

EDPSY 594: Advanced Correlational Techniques

Spring 2016: Tue & Thu 1:30-3:50p, OTB 014 (formerly Condon 115)

Note: CSSCR computer lab (Savery 117 & 121) during last half of class on Thurs (only early part of quarter), 3:00-3:50p

Instructor: Liz Sanders

Email: lizz@uw.edu (email is the best way to communicate)

Office Hours: Miller 312 #G by appointment (mailbox located to the right of front office)

Assistant: Elizabeth Holleman

Email: eah23@uw.edu (email is the best way to communicate)

Office Hours: Miller 312 by appointment (desk in back office area down left-hand long hallway)

Electronic Devices: To form an optimal learning atmosphere for all, **laptops/pads/cell phones/recording devices must be turned off/silent and put away** during class lectures. *E-reader devices/laptops may be used during group article reviews, computer lab, and individual appointments. Audio, not video, recorders may be used with my permission.*

Overview: This is a second-level course in statistical methods designed for graduate students in the behavioral and social sciences. Students who take this course are from a diverse array of backgrounds, including education, communications, forestry, linguistics, music, nursing, public health, rehab medicine, psychology, speech and hearing sciences, and technical communications, to name a few! The requirement for this course is that you have completed Edpsy 490 (Basic Educational Statistics) or an introductory univariate statistics course that is equivalent in content (see me if there is any question about previous content coverage). While this course is not mathematically challenging, we assume you are proficient in basic algebra. We will cover three major areas of statistical methods this quarter, including multiple regression, multivariate analysis of variance, and exploratory factor analysis. And, in order to better understand these analytic methods, we will first spend time learning about matrix/linear algebra. The estimated topic and text readings schedule is provided in the table below. Note that there will be many handouts throughout the quarter to supplement text readings. Note that class lectures and discussions are considered part of the course content (this is not designed to be an independent study course where you simply read a text and do assignments): as such, **attendance and in-class small group participation is required**. *If you think you will miss more than two classes, I advise you to drop the course now.*

Tentative EDPSY 594 Topic & Readings Schedule

Text: Chapter	Tuesdays	Thursdays
TB: 1-4, App. A	3/29 – Course Introduction & Review	3/31 – Matrices: Intro, Addition/Subtraction Computer Lab 1
	4/05 – Matrices: Multiplication	4/07 – Matrices: Inversion & Determinants Computer Lab 2
TB: 5	4/12 – Basics of Linear Regression HW1 DUE (introductory)	4/14 – Basics of Linear Regression Computer Lab 3
	4/19 – Basics of Linear Regression	4/21 – Basics of Linear Regression
	4/26 – Basics of Linear Regression <i>2p: Tina Tian, CSSCR: public datasets</i>	4/28 – <i>More</i> Linear Regression HW2 DUE (linear regression)
	5/03 – <i>More</i> Linear Regression	5/05 – <i>More</i> Linear Regression Computer Lab 4
TB: 10	5/10 – Logistic Regression PROJECT PROPOSALS DUE	5/12 – Logistic Regression
TB: 7, 9	5/17 – MANOVA & DFA HW3 DUE (linear/logistic regression)	5/19 – MANOVA & DFA
TB: 13	5/24 – PCA & EFA	5/26 – PCA & EFA HW4 DUE (MANOVA/DFA)
	5/31 – NO CLASS (WORK INDEPENDENTLY) project appointments	6/02 – NO CLASS (WORK INDEPENDENTLY) project appointments HW5 DUE (PCA/EFA)
	6/07 – Final Day **MILLER 104** potluck papers + presentations due	<i>HW5 & projects will be returned 6/16/16 to the "returned work" drawer in cabinet in Miller312 beneath faculty boxes in front office</i>

TB = Tabachnick & Fidell, Sixth Ed. (2012)

Updated 3/31/2016

Text: The required course text is **Tabachnick & Fidell's *Using Multivariate Statistics* (4th, 5th, or 6th Edition)**. The syllabus chapters assume 6th edition (2012), so if you are using an older version please make sure chapters correspond. If you purchased an even older version it will likely still work (again, check that chapters correspond to our topics).

Software: You will need **Word, Excel (Excel for Macs = 2016 version), Powerpoint, SPSS, and G*Power** for completing assignments and presentations; PLEASE OBTAIN THEM IMMEDIATELY. Student versions are available for purchase (or for free) at the UW Bookstore's Computer Department or online through UW IT, and they are also installed on computers on the fourth floor of Miller Hall, in the Odegaard library, and CSSCR (Savery Hall) <http://julius.csscr.washington.edu>. Please be sure to carefully check the version of SPSS you need, **and see my notes on the next page**. G*Power is free from the following website: <http://www.gpower.hhu.de/en.html>.

Computer Lab: I have scheduled computing lab time as needed at CSSCR on Thursdays, especially during the early part of the quarter. On days that we have a lab we will walk over to Savery, room 117, from our regular class (we will typically leave at 2:45 for 2:50 lab on Thurs). Labs will coincide with material taught in class **and attendance is required**.

Other Supplies: You will need a **memory stick/jump drive** to save files during labs, and **calculator** that can compute a number raised to a power ($^$ or y^x), square roots ($\sqrt{\quad}$), natural logarithms (**ln**), and exponentiation (e^x or **exp**) of a number. The **TI-30Xa SE** and **HP 30S** are both examples of calculators that can perform these functions. A hefty **3-ring binder** to keep your notes and handouts in is also strongly recommended, as well as colored pencils/pens/highlighters.

Class Email/Website + Small Groups: The class website is: <https://canvas.uw.edu/courses/1039925>. I will also create a class email list to communicate course announcements as needed; be sure that you can receive group emails in your email settings. Note that class emails do not allow anyone to select "reply all" (all queries go to me directly). I will also be setting up assigned small groups within the first week of class for in-class exercises, article reviews, and homeworks.

Performance Evaluation (Grades): Grades comprise three parts: attendance, homeworks, and a final project. An accumulation of 98% of the total points will receive a decimal grade of 4.0, and an accumulation of 68% of the points will receive a graduate passing grade of 2.7 (note however that 3.0 is the grade generally required of graduate TAs/RAs). The decimal grades between 4.0 and 2.7 are in intervals of 2-3% of the accumulated points.

1. Attendance/Participation (10%)

Attendance, in concert with readings and assignments, is an important feature of the learning process and is thus given weight in your course grade. In addition to attending class and lab, there will be times in the quarter that I will ask small groups to work together in class, as well as obtain and critique journal articles found at the UW library online. **Absence Make-ups:** If you know you will need to miss class, let me know via email and I will provide a make-up attendance assignment after you return. Note that **no make-ups are available for the final project day of class** (presentations), and all make-ups must be submitted by the final day of class for credit.

2. Homeworks (75%)

There are 5 homeworks that will be posted to the class in a timely manner that corresponds to topic coverage. You will typically have 1-2 weeks to complete an assignment; the turn-around time will depend on the topic and the amount of work required. You may work in groups for discussing how to tackle problems in the assignments; however, each person is expected to turn in their own original work. Homeworks should be typed in complete sentences for all non-calculation questions, and all necessary SPSS syntax and outputs should be *embedded* in write-ups. **Homeworks are time consuming:** please work on homeworks as soon as it is posted (most students report 20-30 hours/homework, esp. HW2-3). **Late Policy:** I accept late homework with a **5% deduction** of possible points **each calendar day** late. To receive any credit, all work must be turned in by the last day of class.

3. Final Project (15%)

There is one individual project in which each person will answer a specific set of research questions by applying one method learned in this course to an existing dataset of interest (usually multiple regression). Data can be from your own study, your advisor's or work's study (with permission from the P.I.; note that UW human subjects approval is not required for class projects), or a publicly available dataset (some of these datasets can be obtained with help from the CSSCR data archivist Tina Tian, txtian@uw.edu). The format of the project includes the following components: a project proposal approved by Liz, a meeting with Liz, a 4-5 minute presentation to the class (with 2-3 slides only; Ted-Talk like), and a final short paper. The goal is for you to (a) correctly apply a new method learned in this course to research question(s) that interest you, and (b) correctly communicate your findings. **Projects must be turned in on the last day of class for credit consideration.** Detailed information about project requirements will be handed out in a few weeks.

Students with Disabilities: If you require accommodations for a disability, you will need to contact Disability Resources for Students at 206-543-8924 or uwdrs@uw.edu (website: <http://depts.washington.edu/uwdrs>) to propose an educational plan and obtain a letter detailing the plan. Bring the letter to me in person or via email, and we will privately discuss arrangements for accommodations.

Supplementary Resources (Not Required)

Multiple Regression (univariate)

- Aiken, L. S., & West, S. G. (1991). *Multiple Regression: Testing and Interpreting Interactions*. Sage Publications.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2002). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences (Third Edition)*. Routledge.
- Hosmer Jr., D., Lemeshow, S., & Sturdivant, R. (2013). *Applied Logistic Regression*. Wiley. **I have not reviewed this yet**
- Lomax, R. G., & Hahs-Vaughn, D. L. (2012). *Statistical Concepts: A Second Course (Fourth Edition)*.
- Pedhazur, E. J. (1997). *Multiple Regression in Behavioral Research: Explanation and Prediction (Third Edition)*. Wadsworth Publishing. **my personal favorite; very detailed**

MANOVA, DFA, PCA, & EFA (multivariate)

- Stevens, J. P. (2001/2009). *Applied Multivariate Statistics for the Social Sciences (Fourth/Fifth Edition)*. Psychology Press. **I have the earlier version; haven't reviewed the latest version yet**

APA Formatting

- American Psychological Association. (2009). *Publication Manual of the American Psychological Association (Sixth Edition)*.
- Cooper, H. (2010). *Reporting Research in Psychology: How to Meet Journal Article Reporting Standards*. APA.
- American Psychological Association's website (for purchasing APA books): <http://www.apa.org/pubs/books/>
- Purdue University's Online Writing Lab (OWL) for APA Style: <https://owl.english.purdue.edu/owl/resource/560/01/>

SPSS software (for newbies)

- Field, A. (2013). *Discovering Statistics using IBM SPSS Statistics*. Sage Publications.

Notes on SPSS Software Versions for UW Students, Especially Mac Users

SPSS has been around for a long time. For a short period it was known as "PASW" but it is now back to its original name. I am sharing information from the UW's IT department regarding issues related to SPSS installation/use, especially for **Mac** users. SPSS was never created with Mac operating systems in mind, and it sometimes has a hard time keeping up with all the different Mac platforms. If possible, I recommend you get the *disk/media* version of SPSS in case you have to re-install it for some reason. It costs a few dollars more, but it may save you some tears of frustration. If none of these work for you, use the versions that are physically available on campus (like CSSCR, fourth floor of Miller, or the libraries).

VERSIONS AVAILABLE FROM UW BOOKSTORE & UW IT (NOT ALL VERSIONS AVAILABLE!!!)

- **SPSS 19** perpetual license is no longer available as of July 2015
- **SPSS 22 or 23** annual license (must be renewed every year on July 1) = \$100 downloadable: <http://www.washington.edu/itconnect/wares/uware/spss-21-annual-subscription>, or \$115 with-media at UW bookstore: http://www.bookstore.washington.edu/Common/Images/pdf/tech_center_current/acad_software_2015_11_03.pdf

PC USERS: Versions available through IBM

- **SPSS 18** is supported on Windows 7 or lower (unknown if it supported on Windows 8) (*no longer available* through UW)
- **SPSS 19 through 22** is supported on Windows 7 and Windows 8
- **IBM's GRADPACK23 Statistics Standard 6-month rental version**: \$60 (12-month \$100) downloadable only: <http://estore.onthehub.com/WebStore/ProductsByMajorVersionList.aspx?sro=8&pc=ddc848d8-b4fe-e111-bd05-f04da23e67f6>

MAC USERS: Versions available through IBM (IMPORTANT TO READ BEFORE ANY PURCHASE)

- **SPSS 18 & 19** (*no longer available from UW*) releases supported on Apple Mac OS 10.5 (Leopard) and 10.6 (Snow Leopard) with Intel processor. NOT supported on Mac OS 10.7 (Lion) and later.
- **SPSS 20** (*not available from the UW*) supported on Apple Mac OS X 10.6 (Snow Leopard) & 10.7 (Lion) with Intel processor. SPSS 20 was developed and released prior to Apple's release of 10.8 (Mountain Lion) operating system. It is not supported on 10.8, meaning any issues found can only be addressed in future releases. However, no serious issues are anticipated, and SPSS 20 can run on Mountain Lion with Intel processor but: (1) for new installations of 20 it is strongly recommended to read Technote 1606447 first and follow the instructions about Apple's new Gatekeeper security feature, and (2) if you are upgrading the operating system around an existing installation of 20.0, you may experience issue with your license code. See Technote 1607184 for info.
- **SPSS 21** supported on Apple Mac OS X 10.6 (Snow Leopard), 10.7 (Lion), & 10.8 (Mountain Lion) with Intel processor.
- **SPSS 22** supported on Apple Mac OS X 10.7 (Lion) & 10.8 (Mountain Lion) with Intel processor. **SPSS 22 NOT supported for Apple Mac OS X 10.6** (Snow Leopard). SPSS 22 was developed and released prior to Apple's release of OS X 10.9 (Mavericks). Per SPSS Product Management, version 22 can be installed on Mac OSX 10.9 **if you install Apple Java SE 6 (1.6.0_65) on OS X 10.9 first** installing 22. See <http://support.apple.com/kb/dl1572> for download.
- **SPSS 23** supported on Apple Macintosh OS X 10.9 (Mavericks) and 10.10 (Yosemite) with Intel processor.
- **IBM's GRADPACK23 Statistics Standard (not Basic) 6-month rental version** supported on Apple Mac OS X 10.8, 10.9, 10.10: \$60 (12-month \$100) downloadable only: https://estore.onthehub.com/WebStore/OfferingsOfMajorVersionList.aspx?pmv=89c975c-47c3-e411-940a-b8ca3a5db7a1&cmi_mnuMain=ed6ad73c-7bc7-e011-ae14-f04da23e67f6
- **For more information**, see the IBM's website: <https://www-304.ibm.com/support/docview.wss?uid=swg21507587>

SOFTWARE RESOURCES WHEN THINGS AREN'T WORKING

- IBM product support/documentation if you got a disk version (see the product packaging for IBM's online support documentation)
- UW IT department if you did a download version of the software (help@uw.edu)
- CSSCR staff (computer lab) (consulting hours posted on: <http://julius.csscr.washington.edu/>)