EDPSY 576: Multilevel Modeling

Fall 2021: Thu 2:00-4:20p, Miller 411 (was PCAR 297) https://canvas.uw.edu/courses/1478066

Instructor: **Dr. Liz Sanders**
Email: lizz@uw.edu (email is the best way to communicate; please allow 24 hrs for response)
Office Hours: Zoom/Miller 312 #G by appointment (mailbox located to the right of front office)

Computing Assistant: **Youngwon Kim**
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Electronic Devices: To form an optimal learning atmosphere, **laptops/pads/cell phones/recording devices must be turned off/silent and put away** during class lectures. *Electronic devices should be used during group article reviews, computing exercises, and individual appointments*. *Audio, not video, recorders may also be used, with my permission*.

Overview: This is an upper-level course in statistical methods designed for graduate students in the social and behavioral sciences. Students who take this course are from a diverse array of backgrounds, including education, business, communication, forestry, linguistics, music, nursing, medicine, sociology/social welfare, speech/hearing sciences, and public health – to name a few. The requirement for this course is that students have completed Edpsy 538/594 or equivalent **regression** coursework. Our goal will be to work through the major types of multilevel models this quarter; if time allows, we can engage in extensions such as cross-classified models. The estimated topic and text readings schedule is provided below; keep in mind that there will be articles and handouts throughout the quarter to supplement text readings. Importantly, class lectures and discussions are considered part of the course content – the course is not designed to be an independent study course where you simply read a text and do assignments. Considering this, **in-class participation is required**. If you think you will miss more than two classes (all things considered), I advise you to drop the course now.

***Tentative* EDPSY 576 Topic & Text Readings Schedule**

Text: Chapter	*Date-Topic*	*Assignments Due*
SB 1-4	**09/30**– Course Introduction/Regression Review	
	10/07– 2-Level Hierarchical Linear Models for Single Time Point Data (Random vs. Fixed, Hypothesis tests, Centering, Interactions, Context Effects), Computing	Homework1 posted
SB 5-7	**10/14**– 2-Level models, continued	
SB 10	**10/21**– 2-Level models/3-Level models, model assumptions	Homework 1 due
SB 17	**10/28**– Nonlinear Models (Binary and Count DVs)	
SB 15	**11/04**– Nonlinear Models/Repeated Measures	Homework 2 due
	11/11– Repeated Measures, Cont'd	Project Proposals due
SB 9, 13-14	**11/18**– Extensions, IF TIME (Missing Data, Survey Weights, Cross-Classified, Partially Nested Models)	Homework 3 due
	11/25– NO CLASS-HOLIDAY	
	12/02– NO CLASS-WORK ON PROJECTS	
	12/09– Final Class Project Presentations & Potluck	Projects due

SB = Snijders & Bosker (2012)

Updated 10/2/2021

Text: The required course text is Snijders & Bosker's (SB) **Multilevel Analysis, 2nd Edition (2012)**.

Computing: Rather than going to CSSCR computer labs to work on exercises, I am asking that you **bring your laptop with you to class with all software installed**, beginning next week, so that we can work together on examples as they naturally arise in our content.

Software: You will need **Word**, **Excel**, **Powerpoint**, **SPSS**, **R**, and **R Studio**. (Note that we will primarily be using lme4 and lmerTest packages in R.) **Excel** and **SPSS** are helpful to have (for formatting/prepping data, basic univariate models, descriptive statistics, and creating tables). Word, Excel, PowerPoint, and SPSS are offered free through UW IT. These software are also installed on computers at CSSCR (Savery Hall) http://julius.csscr.washington.edu as well as on virtual desktops through servers at CSDE (go here: https://csde.washington.edu/computing/accounts/).

- **Word/Excel/PowerPoint** can be freely downloaded from UW IT: https://itconnect.uw.edu/wares/uware/microsoft/
- **SPSS** (annual subscription) can be freely downloaded from UW IT: https://itconnect.uw.edu/wares/uware/spss-annual-subscription/
- **R for Windows** can be freely downloaded from here: https://cran.r-project.org/bin/windows/base/
- **R for Mac** can be freely downloaded from here: https://cran.r-project.org/bin/macosx/.
  - **R Studio for all platforms using 64-bit computers**: https://rstudio.com/products/rstudio/download/#download

Other Supplies: Obtain a **calculator** that can compute a number raised to a power (**^** or $\mathbf{y^x}$), square roots (√), natural logarithms (**ln**), and exponentiation ($\mathbf{e^x}$ or **exp**) of a number. The TI-30Xa SE is one example. A **binder** for notes, handouts, articles, and homeworks is helpful, as well as colored pencils/pens/highlighters.

Class Website & Small Groups: The class canvas website is: https://canvas.uw.edu/courses/1478066 . I will typically communicate via canvas announcements; please make sure your **Canvas** "**account**" "**notifications**" announcements is checked ✓**green**. I will also be setting up small working groups within the first week of class for you to collaborate on in-class activities, article reviews, and homeworks.

Performance Evaluation (Grades): Grades comprise three parts: attendance/participation, homeworks, and a final project. Accumulating 98% of the total points will receive a decimal grade of 4.0, accumulating 68% will receive a graduate passing grade of 2.7. Decimal grades between 4.0 and 2.7 are in intervals of 2-3%.

1. Participation (10%)

Participation, in concert with readings and assignments, is an important feature of the learning process and is thus given weight in your course grade. ***Absence Make-ups***: If you know you will need to miss class, let me know via email and I will provide a make-up participation assignment after your absence. Up to 2 make-ups are permitted. All make-ups should be submitted by the final day of class 12/9/2021.

2. Homeworks (75%)

There are 3 homeworks that will be posted to the class corresponding to topic coverage. You will have 1-2 weeks to complete each. 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, in APA format (APA: **https://owl.english.purdue.edu/owl/resource/560/01/**), and all necessary software syntax/commands/outputs should be *embedded* in the homework document. ***Late Policy***: I accept late homework with a **5% deduction** of possible points **each calendar day** late. To receive credit consideration, all work should be turned in by the last day of class 12/9/2021.

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. You will need a dataset that includes a sample size of at least 10 level 2 units and at least 3 level 1 units per level 2 unit. You will also need at least three predictors. 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: a project proposal approved by Liz, a **3-minute** presentation to the class (with 1-3 slides only; Ted-Talk-like). 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. More project information will be handed out in a few weeks. **Projects should be turned in by the last day of class 12/9/2021 for credit consideration.**

(dis)Ability Accommodations

Your experience in this class is important to me. If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course. If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 206-543-8924 or uwdrs@uw.edu or disability.uw.edu. DRS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, your instructor(s) and DRS. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law.

Religious Accommodations

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at Faculty Syllabus Guidelines and Resources. Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form available at https://registrar.washington.edu/students/religious-accommodations-request

Writing Center Resources

College of Education Writing Support: The College of Education partners with the Odegaard Writing & Research Center to provide writing support for CoE students. Conveniently located in Miller Hall 207, this satellite site provides one-to-one tutoring, and our tutors work with writers at any stage of writing, including outlining, drafting, research, and revision. The CoE branch is staffed with undergraduate and graduate peer tutors who are familiar with the College of Education and who can support writers' ideas and projects throughout their writing process. For more information or to schedule an appointment, please visit our website at https://depts.washington.edu/owrc.

Food Insecurity and Hardship Resources

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the UW Any Hungry Husky Program. Any Hungry Husky provides hunger relief free of judgment or stigma. Go to https://www.washington.edu/anyhungryhusky/ for information about the food pantry and food security grants. In addition, UW offers emergency aid for students experiencing unexpected financial hardships that may disrupt their education or get in the way of completing their degree. Go to https://www.washington.edu/emergencyaid/ for more information about how to apply.

Academic Integrity

The College of Education holds very high standards regarding academic integrity. Work submitted in this course must be the product of your own original effort. When you incorporate the works, words, or ideas of another, you must provide proper citations. If you are concerned about plagiarism, have questions about legitimate forms of collaboration, or are unclear about appropriate methods of citation, consult a style manual or the instructor. Along with plagiarism and unauthorized collaboration, other forms of academic misconduct include (but are not limited to) falsifying attendance records and submitting the work of others as if it were your own. Violations of the Academic Integrity Policy will result in sanctions that can range from disciplinary warning, to probation or suspension, to – in the event of severe or repeated violations – dismissal from the University. For more information please refer to the College of Education's Academic Integrity Policy and related procedures: http://education.uw.edu/my-coe/current-students/academic-policies.