

**ED\_RES 565 - Quantitative Research (3 Cr.)**

Fall 2018

SPRK 335, Monday, 5:45 PM – 8:30 PM

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Office Hours:  
Monday: 2:00 – 4:00 PM or by  
appointment

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**Prerequisites**

ED\_PSYCH 508 Educational Statistics or equivalent;  
ED\_RES 563 Principles of Research or equivalent.

**Course Description**

ED\_RES 565 aims to provide a conceptual and practical basis to statistical literacy in the education disciplines. The course focuses on univariate and repeated measures analysis from parametric to non-parametric procedures. The student is exposed to statistical software packages common in the social and behavioral sciences.

**Required Texts (and reading as assigned)**

Lomax, R.G. & Hahs-Vaughn, D. L. (2012). *An introduction to statistical concepts* (3<sup>rd</sup> ed).  
New York, NY: Routledge.

**Recommended Book**

American Psychological Association (2009). *Publication manual of the American Psychological Association* (6<sup>th</sup> ed.). Washington, D. C.: Author.

**Other Sources**

<http://www.learner.org/resources/series65.html?pop=yes&pid=139>  
<http://psychology.wadsworth.com/workshops/workshops.html>  
<http://www.statsoft.com/textbook/stathome.html>  
<http://www.indiana.edu/~jkkteach/ExcelSampler/>

**E-mail Policy**

I reply to email within 24 to 48 hours. I usually check email Monday-Friday, 9:00am to 5:00pm. If you do not hear from me after 48 hours, please feel free to email me again. If your email necessitates lengthy clarification of class readings or discussions, I will ask that you come see me about your concerns/questions during office hours.

**Course Learning Objectives**

Based on classroom instruction and activities, reading assignments, discussions, and related activities, each student should demonstrate basic knowledge and application in the following areas:

1. Data screening and missing data routines
2. Statistical power and effect size
3. Analysis of variance and Factorial designs (i.e., one-way, factorial, analysis of covariance)
4. Multiple comparison procedures
5. Regression
6. Non-parametric techniques
7. Relationship of statistical analyses to research design
8. Statistical software packages

Students should exit the course with an increased ability to (a) conduct the discussed statistical analyses, (b) relate such analyses to experimental designs, (c) use statistical software packages, and (d) critically review the analyses in research articles.

### **Attendance/Participation**

I expect all students to (a) attend class on time, (b) participate actively in class discussions, (c) read all assigned readings, and (d) turn in assignments on time. We will try to have lab time each class session to practice what we have discussed. If you are unable to attend class, please notify me in advance. You are responsible for information missed during your absence. ***No late assignments are accepted for credit.***

### **Assessment of Learning and Grading**

The course grade a student earns is determined by the following combination of assessments of the objectives listed above. I also note that you should expect to spend a few hours on homework assignments and work throughout the semester on your project. A last day effort on assignments is not a robust strategy for mastering the content.

#### *Exams [30%]*

There will be **two** in class exams (i.e., Mid-Term & Final). Make-up exams (alternate form) are available only in extreme circumstances.

#### *Homework Assignments [60%]*

There will be a total of **five** homework assignments throughout the course. The assignments will consist of statistical problems to solve, but also may include other learning/practice experiences. The data for the assignments and further assignment information will be provided. Data and sample code files will be posted in a class folder or available from textbook website. No make-up assignments will be offered. Late assignments are not accepted for credit. Assignments are due at the start of the class with no exceptions.

#### *Article Reviews [10%]*

Students will read and critique two research articles of their selection related to their project. The analysis in the article should be related to the analyses covered in the course. This assignment is designed to help you read the research literature, especially the methods section, critically. The critique will be completed using the research sheets introduced in the course. Each critique is to be typed. You do not need to turn in the article with the critique.

Table 1

*Grade Scale for the Course Displaying Percent Associated with Letter Grade*

<b>Grade</b>	<b>Percent</b>
A	100 - 93%
A-	92 - 90%
B+	89 - 87%
B	86 - 83%
B-	82 - 80%
C+	79 - 77%
C	76 - 73%
C-	72 - 70%
D+	69 - 67%
D	66 - 60%
F	59% or below

*Note:* I reserve the right to change the scale if in favor of the student and I round to the nearest whole number.

*Assigning Incompletes:*

University policy (Acad. Reg. #90) states that Incompletes may only be awarded if: "the student is unable to complete their work on time due to circumstances beyond their control"

**Resources**

SPSS and SAS are available in Cleveland Hall Room 63.

**Mobile Phones/Beepers/PDAs/Computers**

Any student carrying a mobile phone/beeper or other PDA should turn it off or set it to vibrate during class. In the event that a student must remain "on-call" during class, they should plan to sit where they can easily leave the room without disturbing others. Also, please refrain from sending text messages or participating in other social media outlets (e.g., Facebook) while in class.

**If you cannot refrain from such activities, you will be asked to leave the classroom.**

**Students with Documented Disabilities**Pullman Campus

Students with Disabilities: Reasonable accommodations are available for students with documented disabilities or chronic medical conditions. If you have a disability and need accommodations to fully participate in this class, please visit the Access Center website to follow published procedures to request accommodations: <http://www.accesscenter.wsu.edu>. Students may also either call or visit the Access Center in person to schedule an appointment with an Access Advisor. Location: Washington Building 217; Phone: 509-335-3417. All disability related accommodations MUST be approved through the Access Center. Students with approved accommodations are strongly encouraged to visit with instructors early in the semester during office hours to discuss logistics.

WSU Online Course

Reasonable accommodations are available in online classes for students with a documented disability. All accommodations must be approved through your WSU Disability Services office. If you have a disability and need accommodations, we recommend you begin the process as soon as possible.

For more information contact a Disability Specialist on your home campus:

\* Pullman or WSU Online: 509-335-3417, <http://accesscenter.wsu.edu>, [access.center@wsu.edu](mailto:access.center@wsu.edu)

\* Spokane: 509-358-7534, <https://spokane.wsu.edu/studentaffairs/disability-resources>

\* Tri-Cities: 509-358-7534, <http://www.tricity.wsu.edu/disability/>

\* Vancouver: 360-546-9138, <http://studentaffairs.vancouver.wsu.edu/student-resource-center/disability-services>

**Academic Freedom**

WSU supports the faculty's academic freedom, right to freedom of expression, and responsibility to fulfill course objectives that are approved by the Faculty Senate. This is fundamental to who we are as an institution. Along with these rights comes the responsibility to protect the freedom of expression of all members of our community, including students. The same is stated clearly in our own policies and procedures, including the Faculty Responsibilities section of the WSU Faculty Manual:

"As teachers, professors encourage the free pursuit of learning in their students. They hold before them the best scholarly standards of their disciplines. They demonstrate respect for the student as an individual and adhere to their proper role as intellectual guides and counselors...They protect students' academic freedom."

### Service/Emotional Support Animal Guidelines

Please review the campus policy on [service/emotional support animals](#). Pets are not allowed on campus and service animals must be registered with the WSU Access Center. Please contact the Access Center at 509-335-3417 with any questions.

### Academic Integrity Policy

Washington State University, a community dedicated to the advancement of knowledge, expects all students to behave in a manner consistent with its high standards of scholarship and conduct. Students are expected to uphold these standards both on and off campus and acknowledge the university's authority to take disciplinary action. The purpose of these standards and processes is to educate students and protect the welfare of the community.

University instructors have the authority to intervene in all situations where students are suspected of academic dishonesty. In such instances, responsible instructors retain the authority to assign grades to students considering, from an academic standpoint, the nature of the student action. The consequences for such actions should be spelled out beforehand in the syllabus. More information regarding responding to academic integrity violations can be found at: <http://conduct.wsu.edu>. Feel free to contact the Office of Student Standards and Accountability (509-335-4532) if you would like more specific information about the process. The Writing Program (509-335- 7959) can assist with proactive assignment design that minimizes intentional or unintentional academic dishonesty.

Attention to this policy is particularly important in a course like ED\_RES 565, in which collaboration with other students is encouraged. Specifically, you can only make use of the following sources when working on your homework assignments and exams:

- (1) Lecture and lab notes, course materials, or other public-available text-based sources. These materials should not be used by copying and pasting, and should be credited appropriately (e.g., cited).
- (2) Discussion with peers in class. If you work with other students during the planning, execution, or interpretation of your data analyses – a process that I support – you should make sure that the other students' contributions are recognized explicitly in your written account.
- (3) Asking me for help.

Other sources such as asking or paying others to do the work or similar are not acceptable and will be treated as violations of the WSU academic code (WAC 504-26-010). More information regarding responding to academic integrity violations can be found at <http://conduct.wsu.edu>. **Academic dishonesty is not tolerated and will result in action (i.e., failing the assignment and/or course depending on the nature of the offense) in accord with the policy.** Feel free to contact the Office of Student Standards and Accountability (509-335-4532) if you would like more specific information about the process. Please contact me if you have questions with this issue.

### Class Attendance and Absences (Academic Regulation 72)

Students are responsible for ensuring that they attend all class meetings and complete all in-class and out-of-class work as assigned by the instructor. Students are also responsible for communicating with the instructor should they need to be absent.

### Campus and Classroom Safety

Classroom and campus safety are of paramount importance at Washington State University, and are the shared responsibility of the entire campus population. WSU urges students to follow the “Alert,

*Assess, Act,*” protocol for all types of emergencies and the [\*“Run, Hide, Fight”\*](#) response for an active shooter incident. Remain ***ALERT*** (through direct observation or emergency notification), ***ASSESS*** your specific situation, and ***ACT*** in the most appropriate way to assure your own safety (and the safety of others if you are able).

Please sign up for emergency alerts on your account at MyWSU. For more information on this subject, campus safety, and related topics, please view the [\*FBI’s Run, Hide, Fight video\*](#) and visit the [\*WSU safety portal\*](#).”

### **Emergency Notification System**

Washington State University is committed to enhancing the safety of the students, faculty, staff, and visitors. It is highly recommended that you review the Campus Safety Plan (<http://safetyplan.wsu.edu/>) and visit the Office of Emergency Management web site (<http://oem.wsu.edu/>) for a comprehensive listing of university policies, procedures, statistics, and information related to campus safety, emergency management, and the health and welfare of the campus community.

**Tentative Class Schedule\***

<b>DATES</b>	<b>TOPIC</b>	<b>READINGS</b>	<b>NOTES</b>
8-20	Overview and Introduction <i>Syllabus</i> <i>Review of basic concepts</i> <i>SPSS basics and data management</i>		
8-27	Review of Statistical Concepts/Procedures (HW#1 assigned)	Chapters 1-4	
9-03	<b>NO CLASS - LABOR DAY</b>		
9-10	Correlation and simple linear regression; Start Multiple Regression.	Chapters 10, 17 & 18	HW#1 due (5%)
9-17	Multiple regression (Cont.) <i>Assumptions, outliers, etc.</i> (HW#2 assigned)		
9-24	Multiple regression (Cont.) <i>Dummy coding, Moderation, Mediation, etc.</i> (Exam#1 released)		HW#2 due (15%)
10-01	Comparing Means, variances, connection to regression, start analysis of variance (ANOVA) <i>t-tests, ANOVA basics</i>	Chapters 7 & 9	Exam #1 due (15%)
10-08	Effect size; Type I and II errors; Power, missing data.	Chapter 6; Graham, 2009 Vacha-Haase & Thompson, 2004 Cohen, 1992	
10-15	One-Way ANOVA (cont.) <i>Assumptions, post-hoc tests, etc.</i> (HW#3 assigned)	Chapters 11 & 12	
10-22	Factorial ANOVA <i>Experimental designs, interactions, etc.</i>	Chapter 13	HW#3 due (15%)
10-29	Repeated and mixed measures ANOVAs. (HW#4 assigned)	Chapter 15	Article review #1 (5%).
11-05	Analysis of covariance (ANCOVA)	Chapter 14	HW#4 due (15%)
11-12	<b>No CLASS – Veteran’s Day</b>		
11-19	<b>NO CLASS- THANKSGIVING BREAK</b>		
11-26	Logistic Regression (HW#5 assigned)	Chapter 19	Article review #2 (5%).
12-03	Nonparametric tests (Exam #2 released)	TBD	HW#5 due (10%)
12-10	<b>Final Exam</b>		Exam#2 due (15%)

## Notes:

- The instructor reserves the right to adjust the schedule as needed.
- Additional readings may be assigned.