

# PSY 294: RESEARCH DESIGN AND ANALYSIS II

FALL 2015

AUGUST 24 – DECEMBER 4

LECTURE: TR 11:30am-12:50pm

LABS: (AA) WF 1-1:55pm

(AB) TR 1-1:55pm

LOCATION: Psychology 131

LOCATION: Psychology 126

INSTRUCTOR	OFFICE HOURS	OFFICE	EMAIL
Dr. Molly Metz	R 10-11am, F 11:30am-12:30pm, or by appointment	Psychology 320	metzma2@miamioh.edu
TA	OFFICE HOURS	OFFICE	EMAIL

**PREREQUISITES:** STA 261, PSY 293

**COURSE WEBSITE:** Canvas, at <https://miamioh.instructure.com>

**COURSE MATERIALS:** Morling, B. (2015). *Research Methods in Psychology: Evaluating a World of Information* (2<sup>nd</sup> Ed.). New York: Norton. ISBN: 978-0-393-93693-3

American Psychological Association (2010). *Publication Manual of the American Psychological Association* (6<sup>th</sup> ed). Washington, DC: APA (**recommended, but not required**)

In addition, many course materials will be posted on the course website, including the syllabus, readings/handouts, lab materials, and links to external sources. Therefore, internet access is crucial to your performance in the class. Please make sure to check your email frequently for important announcements and reminders.

Finally, basic calculators (with square and square-root functions) are permitted when completing any and all assignments for this course, including exams. However, graphing calculators and calculators on cell phones, tablets, or laptops are not permitted.

**IMPORTANT:** STA 261, PSY 293, and PSY 294 are required for psychology majors and must be completed before enrolling in 300 and 400 level courses. These courses partially fulfill CAS writing and Quantitative Literacy requirements

**EMAILING YOUR INSTRUCTORS:** If you have any questions at all, please don't hesitate to email me or your TA. When emailing us (or any instructors), please use a descriptive subject line, a greeting, complete and grammatically correct sentences, and a signature with your full name (in other words, think of email as professional communication). In addition, please include "PSY293" in the subject line. I will try to respond to all emails within 2 business days. Finally, I may not respond to emails between the hours of 8pm and 8am, so please keep this in mind when deciding whether to resend the message.

---

## COURSE OVERVIEW & GOALS

---

By the end of this course, you will have a better understanding of the process of psychology as a science, from developing your own research questions and identifying the best methods to test them, through the communication of results. During this course you will gain insight into the scientific process as a whole – its advantages, difficulties, and limitations. As such, you will be able to better evaluate the knowledge science can provide, and integrate that knowledge into a broader worldview.

You will learn primarily about the experimental method and how psychologists use this to answer questions about causes of human behavior. You will also encounter the statistical procedures used to measure properties of these behaviors. However, more importantly, you will develop an understanding of the theoretical motivation behind these procedures. By the conclusion of this course, in conjunction with your previous training in the prerequisite courses, you should have a sufficient grasp of several fundamental design and analysis procedures, including when and why they are used.

Specifically, the primary goal for this course is to further prepare you as a consumer and producer of scientific knowledge by developing your ability to:

- A. Locate, evaluate, and summarize existing research literature.
- B. Identify remaining, important questions in the research literature on a given topic, and design studies that effectively address these questions.
- C. Compute (by hand and with statistical software) relevant descriptive and inferential statistics.
- D. Identify the assumptions and limitations inherent in the application of relevant descriptive and inferential statistics, and when to apply each.
- E. Identify specific research designs, their strengths and weaknesses, and when to apply each.
- F. Identify the ethical issues associated with the study of human behavior, in general, and with any specific research study, in particular.
- G. Identify key design principles in published research and your own, describe the rationale for their selection, and identify their potential limitations and biases.
- H. Communicate the results of empirical research to professional audiences in scientific genres.

---

## COURSE STRUCTURE

---

### **A. CLASS MEETINGS**

During our class meetings, we will introduce and discuss the important concepts of the course. We will also engage in activities and explore real-world applications related to these concepts. During this time, you are both encouraged and expected to ask questions to help clarify and expand on the material. Lecture will be just one small piece of our time together, so come to class prepared to engage with each other and the material. I *will* post lecture slides to the course Canvas site after each class period, but these slides will *not* include all of the information we go over, and therefore are not a substitute for attending class.

### **B. LAB SECTIONS**

Lab sections provide a more intimate setting to gain additional hands on experience with the course material, as well as to receive more small-group instruction and additional assistance mastering course concepts. You are expected to attend all lab sections and to build relationships with your classmates and with your TA. The class meetings and lab are coordinated and

complementary. Assignments and topical coverage span both, although each may provide a qualitatively different experience as well as different resources.

### **C. READING**

The textbook is a supplement to the class meetings; some assigned chapters will review or expand on what we discuss in class, while others will expose you to important topics that we will *not* be discussing together. To get the most out of class, please complete all readings *before coming to class*. You will be responsible for assigned chapters on exams.

---

## **ASSESSMENT**

---

Because few students excel at (and feel comfortable with) all forms of evaluation, you will have the opportunity to demonstrate your grasp of the course material in a number of ways. Your final grade will be calculated based on your performance of several activities. Each component is described below.

### **A. RESEARCH— 40% OF COURSE TOTAL**

You will be a member of two research groups that will research, design, and conduct a research project and analyze and communicate the results. Although the research aspect will be performed in groups, the communication of the research will primarily be done individually. Specifically, you will be responsible for a total of **two** research studies and **three** products:

- a. STUDY 1: ONE-FACTOR EXPERIMENT—** You will design and implement an experiment that compares two groups of individuals. This research will be conducted in groups over the first half of the semester, and the results will be communicated individually in an APA-style manuscript.
  - i. RESEARCH PAPER (15% OF COURSE TOTAL)**
- b. STUDY 2: 2×2 EXPERIMENT —** You will design and implement another experiment or quasi-experiment that compares at least two groups on each of two different independent variables. This research will be conducted in groups over the second half of the semester, and the results will be communicated as a group in a professional poster presentation held during the last week of classes.
  - i. POSTER PRESENTATION (15% OF COURSE TOTAL)**
- c. APPLICATION BRIEF (10% OF COURSE TOTAL)—** You will create a unique, translational “application brief” that applies the findings from either of your basic research studies to a real-world domain, using an appropriate, professional yet nontechnical genre. This will be done individually, and may take the form of a marketing brief, policy analysis, letter to the editor, professional blog post, popular magazine column, etc.

### **B. QUIZZES AND EXAMS— 30% OF COURSE TOTAL**

- a. QUIZZES (20% OF COURSE TOTAL) —** Instead of fewer, longer exams, 5 non-cumulative in-class quizzes will be given over the term. Your lowest quiz score will be dropped. If you miss one of the quizzes for whatever reason, that is the score that will be dropped.
- b. FINAL EXAM (10% OF COURSE TOTAL) —** In addition to the quizzes, you will take one cumulative final exam. The exam may be multiple choice, short answer, and

brief essay, and will cover information from both lecture and lab. The exams will be closed-book, closed-note, and completed individually.

### C. ACTIVE ENGAGEMENT – 30% OF COURSE TOTAL

Being present in class is a great first step toward success, but learning doesn't happen by passively absorbing rogue information from the atmosphere. In order to get the most out of this (or any) class, *active engagement* is key. This may include: participation in class discussion or activities, taking notes, or even just actually thinking about questions that are posed, even if you don't speak up in class. This definitely does not include: reading the newspaper, doing other work, texting or engaging in side conversations, listening to your headphones, sleeping, etc.

**Work completed in lab will account for 15% of your course total, with the remaining 15% comprised of in-class activities, homework, and lecture quizzes.** If you miss a class during which we complete a graded activity, you may not make it up.

### FINAL GRADE CALCULATION

Final grades will be based on absolute points, rather than a curve – that is, it is completely possible for everyone to earn an A in this class (if they earn the points). **There will be no extra credit opportunities.**

All final grades will be rounded to the nearest full percent. Your grade will then be determined by the scale below. Per university policy, final grades are non-negotiable. Grade changes will be made *only* to correct for grading errors.

#### Research

Paper – 15%

Poster – 15%

Brief – 10%

#### Exams

Quizzes (4) – 20%

Final – 10%

#### Active Engagement

Lab Work – 15%

Everything else – 15%

PERCENTAGE	GRADE
<b>93 and above</b>	<b>A</b>
<b>90 – 92</b>	<b>A-</b>
<b>87 – 89</b>	<b>B+</b>
<b>83 – 86</b>	<b>B</b>
<b>80 – 82</b>	<b>B-</b>
<b>77 – 79</b>	<b>C+</b>
<b>73 – 76</b>	<b>C</b>
<b>70 – 72</b>	<b>C-</b>
<b>67 – 69</b>	<b>D+</b>
<b>60 – 66</b>	<b>D</b>
<b>59 and below</b>	<b>F</b>

#### To compute your grade:

Final score =  $[(.15*\text{paper}) + (.15*\text{poster}) + (.10*\text{brief})] + [(.05*\text{quiz1}) + (.05*\text{quiz2}) + (.05*\text{quiz3}) + (.05*\text{quiz4}) + (.1*\text{final})] + [(.15*\text{lab work}) + (.15*\text{everything else})]$

**Note: If computing your grade yourself, use percentages for assignment scores (e.g., 81), not decimals (e.g., .81) or raw points (e.g., 40.5 out of 50)**

---

## COURSE POLICIES

---

### LATE WORK AND MAKE-UP POLICY

If participation in university-sponsored events (e.g., athletics) or observance of a religious holiday or other sanctioned event prevents your attendance, you must contact me prior to the relevant date, and you must have any appropriate documentation. If an assignment is due on that date, arrangements must be made to complete the assignment ahead of time.

Unless otherwise stated, all assignments are due **at the beginning of class** (unless otherwise noted for electronic assignments). Late assignments will only be accepted in the case of extraordinary circumstances and appropriate documentation, and may involve point deductions. Please alert me to these extraordinary circumstances by email within 12 hours of the missed class, and we will set up a time to discuss these on a case-by-case basis.

Early exams or exam make-ups will not be granted.

However, I recognize that sometimes life happens; therefore, I have built some flexibility into the course to allow for illness, other obligations, and bad days. First, the lowest of your 5 quiz grades will be dropped at the end of the semester, no questions asked (so if you miss a class, that zero will be dropped). In addition, I will build a 10% cushion into your engagement grade; that is, your engagement grade will be computed by dividing the total number of points you earn by 90% of the total available points.

### GRADE DISPUTE POLICY

24/7 Policy: You must wait for at least 24 hours following the return of an assignment before bringing a grade concern to me; use this time to reflect upon your performance and grade. Additionally, grade concerns must be brought to my attention within 7 days of the return of the assignment. Please write a short paragraph detailing your grade concern, including a copy or scan of the original assignment, if relevant, and email it to me. Only reasonable and well-justified concerns will be considered, and all decisions are final.

### TECHNOLOGY POLICIES

#### CELL-PHONE POLICY

Out of respect for me and your classmates, your phones should be off (or on silent) and put away at all times. In particular, please refrain from texting during class –the view from the front of the room is excellent, and no matter how sneaky you think you are being, I assure you, you are not.

That being said: You are adults and know your priorities better than I possibly could. As such, if you have a call or text that is *important enough to miss class for*, by all means, please step outside to take care of it. HOWEVER – if the call or text is *not* important enough to miss class for, then please be respectful and save it for after class.

## LAPTOP POLICY

Research indicates that taking notes by hand results in significantly better retention of conceptual information than taking notes on a laptop (see Mueller & Oppenheimer, 2014), even when students are engaged in the material (i.e., are not also checking their email or Facebook feed). Further, laptop use can be distracting in various ways to the entire class. Because my goal is to maximize the likelihood of a favorable learning environment, I **strongly** recommend that you not use laptops in class. However, laptops will be permitted on a probationary basis; should the use of laptops be taken advantage of or prove distracting to other students, I will revisit this policy then.

---

## STUDENT RESOURCES

---

**Center for Psychological Inquiry (CPI):** The CPI is a resource for psychology students to facilitate their learning and engagement with psychology. The CPI serves many functions, from a quiet study space, access to SPSS software, access to textbooks and the APA manual, graduate school preparation and advice, tutoring, writing feedback, and homework help. Visit the Center on the first floor of Psychology for operating hours and more information, or visit the website at <http://miamioh.edu/cas/academics/departments/psychology/academics/undergraduate-studies/undergraduate-programs/center-for-psychological-inquiry/index.html>.

**Howe Writing Center (HWC):** “Miami’s goal is to provide the best undergraduate experience in the nation by promoting a vibrant learning and discovery environment that produces extraordinary graduates. A central part of that environment and of student success is learning to write and to write well.” – President David Hodge, from the HWC website. The Howe Writing Center, located in King Library, serves all members of the Miami community by providing support at all stages of the writing process. To make an appointment, contact HWC at (513) 529-6100 or visit their website at <http://miamioh.edu/howe/>.

**Student Disability Services (SDS):** Miami University is committed to ensuring equal access to students with disabilities. Miami’s Office of Student Disability Services (SDS) assists students with determining eligibility for services and accommodation planning. Students who are entitled to disability-related academic adjustments, auxiliary aids, etc., must register with SDS to receive accommodations in university courses. Please understand that formal communication from SDS must be presented prior to the coordination of accommodations for this course. For more information, students may contact SDS at (513) 529-1541 or visit their website at <http://miamioh.edu/student-life/sds/>.

**Student Counseling Services:** If you are experiencing any difficulties meeting class requirements, or any difficulties in your personal life, please contact Student **Counseling Service**. Miami’s Student Counseling Service provides primary, secondary, and tertiary level interventions in an effort to achieve and/or maintain a mentally healthy status for each student and to create a learning environment that facilitates and supports that status. Services include both individual and group counseling, workshops on special topics (like stress management, romantic relationships), substance use treatment, ADHD screening, and more. For more information, please call (513) 529-4634 or visit their website at <http://miamioh.edu/student-life/student-counseling-service/index.html>.

**Campus Learning Centers:** If you do not feel comfortable visiting a counselor but still would like to talk to someone about how best to succeed in your classes, consider visiting the Rinella Learning Center (Main Campus) or the Office of Learning Assistance (Hamilton Campus). These offices offer a wide range of academic support, from one-time consultations and workshops to sustained individual or group tutoring or supplemental instruction. For more information (Main Campus), call (513) 529-8741 or visit their website at <http://miamioh.edu/student-life/rinella-learning-center/index.html>. For more information (Hamilton Campus), call (513) 785-3139 or visit their website at <http://www.regionals.miamioh.edu/ola/>

**SPSS:** <http://www.lib.miamioh.edu/computing> You may need access to SPSS outside of lab time to analyze data for worksheets or projects at some point throughout the semester. SPSS is on the computers in the CPI (Psy 130), in the CIM lab in King Library, and in the Best Library. Follow the above link for more information. Further, the university offers a year-long free download of SPSS to students: <https://software.miamioh.edu/store/>

**Qualtrics:** <http://community.miamioh.edu/qualtrics/> Research projects will be programmed and distributed on Qualtrics. Please set up an account during the first week of class through the above link, if you do not already have an account. Direct all questions about Qualtrics to your lab instructor.

---

## SOME FINAL WORDS

---

### A WORD ABOUT ACADEMIC INTEGRITY

Academic Integrity is at the heart of the mission and values of Miami University and is an expectation of all students. Maintaining academic integrity is a reflection of your character and a means to ensuring that you are achieving the outcomes of this course and that your grades accurately reflect your learning and understanding of the course material. In addition, your performance in the next course in this series depends heavily on your ability to truly learn this material and take it with you.

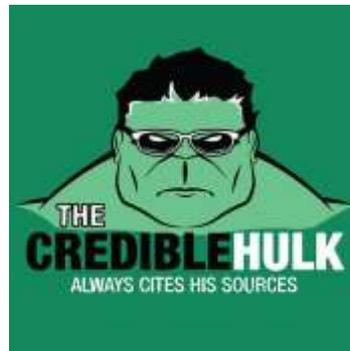
Academic misconduct will not be tolerated in any form. Academic misconduct includes, but is not limited to:

- Submitting the work of another (whether in part or in whole) as your own. This includes putting your name on group work that you did not contribute to.
- Possessing prohibited materials during an in-class quiz or examination.
- Providing or receiving assistance from another student unless explicitly permitted to do so by the instructor.

Plagiarism occurs when someone misrepresents the work of another as his or her own. Plagiarism may consist of using the ideas, sentences, paragraphs, or the whole text of another without appropriate acknowledgement, but it also includes employing or allowing another person to write or alter work that a student then submits as his or her own. Although some assignments or projects in this class will be completed in groups, all writing must be the work of the student whose name is on the assignment, and that student alone. If you are at all uncertain about what constitutes plagiarism, please see your TA or the instructor – do not risk your grade or integrity! I also encourage you to meet with me if you suspect that another student in the course has engaged in academic misconduct.

Any suspected instances of academic dishonesty will be handled under Miami University's Academic Integrity policy found in Part 1, Chapter 5 of the Student Handbook. Please review the policy at the link below, and note that lack of knowledge or understanding of the appropriate academic conduct is not an excuse for committing academic dishonesty. <http://blogs.miamioh.edu/miamipolicies/?p=1994>

Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Terms and Conditions of Use posted on the Turnitin.com site.

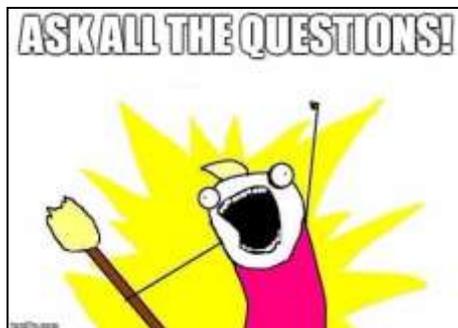


## ADVICE FOR COURSE SUCCESS

It is important for all students to realize that there will be a distribution of grades in this class that reflects your mastery of some very technical and often-challenging concepts. Complete mastery of all concepts will earn an “A,” good but imperfect knowledge earns a “B,” average or adequate knowledge will earn a “C,” and poorer knowledge will receive grades of “D” or “F.” By these criteria, the majority of grades should (and likely will) be “B/C” grades. Remember that your grade in this course is not a reflection of your general ability or your character.

This is a difficult, but not impossible course; it is my hope that you will find this class challenging but rewarding in terms of the knowledge you will walk away with. If you anticipate having difficulty (or when you are), I strongly urge you to do the following:

- Attend every lecture, and take good notes. While attendance will not be graded, per se, the ability to truly learn and use the material in this class is strongly related to attendance.
- Review lecture notes on the day of the lecture (before you go to bed). If you need clarification on anything, ask in the next lecture, lab, or office hours. Don't wait until right before the exams!
- Manage your time wisely. This is an intense course with many moving pieces. Familiarize yourself with the syllabus, put important dates in your calendars now, and space out your work – there is just too much to do it at the last minute
- Use the resources available to you – that includes your course materials (especially this syllabus), the lab instructor, me, and the many amazing services offered on campus.
- Discuss the material with another student. Form a study group. Go to office hours. Ask the TA questions. Ask me questions. **ASK QUESTIONS.**



## CLASS CALENDAR – FALL 2015

*Tentative schedule; I reserve the right to adjust this timeline based on course progress*

WEEK	DAY	DATE	TOPIC	READING	PROJECT PROGRESS (SPECIFIC DATES TBA IN LAB)
1	T	8/25	INTRODUCTION		
	R	8/27	BASICS OF EXPERIMENTAL DESIGN	CH. 10, p271-283	LIT REVIEW HW
2	T	9/1	WRITING ABOUT RESEARCH	TBD	
	R	9/3	HYPOTHESIS TESTING AND Z-TESTS	STATS REVIEW: p463-474	IRB WS DUE
3	T	9/8	SINGLE SAMPLE T-TESTS		
	R	9/10	<b>QUIZ 1</b>		DATA COLLECTION BEGINS
4	T	9/15	BETWEEN-SUBJECT DESIGNS AND INDEPENDENT SAMPLE T-TESTS	CH. 10, p284-287 STATS REVIEW: p475-479	
	R	9/17	WITHIN-SUBJECT DESIGNS AND DEPENDENT SAMPLE T-TESTS	CH. 10, p288-295	INTRODUCTION DRAFT DUE
5	T	9/22	POWER AND EFFECT SIZE	CH. 11 p334-335; STATS REVIEW: p471-474	
	R	9/24	<b>QUIZ 2</b> VALIDITY AND RELIABILITY REVIEW	CH. 5 p121-145; CH. 7	DATA COLLECTION ENDS; METHODS DRAFT DUE
6	T	9/29	VALIDITY OF CAUSAL CLAIMS	CH. 10, p295-305	
	R	10/1	CONFOUNDS AND NULL EFFECTS	CH. 11	DATA ANALYSIS
7	T	10/6	ETHICAL CONSIDERATIONS IN EXPERIMENTS	REVIEW: CH. 4	

	R	10/8	TABLES & FIGURES CATCH-UP/REVIEW		
8	T	10/13	<b>QUIZ 3</b>		RESULTS/DISCUSSION DRAFT DUE
	R	10/15	MORE THAN 2 GROUPS: ONE-WAY ANOVA	STATS REVIEW: P479-482	PROJECT 1: PAPER DUE SUNDAY AT 8PM
9	T	10/20	ANOVA CONTINUED		
	R	10/22	EFFECT SIZE AND POST-HOC TESTS	TBD	
10	T	10/27	CATCH-UP/REVIEW		
	R	10/29	<b>QUIZ 4</b>		IRB WS
11	T	11/3	INTRODUCTION TO FACTORIAL DESIGNS	CH. 12 P343-362	DATA COLLECTION BEGINS ANNOTATED BIBLIOGRAPHY WS
	R	11/5	FACTORIAL DESIGNS: MAIN EFFECTS AND INTERACTIONS	FACTORIAL DESIGNS, MAIN EFFECTS AND INTERACTIONS	
12	T	11/10	FACTORIAL ANOVA	CH. 12 P363	DATA COLLECTION ENDS; DATA ANALYSIS
	R	11/12	CATCH-UP/REVIEW		
13	T	11/17	<b>QUIZ 5</b>		
	R	11/19	BACK TO THE BIG PICTURE: DESIGN AND ANALYSIS		PROJECT 2: POSTER DUE
14	T	11/24	ETHICS REVISITED	TBD	
	R	11/26	<b>NO CLASS – THANKSGIVING HOLIDAY</b>		

15	T	12/1	POSTER PRESENTATIONS I	CH. 13	
	R	12/3	POSTER PRESENTATIONS II	CH. 14	APPLICATION BRIEF DUE
FINALS	T	12/8	<b>12:45-2:45PM</b>		

**MAKE STUDY BUDDIES! RECORD THE CONTACT INFO FOR 2 NEW FRIENDS HERE:**

**NAME:** \_\_\_\_\_

**EMAIL:** \_\_\_\_\_

**PHONE:** \_\_\_\_\_

**NAME:** \_\_\_\_\_

**EMAIL:** \_\_\_\_\_

**PHONE:** \_\_\_\_\_