Understanding and Analyzing Experiments (PSY 30600)

- Spring 2024 -

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Office hours: Agnew – by appointment (email Dr. Agnew)
Mukadam – by appointment (email Arbazz)

Class hours/room: Mon: Online lectures
Wed: 12:30 to 1:20 pm in PSYC 3102
Fri: 12:30 to 1:20 pm in PRCE 255

Textbook: Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics* (5th ed.). Los Angeles, CA: Sage.
Companion website for textbook: https://edge.sagepub.com/field5e

Course Web Site: On Brightspace at https://purdue.brightspace.com/d2l/login
(***Additional information***, beyond this syllabus, is posted there)

Course Format and Description

This course is scheduled for Mondays, Wednesdays, and Fridays, 12:30 – 1:20 pm.

Unless otherwise noted below, the instructional modality is as follows:

- **Mondays** will be reserved for students to watch **online lectures**
- **Wednesdays** will involve an in-person discussion in **PSYC 3102**
- **Fridays** will involve an in-person lab in **PRCE 255**

Course Prerequisites: Completion of PSY 201 and 203 with a grade of B- or higher.

This course is designed to strengthen skills for doing experimental research and is intended for students who plan to pursue graduate degrees. It covers methods and statistics in designing and analyzing experimental studies in psychological sciences that are typically required of first-yea

graduate students. The course also provides training in analyzing experiments using a leading statistical software package, SPSS. The course bridges concepts from introductory methods/statistics courses (PSY 20100 and 20300) with concepts typically covered in more advanced and graduate-level statistics courses. The specific analytic tests that are covered include *t*-tests and analysis of variance (ANOVA).

Learning Outcomes and Course Objectives

This course is designed to achieve several **learning outcomes**: (1) develop an understanding of data analysis in psychological research by watching lectures, attending discussions, completing homework assignments, and testing your knowledge; (2) formulating a research idea that makes use of a statistic covered in class; and (3) get experience using a statistical software package (SPSS) in lab meetings and by completing homework assignments.

Specific **course objectives** include:

1. Learning how to analyze data from conventional experimental designs, including understanding which statistics to use, how to use them, and how to interpret the results
2. Learning how to use SPSS to analyze data
3. Critically examining published articles in terms of their design and analytic features
4. Developing an independent research idea
5. Fortifying research presentation skills

Learning Resources

Assigned readings, beyond the textbook, include the articles below (referred to as "Art" in the schedule). Each article provides an example of a specific test statistic that is covered in this course.

Art 1: Amit, E. & Greene, J. D. (2012). You see, the ends don't justify the means: Visual imagery and moral judgment. *Psychological Science, 23,* 861-868. https://journals-sagepub-com.ezproxy.lib.purdue.edu/doi/10.1177/0956797611434965

Art 2: Kesebir, S. & Oishi, S. (2010). A spontaneous self-reference effect in memory: Why some birthdays are harder to remember than others. *Psychological Science, 21, 1525*-1531. https://doi-org.ezproxy.lib.purdue.edu/10.1177/0956797610383436

Art 3: Tang, S., Shepherd, S., & Kay, A. C. (2014). Do difficult decisions motivate belief in fate? A test in the context of the 2012 U.S. presidential election. *Psychological Science, 25,* 1046-1048. https://journals-sagepub-com.ezproxy.lib.purdue.edu/doi/10.1177/0956797613519448

Art 4: Wesselmann, E. D., Cardoso, F. D., Slater, S., & Williams, K. D. (2012). To be looked at as though air: Civil attention matters. *Psychological Science, 23,* 166-168. https://doi-org.ezproxy.lib.purdue.edu/10.1177/0956797611427921

Art 5: Carr, P. B., & Steele, C. M. (2010). Stereotype threat affects financial decision making. *Psychological Science, 21,* 1411-1416. https://doi-org.ezproxy.lib.purdue.edu/10.1177/0956797610384146

Art 6: Maddux, W. W., Yang, H., Falk, C., Adam, H., Adair, W., Endo, Y., Carmon, Z., & Heine, S. J. (2010). For whom is parting with possessions more painful? Cultural differences in the endowment effect. *Psychological Science, 21,* 1910-1917. https://doi-org.ezproxy.lib.purdue.edu/10.1177/0956797610388818

Art 7: Brescoll, V. L., Dawson, E., & Uhlmann, E. L. (2010). Hard won and easily lost: The fragile status of leaders in gender-stereotype-incongruent occupations. *Psychological Science, 21,* 1640-1642. https://doi-org.ezproxy.lib.purdue.edu/10.1177/0956797610384744

Art 8: Nairne, J. S., Pandeirada, J. N. S., & Thompson, S. R. (2008) Adaptive memory: The comparative value of survival processing. *Psychological Science, 19,* 176-180. https://doi-org.ezproxy.lib.purdue.edu/10.1111/j.1467-9280.2008.02064.x

The course will use Purdue's **Brightspace** learning management system. It is strongly suggested that you become familiar not only with the site navigation, but also with content and resources available for this course.

Students will use **SPSS Software**, which can be accessed online through Purdue's remote software or downloaded to your own computer (see Brightspace for specifics).

General Class Expectations

This course is for students who are intrinsically motivated to learn and to be challenged. Students should aim not merely to get a good grade – although grades are important – but also to attain knowledge and skills that prepare them to do independent research.

Beyond merely attending class and lab meetings, students are expected to be engaged (remain conscious, look alert, pose questions, discuss content). Being involved and asking clarifying questions helps students to learn the material. The instructors may call on students in class, so come prepared (e.g., keep up with assigned readings). Please let the instructors know if you experience excessive anxiety from being called on in class.

Course materials should not be duplicated, distributed to others, or used for any purposes beyond those stated in the learning outcomes and course objectives section of this syllabus, unless explicit permission has been obtained from Dr. Agnew.

Assignments and Grades

Your achievement of course learning outcomes will be assessed through a combination of exams, homework assignments, a research presentation, and attendance, which are described in this syllabus and the course Brightspace platform.

Exams: There will be 3 exams over the course of the semester. They are not cumulative. However, the course material is inherently cumulative in that later concepts build on earlier concepts. Each exam will consist of a combination of multiple choice and short-answer questions. The exams are closed-book and are administered in class and they will not require a calculator. Each exam is worth 45 points toward the course grade.

Homework Assignments: There will be 4 homework assignments, which should be submitted via Brightspace by 1:30 PM on the due date. These assignments are to be completed independently. You may ask the instructors questions while completing these assignments, but do not consult others. Consulting or working with others while preparing your assignment will be treated as an act of academic dishonesty.

Homework assignments will be evaluated as follows:

✓+ (30 points) indicates that you completed the requirements of the assignment and demonstrated a level of understanding above and beyond what was required.

✓ (27 points) indicates that you completed the requirements of the assignment and were able to demonstrate a satisfactory level of understanding.

✓- (24 points) indicates that you did not demonstrate a satisfactory level of understanding in the assignment. If you receive a ✓-, you should schedule a meeting with the TA to discuss how to improve.

Each homework assignment is worth up to 30 points toward the course grade. Late assignments will be marked down 3 points for each day past the due date.

Research Assignment: Broadly, the Research Assignment involves (1) developing a hypothesis to be tested using an experimental design (do not propose a design involving only continuous predictors and relying solely on regression); (2) describing the design, method, and anticipated analysis; and (3) explaining how the design and analysis directly address the hypothesis.

Specifically, this assignment involves given an oral presentation to the class. The presentation is a conference-style talk that students do with a classmate, unless a student is developing an

independent research project via PSY 498 or the honors program. If you are in the *final semester* of an independent research project, you have the option of presenting a conference-style poster to the class (rather than an oral presentation), as long as it use statistical tests covered in this course.

The Research Assignment is worth 45 points toward the course grade and will be due toward the end of the semester. Additional information is provided on Brightspace.

Attendance: You are expected to be present for every in-person class or lab meeting. Attendance will be taken at the beginning of all in-person classes and all lab meetings (i.e., on Wednesdays and Fridays), plus during every April class that features research presentations. Attendance will count for 10 points toward the course grade. The points will be based on whether you are present at 10 randomly selected class or lab meetings (1 point for each of the randomly selected meetings). Please do not arrive to class late or you will miss the opportunity to be counted as present for that class.

If you will be absent from an in-person class or a lab meeting, inform Dr. Agnew of the situation in advance to make appropriate arrangements. If you must miss an exam, contact Dr. Agnew before the day of the exam. Dr. Agnew will require documentation of a medical or personal emergency that accounts for having to miss an exam. Merely sending an email or phone message indicating that you can't make an exam will not suffice and will result in an exam score of 0. For unanticipated or emergency absences when advance notification to Dr. Agnew is not possible, you can contact the Teaching Assistant (email Arbazz), or Laurie Hitze (llhitze@purdue.edu) in the Department of Psychological Sciences.

Grade Point Summary and Grading Scale:

Assignment	Points
3 Exams (@ 45 points each)	135
4 Homework Assignments (@ 30 points each)	120
1 Research Assignment	45
10 Attendance Checks	10
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	310 possible points

Grades will be assigned based on the following scale for total points earned:

A+ = 300 – 310 pts	B+ = 268 – 277 pts	C+ = 238 – 247 pts	D+ = 208 – 216 points
A = 289 – 299 pts	B = 257 – 267 pts	C = 227 – 237 pts	D = 198 – 207 points
A- = 278 – 288 pts	B- = 248 – 256 pts	C- = 217 – 226 pts	D- = 186 – 197 points
			F = Under 186 points

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Schedule of Topics, Readings, and Assignments

The schedule provides dates for topics, readings, class and lab meetings, and assignment due dates (homework, exams, research presentations). Assigned readings should be completed *before* the designated date. *This schedule could change, with changes announced in class.*

Key: "Ch" = textbook chapter | **"Art"** = assigned article | **"HW"** = homework assignment

Date	***Topic | Activity | Assignment***	***Reading***
Week 1: Mon Jan 8, 2024	Course Overview | Background Information | Initial Knowledge Assessment	
Wed Jan 10, 2024	Unit 1.1 Doing research (in-person lecture) Unit 1.2 Evaluating research (in-person)	Ch 1
Fri, Jan 12, 2024	Lab 1: Orientation	
Week 2:	Unit 1.3 Descriptive statistics (online lecture) Unit 1.4 Inferential statistics (online lecture)	Ch 2
Wed Jan 17, 2024	Unit 1 Discussion	
Fri, Jan 19, 2024	NO LAB or CLASS	
Week 3: Mon Jan 22, 2024	Unit 2.1 One-sample t-test (online lecture)	Ch 10 (skim 10.4)
Wed Jan 24, 2024	Unit 2.1 Discussion	Art 1 (Exp 3)
Fri, Jan 26, 2024	Lab 2: Introduction to SPSS, Part I	Ch 4

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Date	***Topic | Activity | Assignment***	***Reading***
Week 4: Mon Jan 29, 2024	Lab 3: Introduction to SPSS, Part II Unit 2.2 Comparing 2 means (online lecture)	Ch. 5
Wed Jan 31, 2024	Unit 2.2 Discussion	Art 2 (Study 2) Art 3 (Study 2)
Fri, Feb 2, 2024	Lab 4: T-tests and confidence intervals	
Week 5: Mon Feb 5, 2024	**HW 1 due**	
Wed Feb 7, 2024	Wrap up and review (SPSP Conference)	
Fri, Feb 9, 2024	**Exam 1 (Units 1 and 2)**	
Week 6: Mon Feb 12, 2024	Unit 3.1 One-way ANOVA (online lecture) Unit 3.2 Contrasts (online lecture)	Ch 12 (skim 12.2.0-1)
Wed Feb 14, 2024	Unit 3 Discussion	Art 4
Fri, Feb 16, 2024	Lab 5: One-way ANOVA and contrasts	
Week 7: Mon Feb 19, 2024	Unit 4.1 Power (online lecture) Unit 4.2 Assumptions (online lecture)	Ch 2.9, Ch 3.7, Ch 6
Wed Feb 21, 2024	Unit 4 Discussion	
Fri, Feb 23, 2024	Lab 6: Power and Assumptions	

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Date	***Topic | Activity | Assignment***	***Reading***
Week 8: Mon Feb 26, 2024	Unit 5.1 Factorial ANOVA (online lecture) Unit 5.2 Factorial ANOVA (online lecture) **HW 2 due**	Ch 14 (skim 14.3.0); Art 5
Wed Feb 28, 2024	Unit 5.2 Discussion	Art 6 (Study 2)
Fri, Mar 1, 2024	Lab 7: Factorial ANOVA, Part I	
Week 9: Mon Mar 4, 2024	Unit 5.3 Factorial ANOVA (online lecture) Unit 5.4 Factorial ANOVA (online lecture)	
Wed Mar 6, 2024	Unit 5.3 Discussion	Art 6 (Study 3) Art 7
Fri, Mar 8, 2024	Lab 8: Factorial ANOVA, Part II	
Week 10: Mon Mar 18, 2024	**HW 3 due**	
Wed Mar 20, 2024	Wrap-Up and Review	
Fri, Mar 22, 2024	**Exam 2 (Units 3, 4, and 5)**	

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Date	***Topic | Activity | Assignment***	***Reading***
Week 11: Mon Mar 25, 2024	Unit 6 ANCOVA (online lecture)	Ch 13 (skim 13.3 & 13.7)
Wed Mar 27, 2024	Unit 6 discussion	
Fri, Mar 29, 2024	Lab 9: ANCOVA	
Week 12: Mon Apr 1, 2024	Unit 7 Repeated measures ANOVA (online) Unit 8 Mixed design (online lecture)	Ch 15 Ch 16
Wed Apr 3, 2024	Unit 7 and 8 discussion	Art 8
Fri, Apr 5, 2024	Lab 10: Repeated measures & mixed design	
Week 13: Mon Apr 8, 2024	**HW 4 due**	
Wed Apr 10, 2024	Wrap-Up and Review	
Fri, Apr 12, 2024	**Exam 3 (Units 6, 7, and 8)**	
Week 14: Mon Apr 15, 2024	Research Presentations (in-person)	
Wed Apr 17, 2024	Research Presentations (in-person)	
Fri, Apr 19, 2024	No class (MPA Conference)	

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Date	*Topic | Activity | Assignment*	*Reading*
Week 15: Mon Apr 22, 2024	Research Presentations (in-person)	
Wed Apr 24, 2024	Research Presentations (in-person)	
Fri, Apr 26, 2024	Research Presentations (in-person)	

Purdue Policies, Resources and Expectations Relevant to this Course

You are responsible for observing the academic regulations and student conduct norms of Purdue University, found here: https://catalog.purdue.edu/content.php?catoid=16&navoid=20089, which apply to, among other things, student conduct, academic honesty, and attendance. Some specific policies are described below.

More Information on Attending Class

This course follows the Academic Regulations: Attendance and Office of the Dean of Students: Class Absences posted in Brightspace under "University Policies and Statements." The policies state that students are expected to be present for every meeting of the classes in which they are enrolled. Attendance will be taken on occasion in class. When conflicts or absences can be anticipated, such as for many University-sponsored activities and religious observations, you should inform me of the situation as far in advance as possible. For unanticipated or emergency absences when advance notification to is not possible, contact me as soon as possible by email. For cases that fall under excused absence regulations, you or your representative should contact or go to the Office of the Dean of Students (ODOS) website to complete appropriate forms for instructor notification. Excused absences may be granted by ODOS for cases of grief/ bereavement, military service, jury duty, parenting leave, or emergent medical care.

Your Well-Being

If you find yourself beginning to feel some stress, anxiety and/or feeling slightly overwhelmed, try WellTrack**.** Sign in and find information and tools at your fingertips, available to you at any time.

If you need support and information about options and resources, please contact or see the Office of the Dean of Students. Call 765-494-1747(M-F, 8 am- 5 pm).

If you find yourself struggling to find a healthy balance between academics, social life, stress, etc., consider signing up for free one-on-one virtual or in-person sessions with a Purdue Wellness Coach at RecWell. Student coaches can help you navigate through barriers and challenges toward your goals throughout the semester. Sign up is free and can be done on BoilerConnect.

If you're struggling and need mental health services: Purdue is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at 765-494-6995 during and after hours, on weekends and holidays, or by going to the CAPS office on the second floor of the Purdue University Student Health Center (PUSH) during business hours.

Basic Needs Security

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. There is no appointment needed and Student Support Services is available to serve students 8 a.m.-5 p.m. Monday through Friday.

Accessibility and Accommodations

Purdue strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.

Nondiscrimination

Purdue is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. A hyperlink to Purdue's full Nondiscrimination Policy Statement is available on our course website in Brightspace.

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Being Honest

Academic integrity is one of the highest values that Purdue holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information is submitted the greater the opportunity for the university to investigate the concern. More details are available on our course Brightspace under University Policies and Statements.

Adhering to the Purdue Honors Pledge

As students of Purdue, all who are enrolled in this course are expected to adhere to the Purdue Honors Pledge: "As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue."

Practicing Non-Violence

Purdue is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students that promote educational and career goals. Violent behavior impedes such goals. Therefore, violent behavior is prohibited in or on any university facility or while participating in any university activity, including this course.

Being Prepared in an Emergency

In the event of a major campus emergency, course requirements, deadlines and grade weighting are subject to changes necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email. You are expected to read your @purdue.edu email on a frequent basis.

A link to Purdue's Information on Emergency Preparation and Planning is located on our Brightspace under "University Policies and Statements." This website covers topics such as Severe Weather Guidance, Emergency Plans, and a place to sign up for the Emergency Warning Notification System. I encourage you to download and review the *Emergency Preparedness for Classrooms document (**PDF**) or (**Word**).*

The first day of class, I will review the **Emergency Preparedness plan for our classroom**, following Purdue's Emergency Preparedness Briefing. Take note of items like:

- Where we will proceed after evacuating the building if we hear a fire alarm.
- Location of our Shelter in Place in the event of a tornado warning or an active threat.

Disclaimer

This syllabus is subject to change.