



**EDUC 640: Applied Statistical Design and Analysis**  
**Spring 2020, CRN 37001, 3 Credits**  
**College of Education, University of Oregon**

### General Course Information

**Instructor:** Amanda Griffin, PhD

**Office:** Prevention Science Institute, Suite 105

**E-mail:** [agriff1@uoregon.edu](mailto:agriff1@uoregon.edu)

**Class Time:** Monday, 4:30 - 7:20pm

**Class Location:** Online

**Virtual Office Hours:** Thursday, 4-5pm

### Course Overview

This course covers analysis of variance (ANOVA) for a range of research designs, including one-way between-subjects, one-way within-subjects, two-way between-subjects, and mixed designs. The course takes an applied approach to design and analysis and therefore does not delve deeply into matrix algebra or estimation methods. Emphasis is placed on proper conduct and interpretation of analyses, including main effects, interactions, and a priori and post hoc contrasts. Applied cases are drawn primarily from the education field. For each technique, foundational concepts, computation, and the proper application, interpretation, and reporting of analytic results will be addressed.

### Student Learning Objectives

Through the successful completion of this course, students will:

- Refine their understanding of social science research design and proper design and reporting techniques for research.
- Establish an understanding of the conceptual underpinnings of ANOVA.
- Develop basic skills in using SPSS for data entry, data management, and data analysis.
- Learn how to interpret the output from analyses using the statistical software and effectively communicate results and conclusions.
- Learn problem-solving and critical thinking skills.
- Be prepared to take more advanced statistics courses, such as analysis of variance and multiple regression models.

### Course Format

Class will typically include a lecture/presentation and an in-class activities. There will also be two projects. In the first, you will critique a published research article that uses methods from this course. In the second, you will conduct a research study using your own data and one or more of the methods from this course. The first project will be done alone, but the second can be done as a group.

### Required Material

- **Textbook:**
  - Morgan, G. A., Leech, N. L., Gloeckner, G. W., & Barret, K. C. (2012). IBM SPSS for introductory Statistics (5th ed.). New York: Routledge.
    - Available as an e-book through the University of Oregon library
  - Turner, J. R., & Thayer, J. (2001). Introduction to analysis of variance: Design, analysis, & interpretation. Sage Publications.
- **Software:** You will need access to SPSS. You can access SPSS for free in a U of O computer lab or on a University-owned computer (see <https://software.uoregon.edu/uo-software>). To purchase or rent a

copy of SPSS for a non-UO computer, go to <https://estore.onthehub.com/> and click the link for IBM SPSS and then select the link for Statistics Grad Pack (Standard Edition). You do NOT need AMOS.

- **Technology:** You will be required to use a computer for class assignments.
- **Recommended:**
  - Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. Sage.
  - Rutherford, A. (2011). *Introducing ANOVA and ANCOVA: a GLM approach*. Wiley & Sons.

### Tentative Course Schedule

Class	Lecture Topic & Reading	Assignments Due	Reading
Week 1 3/30	Course and Student introduction Review Regression		Morgan (6)
Week 2 4/6	Logistic Regression	<i>Week 1 In-class</i>	PDFs
Week 3 4/13	One-Way ANOVA	<i>Week 2 In-class</i> <i>Week 2 HW</i>	Morgan (11.1, 11.2); Turner (Ch. 2, 3) PDFs
Week 4 4/20	Effect coding for a priori Post-hoc testing	<i>Week 3 In-class</i> <i>Week 3 HW</i>	Turner (Ch. 7)
Week 5 4/27	Two-Way ANOVA	<i>Week 4 In-class</i> <i>Week 4 HW</i> <i>Article Approval</i>	Morgan (11.4); Turner (Ch. 4)
Week 6 5/4	Repeated Measure-ANOVA	<i>Week 5 In-class</i> <i>Week 5 HW</i> <i>Project Approval</i>	<i>Turner (Ch. 5)</i>
Week 7 5/11	ANCOVA	<i>Week 6 In-class</i> <i>Week 6 HW</i>	
Week 8 5/18	Mixed ANOVA	<i>Week 7 In-class</i> <i>Week 7 HW</i> <i>Article Critique Due</i>	Turner (Ch. 6)
Week 9 5/25	No class Memorial Day!!	<i>Week 8 In-class</i> <i>Week 8 HW</i>	Final RQ's, descriptive data, and analysis plan due
Week 10 6/1	Non-Parametric ANOVA tests		
Finals 6/10	<i>Research Project Due</i>		

### Grading Components and Criteria

- 1) **Class Participation** (50 pts): Active engagement is a major part of learning. As a class (i.e., students and instructor included), we should consider our time together as an opportunity to challenge one another through constructive discussion and responsive engagement with class topics. To fully participate in class, all students are expected to demonstrate “mental presence.” Mental presence implies that students are expected to be self-motivated, eager to learn, and willing to take responsibility for their own learning and as appropriate, facilitating the learning of others.

- 2) **In-Class Assignments** (5 pts each): Regular in-class activities will be assigned to promote competence and hands-on experience with the various statistical and methodological tools discussed. Likewise, these assignments are also intended to encourage attendance and active engagement. Thus, as the name implies, in-class assignments can only be completed in class to receive full-credit. There will be no make-ups for these activities.
- 3) **Weekly Homework** (10 pts): Regular homework assignments will be assigned to promote competence and hands-on experience with the various statistical and methodological tools discussed.
- 4) **Research Article Critique** (30 pts): Student will be responsible for writing an article critique using some of the methods taught in this class. Students will select a **quantitative** research paper and submit it **by Week 4** for approval. Papers will be due **Week 8 on May 18th**. Students will write a 3- to 5-page (double-spaced) critique that will cover the following:
- What is your **REASON** for choosing this particular journal article for critical review?
  - What **QUESTION(S)** did the study address?
  - What **METHOD** was used to carry out the research?
  - What were the major **RESULTS** and **CONCLUSIONS** of the research study? (note: these separate points)
  - How could the findings from this research **APPLY** to your work?
  - What are the **STRENGTHS** and **WEAKNESSES** of the study?
- 5) **Research Study Projects (groups of 2 or 3)** (40 pts): The paper must represent the original analysis of your own data, and should explore an interesting research question using regression or ANOVA with at least two main effects and associated interactions. **Students will submit groups, research question, and data set by Week 5**. Papers will be due during finals week on **June 10<sup>th</sup>**. The paper should be 10-12 pages in length including figures, tables, and a list of references. Use **APA style** and include the elements listed below.
- A *concise* Introduction section to describe the context and purpose of the study (e.g., existing research), and a justification for the importance of the study's research questions.
  - A *concise* Methods section to describe the sample, the measured variables, and the procedures for data collection and analysis.
  - A *complete and thorough* Results section including tables and figures in APA style as necessary. Reporting of results should include descriptive analysis of data (including a correlation table) as well as reporting of analytical model(s) including discussion and interpretation of relevant coefficients.
  - A *concise* Discussion section that describes study limitations, interprets the results, discusses implications for theory and practice, and offers idea for future research.

**Summary Point Scores**

<b>Assignments</b>	<b>Due Date</b>	<b>Points</b>
Weekly Homework	Each Week	70
In-class Assignment	Each Week	40
Research Article Critique		30
Class Project	Due June 10	40
Course Participation	All classes	50
<b>TOTAL</b>		<b>230</b>

**Grade Percentage Cutoffs (grade rounding 0.5 applied):**

A+ = 98 - 100%	A = 93 - 97%	A- = 90 - 92%
B+ = 88 - 89%	B = 83 - 87%	B- = 80 - 82%
C+ = 78 - 79%	C = 73 - 77%	C- = 70 - 72%
D+ = 68 - 69%	D = 63 - 67%	D- = 60 - 62%
	F = Below 60	

**Student Engagement Inventory (3 credit course = 120 hours)**

<b>Educational Activity</b>	<b>Hours Student Engaged</b>	<b>Explanatory comments</b>
Course Attendance	30	3 hours/week
Assigned Readings	20	~2 hours/week
Homework	20	~2 hours/week
Research Article Critique	10	
Research Project	40	
<b>TOTAL</b>	<b>120</b>	

**Expected Classroom Behavior**

1. Class participation: All students are expected to participate fully in class discussion.
2. Cell phones: Cell phone usage is not permitted in class.
3. Laptops/Tablets: Laptops should only be used for class activities.
4. Late policy: After 5:00 pm on the due date, 5% of the points possible for that submission will be deducted for every 24-hour period thereafter until the assignment is received -- after five days no writing assignment will be accepted for credit.

**E-Mail Etiquette**

To ensure that I receive your e-mail and am able to respond in a timely fashion, you should include the course title and section (i.e., **EDUC 640**) in the subject line of your e-mail and sign your e-mail with your full name and use your UO account. E-mail with an instructor is a professional communication. Please be clear and courteous, and use the writing style you would use in an informal paper.

**Attendance and Absence Guidelines**

You are responsible for attending all classes, arriving on time, and for notifying the instructor in advance of potential excused absences. I encourage you to think of class time as a mutual appointment that we have made with each other. I will value your time by ensuring that I am present and engaged each day and hope that you will do the same.

In the event that there are days that this sentiment does not suffice and you require additional external motivation to attend, please note the emphasis on attendance and participation outlined in the "Grading Components and Criteria" section.

## Expectations for Professionalism

Please see the sections on ethics, conduct, and related issues. You are expected to participate actively. Inattention, disruption, lateness, or other unprofessional behavior as determined by the instructor is sufficient grounds for removal from the course with a failing grade.

You must reference your sources in essay responses and use quotation marks for direct quotes. Plagiarism and disallowed collaboration are serious academic offenses and will be managed accordingly. You may not collaborate unless **explicitly** required or permitted to do so. Sharing information from this class with other class members is permitted only when this does not violate standards of academic honesty. No recording is permitted without prior approval from the instructor. You may not repost the instructor's materials (PowerPoints, worksheets, etc.) without permission from the instructor. Posting, selling or otherwise sharing class or exam notes will be treated as academic dishonesty.

## Additional Course Requirements

Please save or print a copy of this syllabus. Electronic readings will be posted on the online course learning platform. If you are having trouble accessing or using the online class learning platform from off-campus, try using a different browser. If you are having trouble downloading PDFs, try using a PC (not Mac).

You are responsible for keeping copies of all of your work until after you are satisfied with your final grade. This may mean making an electronic backup of all assignments completed on the computer (or e-mailing yourself a copy that can be retrieved if your computer crashes), keeping graded work until after the class is over, or keeping a copy of any e-mail you send and receive related to the course.

## Ethics and Academic Standards

This course may involve opportunities for self-disclosure. It is possible that a student colleague may say something personally important and private in your discussions. It is an expectation, as well as sound professional practice, that you maintain that person's privacy and trust. However, please keep in mind the legal limits to privacy, and refer to your ethics code. If you feel that a breach of ethics or the law has occurred, discuss this with your instructor immediately. Please review the mandatory reporting and the Title IX policies in this syllabus. **Participation in this class does not confer confidentiality.**

## Diversity, Equity, and Inclusion

It is the policy of the University of Oregon to support and value equity and diversity and to provide inclusive learning environments for all students. To do so requires that we:

- respect the dignity and essential worth of all individuals regardless of national origin or citizenship status.
- promote a culture of respect throughout the University community.
- respect the privacy, property, and freedom of others.
- reject bigotry, discrimination, violence, or intimidation of any kind.
- practice personal and academic integrity and expect it from others.
- promote the diversity of opinions, ideas and backgrounds which is the lifeblood of the university.

In this course, class discussions, projects/activities and assignments will challenge students to think critically about and be sensitive to the influence, and intersections, of race, ethnicity, nationality, language, religion, gender, socioeconomic background, physical and cognitive ability, sexual orientation, and other cultural identities and experiences. Students will be encouraged to develop or expand their respect and understanding of such differences.

Maintaining an inclusive classroom environment where all students feel able to talk about their cultural identities and experiences, ideas, beliefs, and values will not only be my responsibility, but the responsibility of each class member as well. Behavior that disregards or diminishes another student will not be permitted for

any reason. This means that no racist, ableist, transphobic, xenophobic, chauvinistic or otherwise derogatory comments will be allowed. It also means that students must pay attention and listen respectfully to each other's comments.

Resources for diverse students can be found here: <http://dos.uoregon.edu/community>. Resources for undocumented and DACAmented students may be found at: <https://blogs.uoregon.edu/dreamers/>.

## **Documented Disability**

Appropriate accommodations will be provided for students with documented disabilities. If you have a documented disability and require accommodation, arrange to meet with the course instructor within the first two weeks of the term. The documentation of your disability must come in writing from the Accessible Education Center in the Office of Academic Advising and Student Services. Disabilities may include (but are not limited to) neurological impairment, orthopedic impairment, traumatic brain injury, visual impairment, chronic medical conditions, emotional/psychological disabilities, hearing impairment, and learning disabilities. For more information on Accessible Education Center, please see <http://aec.uoregon.edu>

## **Mandatory Reporting of Child Abuse**

UO employees, including faculty, staff, and GEs, are mandatory reporters of child abuse. This statement is to advise you that that your disclosure of information about child abuse to a UO employee may trigger the UO employee's duty to report that information to the designated authorities. Please refer to the following links for detailed information about mandatory reporting: <http://hr.uoregon.edu/policies-leaves/general-information/mandatory-reporting-child-abuse-and-neglect>

## **Reporting Title IX Experiences**

Any student who has experienced sexual assault, relationship violence, sex or gender-based bullying, stalking, and/or sexual harassment may seek resources and help at [safe.uoregon.edu](http://safe.uoregon.edu). To get help by phone, a student can also call either the UO's 24-hour hotline at 541-346-7244 [SAFE], or the non-confidential Title IX Coordinator at 541-346-8136. From the SAFE website, students may also connect to Callisto, a confidential, third-party reporting site that is not a part of the university.

Students experiencing any other form of prohibited discrimination or harassment can find information at [respect.uoregon.edu](http://respect.uoregon.edu) or [aaeo.uoregon.edu](http://aaeo.uoregon.edu) or contact the non-confidential AAEO office at 541-346-3123 or the Dean of Students Office at 541-346-3216 for help. As UO policy has different reporting requirements based on the nature of the reported harassment or discrimination, additional information about reporting requirements for discrimination or harassment unrelated to sexual assault, relationship violence, sex or gender based bullying, stalking, and/or sexual harassment is available at <http://aaeo.uoregon.edu/content/discrimination-harassment>

Specific details about confidentiality of information and reporting obligations of employees can be found at <https://titleix.uoregon.edu>. The instructor of this class is a "Student-Directed Reporter." This means that instructors will direct students who disclose sexual harassment or sexual violence to resources that can help and will only report the information shared to the university administration when the student requests that the information be reported (unless someone is in imminent risk of serious harm or a minor). Instructors are required to report all other forms of prohibited discrimination or harassment to the university administration.

## Academic Misconduct Policy

All students are subject to the regulations stipulated in the UO Student Conduct Code (<http://conduct.uoregon.edu>). This code represents a compilation of important regulations, policies, and procedures pertaining to student life. It is intended to inform students of their rights and responsibilities during their association with this institution, and to provide general guidance for enforcing those regulations and policies essential to the educational and research missions of the University.

## Conflict Resolution

Several options, both informal and formal, are available to resolve conflicts for students who believe they have been subjected to or have witnessed bias, unfairness, or other improper treatment.

It is important to exhaust the administrative remedies available to you including discussing the conflict with the specific individual, contacting the Department Head, or within the College of Education, fall term you can contact the Associate Dean for Academic Affairs and Equity (Krista Chronister, 346-2415, [kmg@uoregon.edu](mailto:kmg@uoregon.edu)). For winter, spring and summer terms you can contact the Interim Associate Dean for Academic Affairs (Lillian Duran, 346-2502, [lduran@uoregon.edu](mailto:lduran@uoregon.edu)). Outside the College, you can contact:

- UO Bias Response Team: 346-3216 <http://bias.uoregon.edu/whatbrt.htm>
- Conflict Resolution Services 346-3216 <http://studentlife.uoregon.edu/support>
- Affirmative Action and Equal Opportunity: 346-3123 <http://aaeo.uoregon.edu/>

## Grievance Policy

A student or group of students of the College of Education may appeal decisions or actions pertaining to admissions, programs, evaluation of performance and program retention and completion. Students who decide to file a grievance should follow University student grievance procedures (<https://policies.uoregon.edu/grievance-procedures>) and/or consult with the College Associate Dean for Academic Affairs (Lillian Duran, 346-2502, [lduran@uoregon.edu](mailto:lduran@uoregon.edu)).

## In Case of Inclement Weather

In the event the University operates on a curtailed schedule or closes, UO media relations will notify the Eugene-Springfield area radio and television stations as quickly as possible. In addition, a notice regarding the university's schedule will be posted on the UO main home page at <https://www.uoregon.edu/>. Additional information is available at <https://hr.uoregon.edu/about-hr/campus-notifications/inclement-weather>

If an individual class must be canceled due to inclement weather, illness, or other reason, a notice will be posted on Canvas or via email. During periods of inclement weather, please check Canvas and your email rather than contact department personnel. Due to unsafe travel conditions, departmental staff may be limited and unable to handle the volume of calls from you and others.

## Course Incomplete Policy

Students are expected to be familiar with university policy regarding grades of "incomplete" and the time line for completion. For details on the policy and procedures regarding incompletes, please see: <https://education.uoregon.edu/academics/incompletes-courses>

**Student Resource**

**Safe Ride** is an **assault prevention shuttle** that works to provide free, inclusive, and accessible alternatives to traveling alone at night for **UO students, faculty, and staff**.

We are a schedule-ahead service and riders can (1) call once we open to schedule a ride with a dispatcher or (2) leave a voicemail on the day of their ride request. We do not call riders ahead of time to confirm due to capacity constraints, but riders are always welcome to call us to double-check that their ride was scheduled. We are a, ‘for-the-students/by-the-students’ organization and operate out of the Women’s Center in EMU 12F.

**Operating hours:**

Fall/Winter term	Sunday - Thursday   6p - midnight Friday + Saturday   6p - 2a
Spring term	Sunday - Thursday   7p - midnight Friday + Saturday   7p - 2a
Summer term	Sunday - Thursday   9p - midnight Friday + Saturday   9p - 2a

**Policy and rules:**

1. We are a **schedule-ahead service**, we **do not call ahead**, and we can only wait for riders for 5 minutes at their pick-up time and location.
2. We only give rides to groups of **3 or less** to prioritize groups that are at higher risk.
3. We are a **free service** and do not accept tips.