The University of Texas at Austin School of Social Work

QUANTITATIVE DATA ANALYSIS I

Course Number:	SW388R10	**Instructor:**	Kirk von Sternberg, Ph.D.
Unique Number:	61595	**Office:**	Hargis Hall 1.228
Semester:	Fall 2022	**Phone:** **Email:**	(512) 779-3313 cell vonsternberg@mail.utexas.edu
Meeting Time: **Place:**	Wed. 2:30-5:30 SSW 2.140	**Office Hours:** **Place:**	T. 12:30-2:30 Hargis Hall 1.228

I. Course Description

This course is designed to introduce students to fundamental concepts and statistical procedures used in social work research. It also introduces students to computer applications for data analysis and helps them develop basic skills in data file construction and manipulation, data definition, and statistical analysis. The primary focus of the course is on developing a conceptual and mathematical understanding of statistics needed for advanced work in research design, model development, model fitting and estimation, hypothesis testing, multivariate techniques, and interpretation of data. The course will begin with basic statistical concepts such as central tendency, variability, sampling distributions, statistical significance, probability, normal curve, standardized scores, hypothesis testing, statistical inference, effect seffectand statistical power. By the end of the semester, specific parametric and non-parametric statistical procedures will be introduced, including t-tests, ANOVA (one-way and repeated measures), correlation and regression, ANCOVA, chi-square, and an introduction to Confirmatory Factor Analyses, Structural Equation Modeling, and Bayesian Statistics.

II. Course Objectives

The stated mission of the doctoral program of the School of Social Work i to prepare its graduates for successful academic careers as social work educators whose excellence as teachers and scholars will provide intellectual leadership for the profession. Pursuit of this mission will be the overall objective of this course. By the end of the semester students will:

1. Develop basic proficiency with computer data analysis including construction of data files, SPSS for data analysis, and development of an analysis plan;
2. Understand fundamental concepts of statistical analysis;
3. Develop basic skills necessary to organize, present, and interpret data;
4. Develop the ability to evaluate and interpret the results of statistical analysis;
5. Understand the relationship between research design and statistical methods.
6. Be able to express the purposes and use of bootstrapping and Bayesian procedures.
7. Be able to write a journal ready results section for a full causal SEM model.

III. Required Texts and Software

Required Text: There is no required text for this class. Any text on fundamental statistics for the social and behavioral science should be good for most topics we will cover. I have several copies of such texts and will make them available to the class. There are also very good online resources available for most of the topics covered in this class. I will also provide specific readings.

Software: SPSS 27. You can purchase a graduate student SPSS package from ITS Software Distribution and Sales.

IV. Teaching Methods

The methods of instruction will be informal lectures (questions and answers are encouraged), class discussions, computer exercises working with SPSS analytic software, class exercises, and guest presentations.

V. Grading

94.0 and Above	A
90.0 to 93.999	A-
87.0 to 89.999	B+
84.0 to 86.999	B
80.0 to 83.999	B-
77.0 to 79.999	C+
74.0 to 76.999	C
70.0 to 73.999	C-
67.0 to 69.999	D+
64.0 to 66.999	D
60.0 to 63.999	D-
Below 60.0	F

VI. Class Policies and Course Requirements

Course requirements will consist of weekly homework assignments and two exams. In addition, regular class attendance is expected and students should come to class prepared to actively participate in the class. Course requirements, due dates, and their contribution to the final grade are summarized below.

	% of Grade	**Due date**
Homework assignments	48%	Weekly
Mid-term Exam	25%	October 5
Final Exam	25%	November 30
Class participation	2%	

***Remember that as a Ph.D. student, you are ultimately responsible for your own learning and development. The professor is there to support and facilitate your learning, but you need to take the initiative for your own education.

1. Students are expected to attend class sessions and participate in an **interactive** framework with the professor. Students are expected to **complete the readings prior to class** and should be well prepared to participate in discussions. Failure to regularly attend classes and demonstrate through discussions that one has kept up with the readings will be considered in the final grade. Students are to notify the professor if they are going to be absent. Students are responsible for any material missed due to absences.

2. Except in the case of extreme emergencies, and then only with the permission of the professor, **late assignments will not be accepted.** Students are expected to email all required assignments on the night before the due date. Assignments turned in after the 10:00 P.M. deadline (the night before the class) will be considered late. If assignments are accepted late, they will be assessed point penalties at the rate of **5% each day they are late.** If students have conflicts with due dates, they should see the professor and negotiate another due date WELL in advance of the original due date. Note that the professor will send a reply email when the assignment is received; if you do not get a reply, contact the professor immediately. Email is great, but not ALWAYS reliable!

3. Student feedback is welcome. During this course the professor will ask students to provide feedback on their learning in informal as well as formal ways, including through anonymous surveys about how the professor's teaching strategies are helping or hindering student learning. It is very important for the professor to know the students' reactions to what is taking place in class, so students are encouraged to respond to these surveys, ensuring that the professor and students together can create an environment effective for teaching and learning.

4. Students are also encouraged to provide feedback during office hours, by phone, by e-mail, and by appointment, if they desire.

5. If students are concerned about their class performance, the professor and his TA are more than willing to work with students to help improve their course grades prior to the end of the semester. **Final grades assigned in the course are not negotiable.**

Use of Canvas in Class
In this class the professor uses Canvas—a Web-based course management system with password-protected access at http://courses.utexas.edu—to distribute course materialsand and store data sets. Students can find support in using Canvas at the ITS Help Desk by calling 475-9400, Monday through Friday, 8 a.m. to 6 p.m. Please plan accordingly.

VII. UNIVERSITY POLICIES

COVID-19 RELATED INFORMATION. The University's policies and practices related to the pandemic may be accessed at: https://protect.utexas.edu/

THE UNIVERSITY OF TEXAS HONOR CODE. The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

DOCUMENTED DISABILITY STATEMENT. Any student who requires special accommodations must obtain a letter that documents the disability from the Services for Students with Disabilities area of the Division of Diversity and Community Engagement (471- 6259 voice or 471-4641 TTY for users who are deaf or hard of hearing). A student should present the letter to the professor at the beginning of the semester so that needed accommodations can be discussed and followed. The student should remind the professor of any testing accommodations no later than five business days before an exam. For more information, visit: http://diversity.utexas.edu/disability/.

PROFESSIONAL CONDUCT AND CIVILITY IN THE CLASSROOM. The professor expects students to act as professionals in class. This means students should arrive on time for class, be prepared to participate in the class discussion, and show respect for one another's opinions. A course brings together a group of diverse individuals with various backgrounds. Students are influenced and shaped by such factors as race, ethnicity, gender, sex, physical abilities, religious and political beliefs, national origins, and sexual orientations, among others. We expect to learn from each other in an atmosphere of positive engagement and mutual respect. This atmosphere includes working intentionally to recognize and dismantle racism, sexism, heterosexism, and ableism in the classroom. Social Work also deals with complex and controversial issues. These issues may be challenging and uncomfortable, and it would be impossible to offer a substantive classroom experience that did not include potentially difficult conversations relating to challenging issues. In this environment, we will be exposed to diverse ideas and opinions, and sometimes we will not agree with the ideas expressed by others. Nevertheless, the professor requires that students engage one another with civility, respect, and professionalism.

UNANTICIPATED DISTRESS. Students may experience unexpected and/or distressing reactions to course readings, videos, conversations, and assignments. If so, students are encouraged to inform the professor. The professor can be responsive and supportive regarding students' participation in course assignments and activities, but students are responsible for communicating clearly what kind of support is desired. If counseling is needed, students may contact a service provider of their choosing, including the UT Counseling Center at 512-471-3515 or online at https://cmhc.utexas.edu/.

POLICY ON SOCIAL MEDIA AND PROFESSIONAL COMMUNICATION. Public social networks are not private. Even when open only to approved or invited members, users cannot be certain that privacy will exist among the general membership of sites. If social work students choose to participate in such forums, please assume that anything posted can be seen, read, and

critiqued. What is said, posted, linked to, commented on, uploaded, subscribed to, etc., can be accessed and archived, posing potential harm to professional reputations and prospective careers.

Social work students who use social media (e.g. Facebook, Twitter, Instagram) and other forms of electronic communication (e.g. blogs) must be mindful of how their communication may be perceived by clients, colleagues, faculty, and others. Social work students are expected to make every effort to minimize material which could be considered inappropriate for a professional social worker in training. Because of this, social work students are advised to manage security settings at their most private levels and avoid posting information/photos or using any language that could jeopardize their professional image.

Students are asked to consider the amount of personal information posted on these sites and are obliged to block any client access to involvement in the students' social networks. Client material should not be referred to in any form of electronic media, including *any* information that might lead to the identification of a client or compromise client confidentiality in *any* way. Additionally, students must critically evaluate any material that is posted regarding community agencies and professional relationships, as certain material could violate the standards set by the School of Social Work, the Texas Code of Conduct for Social Workers, and/or the NASW Code of Ethics.

Social work students should consider that they will be representing professional social work practice as well as The University of Texas at Austin School of Social Work program while in the classroom, the university community, and the broader area communities.

POLICY ON ACADEMIC INTEGRITY. Students who violate University rules on academic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and / or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on academic dishonesty will be strictly enforced. For further information, please visit the Student Conduct and Academic Integrity website at: http://deanofstudents.utexas.edu/conduct.

USE OF COURSE MATERIALS. The materials used in this course, including, but not limited to exams, quizzes, and homework assignments, are copyright protected works. Any unauthorized duplication of the course materials is a violation of federal law and may result in disciplinary action being taken against the student. Additionally, the sharing of course materials without the specific, express approval of the professor may be a violation of the University's Student Honor Code and an act of academic dishonesty, which could result in further disciplinary action. This sharing includes, among other things, uploading class materials to websites for the purpose of distributing those materials to other current or future students.

CLASSROOM CONFIDENTIALITY. Information shared in class about agencies, clients, and personal matters is considered confidential per the NASW Code of Ethics on educational supervision and is protected by regulations of the Family Educational Rights and Privacy Act (FERPA) as well. As such, sharing this information with individuals outside of the educational context is not permitted. Violations of confidentiality could result in actions taken according to

the policies and procedure for review of academic performance located in sections 3.0, 3.1, and 3.2 of the Standards for Social Work Education.

UNIVERSITY ELECTRONIC MAIL STUDENT NOTIFICATION. Electronic mail (email), like postal mail, is a mechanism for official University communication to students. The University will exercise the right to send email communications to all students, and the University will expect that email communications will be received and read in a timely manner.Students can find UT Austin's policies and instructions for updating their e-mail address at https://it.utexas.edu/policies/university-electronic-mail-student-notification-policy.

RELIGIOUS HOLY DAYS. A student who misses classes or other required activities, including examinations, for the observance of a religious holy day should inform the instructor as far in advance of the absence as possible so that arrangements can be made to complete an assignment within a reasonable period after the absence. A reasonable accommodation does not include substantial modification to academic standards, or adjustments of requirements essential to any program of instruction. Students and instructors who have questions or concerns about academic accommodations for religious observance or religious beliefs may contact the Office for Inclusion and Equity. The University does not maintain a list of religious holy days.
TITLE IX REPORTING. In accordance with Title IX of the Education Amendments of 1972, the University of Texas at Austin is committed to maintaining a learning environment that is free from discriminatory conduct on the basis of sex https://titleix.utexas.edu/. Faculty, field instructors, staff, and/or teaching assistants in their supervisory roles are mandated reporters of incidents of sex discrimination, sexual harassment, sexual violence, stalking, dating violence, or any other forms of sexual misconduct. Students who report such incidents will be informed of University resources. Incidents will be reported to the University's Title IX Coordinator. Further information, including student resources related to Title IX, may also be found at https://titleix.utexas.edu/.

CAMPUS CARRY POLICY. The University's policy on campus carry may be found here: https://campuscarry.utexas.edu.

SAFETY. As part of professional social work education, students may have assignments that involve working in agency settings and/or the community. As such, these assignments may present some risks. Sound choices and caution may lower risks inherent to the profession. It is the student's responsibility to be aware of and adhere to policies and practices related to agency and/or community safety. Students should notify the professor regarding any safety concerns.

BEHAVIOR CONCERNS and COVID-19 ADVICE LINE (BCCAL). If students have concerns about their behavioral health, or if they are concerned about the behavioral health of someone else, students may use the Behavior Concerns and COVID-19 Advice Line to discuss by phone their concerns. This service is provided through a partnership between the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP), and The University of Texas Police Department (UTPD). Call 512-232-5050 or visit https://safety.utexas.edu/behavior-concerns-advice-line. The Behavior Concerns and COVID-19 Advice Line has been expanded to support The University of Texas at Austin

community during the COVID-19 pandemic. By calling 512-232-5050 - Option 2 for COVID-19, students, faculty and staff can be assisted in English and Spanish with COVID-19 support.

EMERGENCY EVACUATION POLICY. Occupants of buildings on the UT Austin campus are required to evacuate and assemble outside when a fire alarm is activated or an announcement is made. Please be aware of the following policies regarding evacuation:

- Familiarize yourself with all exit doors in the classroom and the building. Remember that the nearest exit door may not be the one you used when entering the building.
- If you require assistance to evacuate, inform the professor in writing during the first week of class.
- In the event of an evacuation, follow the professor's instructions.
- Do not re-enter a building unless you are given instructions by the Austin Fire Department, the UT Austin Police Department, or the Fire Prevention Services office.

GRADING SCALE

94.0 and Above	A
90.0 to 93.999	A-
87.0 to 89.999	B+
84.0 to 86.999	B
80.0 to 83.999	B-
77.0 to 79.999	C+
74.0 to 76.999	C
70.0 to 73.999	C-
67.0 to 69.999	D+
64.0 to 66.999	D
60.0 to 63.999	D-
Below 60.0	F

VIII. Class Schedule

August 24	Introduction to the course and Review Review of Basic Concepts Introduction to Project CHOICES	Epi Survey and article
August 31	Computing variables in SPSS/syntax Standardized scores and the normal curve	Assign 1 & Assign 2

Sept 7	**Assignments 1 & 2 due** Probability and sampling Sampling distributions Hypothesis Testing Statistical Significance	Assign 3
Sept 14	**Assignment 3 Due** Effect Size 1 and 2 tail tests Power analysis	Assign 4
Sept 21	**Assignment 4 Due** Student's t for groups Paired samples design Independent samples design Chi-Square tests	Assign 5
Sept 28	**Assignment 5 Due** Test selection Odds Ratios and Relative Risk Review	
Oct 5	**Mid-term Exam**	
Oct 12	ANOVA/MANOVA/ANCOVA GLM repeated measures Profile Analysis	Assign 6
Oct 19	**Assignment 6 Due** Missing Data / Multiple Imputation	Assign 7
Oct 26	**Assignment 7 Due** Regression Mediation and moderation	Assign 8
Nov 2	**Assignment 8 Due** Confirmatory Factor Analysis (CFA) SEM/LGC Modeling	
Nov 9	Intro to Bayesian Statistics	
Nov 16	Review	
Nov 23	**Thanksgiving holiday**	
Nov 30	**Final Exam**	

* Required readings: journal articles and other materials may be assigned throughout the semester. The instructor will provide these readings to the class.

IX. Course and Instructor Evaluations

At the end of the course, I will use the standard Course Instructor Survey (CIS) provided by the University of Texas at Austin. The CIS offers students a systematic, campus-wide method of evaluating courses and instructors. It also allows instructors to compare their course ratings with averages for their school. The results are also used by the Dean and the School's Executive Committee as one of the aspects of faculty and course evaluation. I hope that every student will complete the CIS. Although important, these evaluations are after the fact. I strongly encourage you to provide input and feedback regarding the course during the semester so that we can together make this course of maximum benefit to your academic pursuit.

X. Bibliography

Byrne, B.M. (2016) Structural equation modeling with AMOS: basic concepts, applications, and programming. 3rd edition**,** New York: Routledge, 2016.

Curran, P.J., Obeidat, K., Losardo, D. (2010) Twelve frequently asked questions about growth curve modeling. *Journal of Cognitive Development 11*(2): 121–136

Kline, R.B. (2010) Principles and practice of structural equation modeling. 3rd edition, New York: Guilford Press, 2010.
Sandberg, J. & Alvesson, M. (2011). Ways of constructing research questions: gap-spotting or problematization? *Organization, 18*(1) 23–44.

Tabachnick, B.G. & Fiddel, L.S. (2021) Using Multivariate statistics, 7th ed, Pearson.

Van de Schoot, R., Kkaplan, D., Denissen, J, Asendorpf, J., Neyer, F.J., van Aaken, M.A.G. A gentle introduction to Bayesian Analysis: Applications to developmental research. *Child Development*, *85*(3), 842–860