

INFO 6020 Advanced Quantitative Research Method

Fall/Spring Course Syllabus (SHORTENED)

University of North Texas

Department of Information Science

Course Prerequisite

If you do not have the appropriate prerequisite course, you should drop the course. This is an equivalency chart for prerequisites and this course. All other substitutions must be approved by the instructor of the course.

Course	Equivalency
INFO 6940 Seminar in Research and Research Methodology or equivalent	none
INFO 6010* Quantitative Research Methods in Information Science *Prerequisite: INFO 6940 Research Design	EPSY 6010, ADTA 5130, CSCE 5310
INFO 6020* Advanced Quantitative Research Methods in Information Science *Prerequisite: INFO 6050 Quantitative Research Methods in Information Science or equivalent.	EPSY 6020 ADTA 5230, CSCE 5380

Course Format

An on-campus course at UNT Discovery Park Campus (16 Modules)

Course Location:

NTDP D207A

Course Description

This is the second course in a two-course sequence on quantitative research methods (INFO 6010, INFO 6020) in Information Science. This course will introduce information science scholars to advanced concepts and techniques in quantitative research in preparation for conducting independent research.

The goal of the two-course sequence is to teach you to understand and to confidently apply a variety of statistical methods and research designs that are essential for information science research.

Extended Description

This quantitative course series will *not* teach you data-analysis and interpretation – there is simply not enough hand-on time in a two-course series. Rather it will introduce you to the tools and the application of those tools. It is an expectation that further study will be necessary to become an expert in the research, statistical and measurement techniques in your field of study. This comes with both education and professional practice.

Course Goals and Objectives

The primary goal of this course is to equip doctoral students with the conceptual knowledge to be a consumer, and creator, of scholarly research and the practical skills to apply this knowledge while pursuing their own research goals.

By the end of the semester, students should be able to:

1. Demonstrate their knowledge of the advanced of inferential statistics by making valid generalizations and choosing appropriate analysis techniques from sample data.
2. Demonstrate an understanding of the concepts and techniques in advanced quantitative research in preparation for conducting independent research.
3. Demonstrate an understanding of advanced statistical techniques appropriate to conducting doctoral-level research in information science.

Required Materials

American Psychological Association. (latest edition). *Publication manual of the American Psychological Association*. Washington, DC: American Psychological Association.

ISBN-13: 978-1433805622

ISBN-10: 1433805626

Note: Spiral bound version is recommended

[Huck, S. W. \(2012\). *Reading statistics and research*. 6th ed. Boston, MA: Pearson](#)

ISBN-13: 978-0132178631

ISBN-10: 013217863X

Suggested Text

Creswell, J. W. (latest addition). *Research design: qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, California: SAGE Publications.

Course Philosophy

As a doctoral level course, it is significantly different from an undergraduate or master level course. Students are expected to contribute to discussions and to spend a significant period outside of class gather knowledge that can be contributed to the knowledge of their fellow students. Attendance is a very important component in a seminar class and is expected of all students.

Learning quantitative statistical analyses is similar to learning a new language. There are often words that are hard to pronounce, difficult to remember, and may have similar meanings. However, by continually practicing the new language through observation, reading, and writing, learners have the opportunity to pick up the language quickly and sound like a native speaker. Therefore, this course has modular assignments to give learners the opportunity to regularly practice the new language of quantitative statistical analyses. Learners will be expected to work individually and in teams to facilitate both individual and peer learning. To facilitate a safe learning environment, learners will have opportunities to build from their mistakes as they practice the new language through a variety of means.

Grading Philosophy

The process of receiving grades can inhibit the learning process. We endeavor to create a safe learning environment. As part of that environment, you have every opportunity to maintain a high grade in the course.

Course Calendar

Module		Huck Readings	Assignments
Module 1	Review (INFO 6010) & Orientation		
Module 2	Missing Data		
Module 3	Bivariate, Multiple, and Logistic Regression <ul style="list-style-type: none">Multiple Regression	Chapter 16	Assign 1

	<ul style="list-style-type: none"> • Mediation and Moderation • Logistic Regression 		
Module 4	<p>Inferences on Percentages, Proportion, and Frequencies</p> <ul style="list-style-type: none"> • The Sign, Binomial, and Fisher's Exact tests • Chi-squares tests (May be broken down into different videos) • Z-tests 	Chapter 17	Assign 2
Module 5	<p>Statistical Tests on Ranks (Nonparametric Tests)</p> <ul style="list-style-type: none"> • The median test • Mann–Whitney U test • The Kruskal–Wallis H Test • The Wilcoxon Matched-Pairs Signed-Ranks Test • Friedman's Two-Way Analysis of Variance of Ranks 	Chapter 18	Assign 3
Module 6	<p>Multivariate Tests on Means</p> <ul style="list-style-type: none"> • Checking the Assumptions before conducting a MANOVA test • MANOVA • Descriptive Discriminant Analysis (DDA) • Canonical correlation analysis (CCA) ` • MANCOVA 	Chapter 19	Assign 4
Module 7	Factor Analysis	Chapter 20	

Module 8

<ul style="list-style-type: none"> • Exploratory Factor Analysis (EFA) 		
Factor Analysis (Continued) <ul style="list-style-type: none"> • Confirmatory Factor Analysis (CFA) 	Chapter 20	Assign 5
Structural Equation Modeling <ul style="list-style-type: none"> • Measurement Model and Structural Model • Modification Indices, model interpretation and fit statistics • Using SEM to Comparing Group Means 	Chapter 21	
Structural Equation Modeling (Part 2) <ul style="list-style-type: none"> • Using SEM to Comparing Group Means 	Chapter 21	Assign 6
Course Review		Final Presentations
Final Project Due		Final Project

Note. The course schedule may be adapted during the semester to meet learner needs.