the Behavioral Sciences (8<sup>th</sup> edition)*, David C. Howell

*Publication manual of the American Psychological Association (6<sup>th</sup> ed.)*.  
American Psychological Association. (2010). Washington, DC.

### Online Resources

Free statistics calculators

<http://www.graphpad.com/quickcalcs/>

<http://easycalculation.com/statistics/standard-deviation.php>

<http://studentsstest.com/>

<http://www.socscistatistics.com/tests/Default.aspx>

**\*\*You will also need a basic scientific calculator. You will not be permitted to use the calculator function on any other portable electronic device (cell phone, PDA, wristwatch etc.) during exams\*\***

**Lecture:** A majority of the lecture periods will be spent introducing the core material for the class. However, these lecture periods will not be a simple restatement of the material found in the text. The lectures will serve to expand on the material from the text and provide activities to cement your understanding of the material.

**Lab:** Lab periods will consist of more in-depth activities that will allow you to gain advanced experience with research methodology and statistical analyses. These labs will also provide you with some time to work on the major class projects in a controlled environment.

### Assignments:

Midterm exam and final exam. The exam is worth 100 points. The test will be objective and will include all course material (i.e., texts, lectures, activities and homework) covered. You will need to study, understand, and be able to apply the material to various situations in order to succeed on the test. The test will consist of questions of varying format (short answer and stats problems) from the course material. Each student will be responsible for bringing a calculator, formula sheet and writing instrument to class on the test date. Please be respectful of you fellow students and arrive on time for the test.

Homework. Homework will be assigned and is due AT THE SPECIFIED TIME on the due date. Assignments turned in after the specified will be considered late.

Problem sets handed in up to one day late will get half-credit (that includes a problem set turned in after the deadline); anything later will receive a score of zero. Note also that homework assignments will occasionally include material not covered in class.

### Research Paper.

You will write a research paper with the emphasis on the method and results sections. You can either collect data on a topic of your choice or you can use your data from Methods I and redo the statistical analysis using advanced inferential statistical methods.

**Grading Policy:** Your final grade will be based on your grades on the midterm exam (100 pts.), your final exam grade (100 pts.), your grades on your homework assignments (150 pts.), and your research paper (150 points). A total of 500 points will be available for this class. Grades will be assigned according to the following "total points earned" cutoffs:

481-500 = A+	421-440 = B+	361-380 = C+	301-320 = D+	279 & below = F
461-480 = A	401-420 = B	341-360 = C	281-300 = D	

441-460 = A-      381-400 = B-      321-340 = C-      261-280 = D-

**Academic Honesty:** You are expected to adhere to the McDaniel College Honor Code and to report any known violations of this code. Write /type the code on all written work and exams and sign below it.

**Electronic Devices:** Out of respect for your fellow students, please turn off all cell phones before the start of class each day. It is very distracting when phones ring during class and when people are sending and receiving text messages. Laptops/Tablet PCs may be used in class for the purpose of taking notes only. Any inappropriate use as determined by the instructor will lead to the student being counted absent for the day and will result in a loss of permission to use such devices. Your participation grade will be affected drastically if you use these devices in class without permission. In addition, all electronic devices will need to be put away during exams.

**\*\*\*\*\*Special Note\*\*\*\*\***

PSY 2223 and PSY 2224 are, arguably, the most important psychology classes that you will take in your career. You simply cannot be a competent scientist without a fundamental understanding of the material we will cover in this class. If you are willing to dedicate yourself to this, admittedly, time-consuming course you will find yourself greatly rewarded.

**Tentative Schedule of Events**

<b>Date</b>	<b>Topic</b>	<b>Reading</b>
2-Feb	Revision I	Ch 1-8
9-Feb	Revision II	Ch 1-8
16-Feb	Correlation again	Ch 9
23-Feb	Regression and Multiple Regression	Ch 10 - 11
2-Mar	One sample test Two dependent samples t-test	Ch 12-13
9-Mar	Independent samples t-test Revision of statistical power	Ch 14-15
16-Mar	One-way ANOVA	Ch 16
23-Mar	Exam revision Midterm exam	
30-Mar	Factorial ANOVA	Ch 17
6-Apr	Repeated Measures ANOVA	Ch 18
13-Apr	Spring Break – No Class	
20-Apr	Advanced ANOVA models	
27-April	Chi square	Ch 19
4-May	Non-parametric tests	Ch 20
11-May	Revision	
18-May	Final exam Presentations	