



**PSY 2120 - RESEARCH DESIGN & ANALYSIS II  
SPRING 2007**

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**WHAT IS THIS COURSE ABOUT?**

Research Design & Analysis II is the second course in a two-course sequence required for Psychology majors. The purpose of this course is to teach you how to design, conduct, analyze, and understand scientific research, focusing on experimental and quasi-experimental designs. Research Design & Analysis I (Psy 2110) is a prerequisite for this course. If you were not in my RDA I class last semester, please see me.

**WHAT AM I SUPPOSED TO LEARN?**

Below is a description of what you will be expected to learn in this course. See page 7 of this syllabus for information about how Psy 2120 contributes to your degree program.

1. Understand and apply experimental, quasi-experimental, and small-N research methods.
2. Select and interpret appropriate statistical analyses for these research methods.
3. Use computers for statistical analysis purposes as well as for preparing oral, poster, and written presentations.
4. Locate, read, and interpret primary source research material.
5. Use the language of the science of psychology in oral, poster, and written presentations of research.

**HOW WILL I LEARN THIS?**

- ❖ Read the textbook.
- ❖ Attend class and participate.
- ❖ Attend labs and complete lab assignments.
- ❖ Construct a poster reporting a research project.
- ❖ Write an APA format research proposal and present it orally.

**IS THIS A HARD CLASS?**

Yes. This class requires you to extend the research and statistical skills you learned in Research Design & Analysis I. The material on inferential statistics is quite abstract and you will probably have to go over the material several times in several different ways before you fully understand it. There is also a great deal of work involved, particularly in completing the research proposal, oral report, and poster. However, students who do complete all of this work are likely to master the necessary skills and make good grades. You may also find that conducting and reporting the research is interesting and rewarding.

## **HOW WILL I BE GRADED?**

Four Exams (100 points each). These exams will have closed-book conceptual parts, with multiple-choice and short answer questions. Exams will also include open-book computational parts, which will measure your ability to select, compute, and interpret statistics.

Lab Activities (30 points total). In order to earn credit for a lab activity you must be present for the entire lab and also participate in the lab. Each lab period is worth 1 point.

Homework (20 points total). You will have 10 homework assignments, announced in class. Each assignment will be graded on whether you made a reasonable attempt to complete it correctly (1 point) and whether your work is correct (1 point). Although the homework is not worth a large number of points, these assignments will help you prepare for exams.

Five Research Activity Reports (4 points each). The format for these reports is available on the course website. These reports will help you get used to understanding and writing about research. You may report on any of the following research activities:

- Reading a *primary source research article* (reporting original, empirical research). These must be in academic journals, not popular magazines, newspapers, or websites. If you are not sure you have an acceptable article, just ask me.
- Attending a *research presentation*. Any opportunities to attend research presentations will be announced in class.
- *Observing or participating in a research study*. You may sign up at [cmsu.experimentrak.net](http://cmsu.experimentrak.net)

Poster Presentation (80 points) You will present a poster at the Central Scholar's Symposium in April based on a research project that you have designed and conducted. The poster will be evaluated on how well you present appropriate and accurate information about the project, organization, and appearance. You may do this project individually or you may work with up to two other students in the class (provided that they agree). If you do not contribute to the research project at a satisfactory level, you will receive a grade of zero. More information will be provided in a separate handout.

Research Proposal (100 points: 80 point paper plus 20 point oral presentation). You will be responsible for designing a research project of your own and writing a research proposal, in APA format. You will also do a brief oral presentation of your research project. You should be working on this project from the beginning of the semester.

**Your grade for the course will be determined by how many total points you earn, as shown below.**

<u>Points Earned</u>	<u>Grade</u>
585 or more	A
520-584	B
455-519	C
390-454	D
below 390	F

### **WHAT DO I NEED TO GET AT THE BOOKSTORE?**

1. The required textbook, Jackson's *Research Methods and Statistics: A Critical Thinking Approach* (2<sup>nd</sup> ed.). This is the same book we used in Research Design & Analysis I.
2. If you do not have a copy of the *Publication Manual of the American Psychological Association* (5<sup>th</sup> Ed), I recommend that you purchase one.
3. The packet of class notes.

### **WHAT ELSE DO I NEED FOR THIS CLASS?**

1. An inexpensive calculator with basic arithmetic functions including square root.
2. I recommend purchasing a three ring binder for your notes packet and other handouts.
3. You may need to purchase some inexpensive supplies for your research project.

### **HOW DO I TURN IN MY RESEARCH PROPOSAL PAPER?**

Your proposal must be emailed to me at [kreiner@cmsu1.cmsu.edu](mailto:kreiner@cmsu1.cmsu.edu). Please save your paper in Microsoft Word or in Rich Text Format (RTF) and email it to me as an attachment. The name of the file should include your first initial and last name (e.g., gspelvin.doc). Always keep at least one backup copy.

### **IS THERE A LATE PENALTY?**

Homework assignments will not be accepted after their assigned due dates. Your poster and oral presentations must be completed on time as scheduled or you will not earn any points for them.

A penalty of 10% per day will be deducted for late research proposal papers. It is your responsibility to ensure that I receive your proposal by midnight on the due date. Keep in mind that email is not always transferred instantaneously; if you send it before midnight and I receive it after midnight, it is still late.

### **WHAT IF I MISS CLASS OR LAB?**

You will be allowed to make up missed exams, homework, and labs if you were unable to attend due to participation in a required University activity or serious illness of yourself or an immediate family member. In either case, you should present written evidence of the reason for your absence no later than the first day you return to class and arrange to make up the work. If you do not contact me about making up the work until later, or if you are absent for some other reason, you may not be allowed to make up missed work.

### **WHAT DO I NEED TO KNOW ABOUT ACADEMIC HONESTY?**

You are responsible for understanding university regulations concerning academic honesty. Please see your CMSU Student Planner/Handbook for these regulations. If there is anything of which you are unsure regarding academic honesty, please ask me.

### **RESEARCH ETHICS**

You should be familiar with research ethics, as they were covered in Psy 2110. It is your responsibility to make sure that you understand ethical and legal requirements related to the research activities that you do. Failure to follow ethical requirements (e.g., collecting research data without prior approval from the Human Subjects Review Committee) will be treated as a violation of the academic honesty policy.

### **WHAT BEHAVIOR IS APPROPRIATE IN CLASS?**

Please be respectful and considerate toward your classmates. Distracting or disruptive behavior makes it difficult to learn. Please turn off cell phones and pagers, or put them in silent mode if you must have them on. If you might need to leave early or arrive late, please sit near the door. You are encouraged to join in class discussions, but please do not talk while I am talking or while another student is talking. Insulting, belittling, or other offensive behavior toward your classmates is not acceptable.

### **WHAT IF I NEED SPECIAL ACCOMMODATIONS?**

If you have a documented disability, please contact the Office of Accessibility Services, Union 220, (660) 543-4421 to arrange accommodations.

### **EARLY ALERT PROGRAM**

As a part of UCM's commitment to building a positive learning community that supports the success of every student, I participate in the UCM Early Alert Program. That means that if I notice you are struggling with the course, I will refer you to the Early Alert Program so that they can work with you to help you have a successful experience in this course.

### **LIBRARY**

You may access your library account, the online catalog, and electronic databases from James C. Kirkpatrick Library's website at <http://library.cmsu.edu>. For research assistance, you may contact the Reference Desk:

Phone: 543-4154

Email: [reference@libserv.cmsu.edu](mailto:reference@libserv.cmsu.edu)

AIM: JCKLReference

RefChat: <http://library.cmsu.edu/chat>

**COURSE SCHEDULE**

<b>DATE</b>	<b>TOPIC</b>	<b>READING</b>	<b>LAB ACTIVITY</b>
Tue. Jan. 9	Course Introduction Experimental Designs	Chapter 8	Pre-Course Assessment
Thu. Jan. 11	Threats to Internal Validity	Chapter 8	Experiment – Hypothesis and Variables
Tue. Jan. 16	Counterbalancing; Threats to External Validity	Chapter 8	Experiment – Review Literature and Research Protocol
Thu. Jan. 18	Probability		Experiment – Research Protocol
Tue. Jan. 23	Probability		Random Assignment Exercise
Thu. Jan. 25	Hypothesis Testing z-test	Chapter 7(143-160)	Experiment - Human Subjects Protocols
Tue. Jan. 30	Review		Experiment - Human Subjects Protocols
Thu. Feb. 1	<b>EXAM 1</b>		Research Proposal Worksheet
Tue. Feb. 6	Single-Sample t-test Confidence Intervals	Chapter 7 (161-170)	SPSS Single-Sample t-test
Thu. Feb.8	Chi-Square Goodness of Fit test	Chapter 13(282-285)	SPSS Chi-Square Goodness of Fit
Tue. Feb. 13	Independent Samples t-test	Chapter 9	SPSS Independent Samples t-test
Thu. Feb. 15	Dependent Samples t-test	Chapter 9	SPSS Paired t-test
Tue. Feb. 20	Wilcoxon Tests	Chapter 13 (288-293)	SPSS Wilcoxon Rank-Sum and Wilcoxon T-tests
Thu. Feb. 22	Review		Experiment - Work on Symposium Proposal
Tue. Feb. 27	<b>EXAM 2</b>		Experiment - Submit Symposium Proposal
Thu. Mar. 1	One-Way ANOVA	Chapter 10	SPSS One-Way ANOVA
Tue. Mar. 13	One-Way ANOVA Graphs of Means	Chapter 10	Experiment - Statistics
Thu. Mar. 15	Post Hoc Comparisons Repeated Measures ANOVA	Chapter 10	SPSS-Repeated Measures ANOVA
Tue. Mar. 20	Repeated Measures ANOVA How to Make a Poster	Chapter 10 Chapter 14 (309-310)	Experiment – Work on Posters
Thu. Mar. 22	Review		Experiment – Work on Posters Individual Project Checklist
Tue. Mar. 27	<b>EXAM 3</b>		Experiment – Work on Posters

Thu. Mar. 29	Factorial Designs	Chapter 11	Simulated Factorial Design
Tue. Apr. 3	Two-Way ANOVA	Chapter 11	Experiment - Work on Posters
Thu. Apr. 5	<b>POSTER PRESENTATIONS</b>		<b>CENTRAL SCHOLARS SYMPOSIUM</b>
Tue. Apr. 10	Two-Way ANOVA	Chapter 11	SPSS Two-Way ANOVA
Thu. Apr. 12	More ANOVAs Chi-Square Test of Independence How to do an Oral Presentation	Chapter 11	SPSS Chi-Square Test of Independence
Tue. Apr. 17	Quasi-Experimental Designs <b>RESEARCH PROPOSAL PAPERS DUE</b>	Chapter 12 Chapter 8 (191-193)	Work on Oral Presentations
Thu. Apr. 19	Small-N Designs Choosing Statistics	Chapter 12	Small-N practice Work on Oral Presentations
Tue. Apr. 24	<b>RESEARCH PROPOSAL ORAL PRESENTATIONS</b>		<b>RESEARCH PROPOSAL ORAL PRESENTATIONS</b>
Thu. Apr. 26	Review		End of Course Assessment
Thu. May 3	<b>EXAM 4, 11 - 1</b>		

**Department of Psychology Student Learning Outcomes Matrix for BS**

Learning Outcomes	PSY 1100	PSY 2110	PSY 2120	PSY 2130	PSY 3130	PSY 3220	PSY 3340	PSY 4110	PSY 4310	PSY 4440
<b>Demonstrate and integrate knowledge of the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology.</b>	I	I D A	R D A	I D A	I D A	I D A	I D A	D D A	I D A	D D A
<b>Understand and apply basic research methods in psychology, including research design, data analysis, and interpretation.</b>	I	I D A	R D A	I D A	I D A	I	R	A		R
<b>Value and use critical and creative thinking, including the scientific method, to address problems related to behavior and mental processes.</b>	I A	I D A	R D A	I D A		I	D	D A*		R
<b>Appropriately apply knowledge and skills acquired in the psychology curriculum to personal, social, and organizational issues.</b>		I		I*	I*	I	D A		I	R
<b>Value and apply empirical evidence, cope with ambiguity, and behave legally and ethically in research and applied settings.</b>	I	I, D A	R, D A	I	I		D			D A
<b>Understand and apply the language of the science of psychology, through effective speaking, reading and writing.</b>	I	I, D A	R, D A	I, D A*	I D	I, D		D A	I	D A
<b>Demonstrate the ability to acquire and disseminate information and use computers and other technology for a variety of purposes.</b>		I D A	R D A		I	I		D A		D A
<b>Recognize, understand, and respect individual differences and the complexity of sociocultural and international diversity. Demonstrate knowledge about how these factors affect applied and scholarly work.</b>	I	I D A	D A	I	I*	I	D A	D A	I	D A
<b>Demonstrate knowledge about realistic occupational, career, and advanced educational opportunities appropriate to the discipline and develop a feasible plan to pursue those opportunities.</b>	I	I D		I				I D A		R

**I = "Introduced"** "I" is used when the learning outcome is introduced, but not emphasized in the course.

**D = Developed** "D" is used to indicate extensive discussion, treatment and/or application of the learning outcome in the course.

**A = Assessment** "A" is used to indicate the students' knowledge and/or skills related to the learning outcome are measured & evaluated in the course.

**R = REVIEW** "R" indicates that material is just being reviewed from a previous course.

**Research Design & Analysis I Research Activity Report**

**Name** \_\_\_\_\_

**Date of Activity** \_\_\_\_\_

**APA Format Reference (for research article or presentation):**

**Name and Title of Research Project (for research participation/observation):**

**Research Design and Variables:**

**Hypothesis:**

**Conclusions (for research article or presentation):**

**Your Comments on the Research:**



## **Research Design & Analysis II**

### **Instructions for Experimental Design Project**

For this project, you will design an experiment, collect the data, compute and interpret the statistics, and present the project as a poster at the Central Scholars Symposium in April.

You may do this project individually, or you may choose to work with up to two other students in the class. If you choose to work with one or two other students, all of you must agree to work together on the project.

Your project must be a true experiment, meaning that you must have an independent variable that is manipulated. You may use a between subjects or within subjects design, and you should choose appropriate conditions to test your hypothesis. Your dependent variable should be an interval or ratio level measurement. Your hypothesis must be something related to the class research theme of studying and learning.

#### **Collecting Data**

Your project must be approved by the Human Subjects Review Committee before you collect any data from human subjects. Once you receive your approval letter, you will need to work with the Psychology Department Research Coordinator and arrange your data collection times.

You will most likely be using the Psychology Department Subject Pool to collect your data. Please be reasonable about the amount of data you collect, keeping in mind that many other students need to get their projects done as well. Unless you have a particular need for a larger sample (check with me about that), you should limit your sample size to 20 participants.

If you would like to obtain your participants elsewhere, that is fine, but keep in mind that it will be more difficult to obtain your human subjects approval if you are collecting data from children. Also keep in mind that if you will be collecting data at any other institution, you will have to get a letter from them giving you permission to collect data there; that permission letter will be required before you can get your human subjects approval.

After you have finished collecting data, you must turn in a Project Status Form; that is required by the Human Subjects Review Committee.

#### **Poster**

You are required to construct and present a poster on your research at the Central Scholars Symposium. You will need to submit a proposal through the Central Scholars Symposium website (The website may be accessed from our course website). I will grade your poster using the grade sheet posted on the course website. Your poster will be graded on content, organization, and appearance. You will be expected to be present at the poster session and to be able to answer questions from individuals attending the poster session.

**Research Design & Analysis II  
Poster Presentation Grade Sheet**

**Name(s)** \_\_\_\_\_

**Grade** \_\_\_\_\_ **/80**

**CONTENT** \_\_\_\_\_ **/50**

Title and Authors

Topic

Literature Review

Hypothesis & Prediction

Method

Results

Conclusions

**ORGANIZATION** \_\_\_\_\_ **/10**

Appropriate Sequence

Consistency

**APPEARANCE** \_\_\_\_\_ **/20**

Visually Oriented

Readable

Professional Appearance

## **Research Design & Analysis II**

### **Instructions for Research Proposal**

The purpose of this project is to confirm that you have acquired research skills sufficient to design a meaningful research project on your own and that you can communicate it appropriately in APA style. You may choose something that is related to our class research theme, perhaps even a follow up to one of the projects you did this year. However, you may also choose to do your proposal on a topic that is not related to the class research theme, as long as it relates to Psychology.

This assignment is a proposal, so you will not be collecting any data. This allows you the opportunity to design a project that would require resources and time that you don't have in this class. These are individual projects. Although you may talk with other students about your project, you must make all the decisions and do the work for your project yourself.

You may choose any research design covered in RDA I or RDA II. If you choose a design that we have not covered in class yet, you should do some reading on that design ahead of time. Do not feel pressured to choose the most complicated design to get a good grade; instead, choose what you think is the best design to test your hypothesis.

#### **Research Proposal Paper**

Your research proposal paper should include all the sections of a standard APA research report: Title Page, Abstract, Introduction, Method, Results, Discussion, References. Consult your notes from RDA I, your revised paper from RDA I, and the *Publication Manual of the American Psychological Association* (5<sup>th</sup> Ed.). Differences from a standard research report are summarized below. Please also see the grading sheet for the paper.

Abstract: See notes below about how to present the method, results, and conclusion.

Introduction: Provide an in-depth literature review providing sufficient background for your topic. This should include a minimum of 6 references from academic journals.

Method: Write this in future tense rather than past tense.

Results: You will not report actual results because you will not have collected any data. Instead, you should describe (in future tense) how you will tabulate/score the data and which specific statistics you will use to analyze the results.

Discussion: Write the Discussion section with the assumption that the results would be consistent with your hypothesis. Make sure you describe what results would and would not support your hypothesis.

#### **Oral Presentation**

Your oral presentation should be about five minutes in length. You should include Powerpoint slides, but take into account the time constraints when considering how many slides to include. Please also see the grading sheet for the oral presentation.

## Research Design & Analysis II Research Proposal Paper Gradesheet

NAME \_\_\_\_\_  
TOTAL SCORE \_\_\_\_\_/80

### \_\_\_\_\_ General Formatting (5 points)

margins  
double-spacing  
short title & page number  
order of pages  
section headings  
appendices, tables, figures formatted correctly

### \_\_\_\_\_ Title Page (3 points)

Running Head  
    Content  
    Length  
    Format  
Title Block  
    Title Content  
    Author with Middle Initials  
    Institution

### \_\_\_\_\_ Abstract (7 points)

Description of Topic  
Number and Type of Participants  
Type of Research Method and Variables  
Expected Statistical Results  
Expected Conclusion about Hypothesis  
*Organization*  
*No Inappropriate Information*  
*Concise*  
*Scientific Wording*  
*Format*  
*Grammar & Spelling*

### \_\_\_\_\_ Introduction(15 points)

Description of Topic and Importance  
Literature Review  
    Comprehensive Coverage (Minimum 6 references from academic journals)  
    Appropriate Citations  
    Understandable Descriptions  
    Avoided Quoting  
Specific Hypothesis  
Predicted Results  
*Organization*  
*No Inappropriate Information*  
*Concise*  
*Scientific Wording*  
*Format*  
*Grammar & Spelling*

**Method (15 points)**

Method is Appropriate for Testing Hypothesis

Participants

Number

Type

Selection Method

Demographics

Materials

Procedure

*Organization*

*No Inappropriate Information*

*Concise*

*Scientific Wording*

*Format*

*Grammar & Spelling*

**Results (15 points)**

Data Tabulation

Planned Descriptive Statistics

Planned Inferential Statistics

Organization

*No Inappropriate Information*

*Concise*

*Scientific Wording*

*Format*

*Grammar & Spelling*

**Discussion (15 points)**

Statistical Outcomes That Would And Would Not Support The Hypothesis

Limitations/Problems

Comprehensive

Specific

Correct Wording

Related to Literature

Specific Suggestions

Status of Theories (Basic Research)

Applications (Applied Research)

Future Research

*Organization*

*No Inappropriate Information*

*Concise*

*Scientific Wording*

*Format*

*Grammar & Spelling*

**References (5 points)**

Reference for Each Citation

No Uncited References

Alphabetical

Format

**Research Proposal Oral Presentation Grade Sheet**  
**Research Design & Analysis II**

Name \_\_\_\_\_

**Grade** \_\_\_\_\_ **/ 20**

**CONTENT** \_\_\_\_\_ **/ 10**

Introduction

    Topic and Importance

    Hypothesis

Method

    Type of Design

    Participants – Selection and Characteristics

    Measurement of Variables

Results

    Planned Statistics

Discussion

    Results that would Support Hypothesis

    Results that would not Support Hypothesis

    Limitations

**CLARITY OF PRESENTATION** \_\_\_\_\_ **/ 10**

Speaking

    Speech Rate

    Speech Volume

    Intonation

Eye Contact

Not Read or Memorized

Slides