IP&T 747 - Structural Equation Modeling

Winter 2016

Section 001: 105 SWKT on T Th from 9:00 am - 10:30 am

Instructor/TA Info

Instructor Information

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Course Information

Description

Winter 2016
TTh 9am to 10:30am
105 SWKT
IP&T 747 (Structural Equation Modeling) is an advanced statistics class focusing primarily on techniques of inferential analysis using Structural Equation Modeling with the program Mplus 7.3. We will cover: (a) confirmatory factor analysis, (b) SEM with latent variables, (c) Latent growth curve models for longitudinal data, (d) Multi-group modeling, (e) Mixture Modeling, and (f) Monte Carlo simulations in Mplus.
Required Software Mplus. This will be provided in the lab.
Required Book: Wang, J. & Wang, X. (2012) Structural equation modeling: Applications using Mplus. Wiley
To access the book free through BYU:
This link will take you to the page on the library's website. From here, you just have to click Online and then login with your BYU credentials to access the book online.
https://search.lib.byu.edu/byu/record/lee.5824379?holding=3l3o9au70a8yp2to&t_ltype=record-holding (https://search.lib.byu.edu/byu/record/lee.5824379?holding=3l3o9au70a8yp2to&t_ltype=record-holding)

Materials

No materials

Prerequisites

Multiple Regression Statistics or concurrent taking the course, Knowledge of Statistical Software such as SPSS

Learning Outcomes

Confirmatory Factor Analysis
Mastery over doing confirmatory factor analysis in a structural equation modeling context, using the computer program Mplus.
SEM with latent variables
Mastery over structural equation modeling in the presence of latent variables using the program Mplus.
Latent Growth Curve Modeling
Gain a familiarity with longitudinal data analysis in an SEM context. Using the program Mplus.
Multigroup Modeling

Gain Mastery of multigroup modeling in an SEM context. Using the program Mplus.
Mixture Modeling
Mastery over mixture modeling in an SEM context. Using the Mplus program.
Written report
Analyze a real dataset and professionally write up the results in a professional way.

Grading Scale

Grades	Percent
A	93%
A-	90%
B+	87%
B	83%
B-	80%
C+	77%
C	73%
C-	70%
D+	67%
D	63%
D-	60%
E	0%

Grading Policy

Because the course meets twice a week, with hands-on data analysis examples and quizzes conducted during each meeting absence from class will greatly interfere with students' ability to succeed in the class. For this reason, **each student is expected to attend all classes, carefully complete all readings in advance of class, complete all assignments on time, and actively participate in class discussion.**

Assignments

Assignment Descriptions

Data Presentation

Jan 14	Due: Thursday, Jan 14 at 11:59 pm

Students present powerpoint slides on the data they have gathered and their research questions that may be answered with SEM.
(2-3) slides on theory
(1) Slide on Hypothesis or questions
(1-2) slides on variables of interest

CFA article Presentation

Jan 28	Due: Thursday, Jan 28 at 11:59 pm

Find an article that uses CFA in your area of interest.
Create powerpoints that

(a) review the theory
(b) check the assumptions
(c) report the results
(d) whether you believe you believe the results
About 5 slides.

CFA Project presentation (your Data)

Feb
09 Due: Tuesday, Feb 09 at 11:59 pm

Students present the results of a CFA on their Data. .
(2-3) slides on theory
(1) slides on Questions of interest
(2-3) slides on assumption checking
(2-3) slides on Results
(1-2) slides on Discussion

SEM article presentations

Feb
11 Due: Thursday, Feb 11 at 11:59 pm

Find an article that uses SEM in your area of interest.
Create powerpoints that
(a) review the theory
(b) check the assumptions
(c) report the results
(d) whether you believe you believe the results
About 5 slides.

Latent Growth Curve article presentations

Mar
01 Due: Tuesday, Mar 01 at 11:59 pm

Find an article that uses Latent Growth Curve Modeling in your area of interest.
Create powerpoints that
(a) review the theory
(b) check the assumptions
(c) report the results
(d) whether you believe you believe the results
About 5 slides.

SEM presentation (your data)

Mar
10 Due: Thursday, Mar 10 at 11:59 pm

Students present the results of a SEM on their Data. .
(2-3) slides on theory
(1) slides on Questions of interest
(2-3) slides on assumption checking
(2-3) slides on Results
(1-2) slides on Discussion

Multigroup article presentations

| Mar 15 | Due: Tuesday, Mar 15 at 11:59 pm |

Find an article that uses Multigroup modeling in your area of interest.
Create powerpoints that
(a) review the theory
(b) check the assumptions
(c) report the results
(d) whether you believe you believe the results
About 5 slides.

Mixture Modeling article presentation

| Mar 29 | Due: Tuesday, Mar 29 at 11:59 pm |

Find an article that uses Mixture Modeling in your area of interest.
Create powerpoints that
(a) review the theory
(b) check the assumptions
(c) report the results
(d) whether you believe you believe the results
About 5 slides.

Final Project

| Apr 12 | Due: Tuesday, Apr 12 at 11:59 pm |

The individual project will consist of a write-up of a hypothesis the student has come up with and data analysis of a secondary dataset to confirm or deny that hypothesis. The project will consists of a paper (15-20pages) double-spaced, APA style where: (a) student will state hypothesis, (b) check assumptions for SEM, (e) run SEM , and (f) write a short conclusion.

Final Presentation

| Apr 12 | Due: Tuesday, Apr 12 at 11:59 pm |

Students will prepare a short Powerpoint presentation which they share on the last day of class.

University Policies

Honor Code

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university's expectation, and every instructor's expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

Sexual Misconduct

As required by Title IX of the Education Amendments of 1972, the university prohibits sex discrimination against any participant in its education programs or activities. Title IX also prohibits sexual harassment-including sexual violence-committed by or against students, university employees, and visitors to campus. As outlined in university policy, sexual harassment, dating violence, domestic violence, sexual assault, and stalking are considered forms of "Sexual Misconduct" prohibited by the university.

University policy requires any university employee in a teaching, managerial, or supervisory role to report incidents of sexual misconduct that come to their attention through various forms including face-to-face conversation, a written class assignment or paper, class discussion, email, text, or social media post. If you encounter Sexual Misconduct, please contact the Title IX Coordinator at t9coordinator@byu.edu or 801-422-2130 or Ethics Point at https://titleix.byu.edu/report (https://titleix.byu.edu/report) or 1-888-238-1062 (24-hours). Additional information about Title IX and resources available to you can be found at http://titleix.byu.edu (http://titleix.byu.edu).

Student Disability

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. If you have any disability which may impair your ability to complete this course successfully, please contact the University Accessibility Center (UAC), 2170 WSC or 422-2767. Reasonable academic accommodations are reviewed for all students who have qualified, documented disabilities. The UAC can also assess students for learning, attention, and emotional concerns. Services are coordinated with the student and instructor by the UAC. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures by contacting the Equal Employment Office at 422-5895, D-285 ASB.

Academic Honesty

The first injunction of the Honor Code is the call to "be honest." Students come to the university not only to improve their minds, gain knowledge, and develop skills that will assist them in their life's work, but also to build character. "President David O. McKay taught that character is the highest aim of education" (The Aims of a BYU Education, p.6). It is the purpose of the BYU Academic Honesty Policy to assist in fulfilling that aim. BYU students should seek to be totally honest in their dealings with others. They should complete their own work and be evaluated based upon that work. They should avoid academic dishonesty and misconduct in all its forms, including but not limited to plagiarism, fabrication or falsification, cheating, and other academic misconduct.