

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://onlinelibrary.wiley.com/doi/book/10.1002/9781118356258> (<https://onlinelibrary.wiley.com/doi/book/10.1002/9781118356258>).

It's also available from this link through the library:

<https://ebookcentral.proquest.com/lib/byu/detail.action?docID=989223> (<https://ebookcentral.proquest.com/lib/byu/detail.action?docID=989223>).

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

Chapter 1: Formative Reading Quiz

May
16

Due: Wednesday, May 16 at 11:59 pm

Getting started with Mplus

May
16

Due: Wednesday, May 16 at 11:59 pm

DBL demo

May
22

Due: Tuesday, May 22 at 11:59 pm

Multigroup article presentations

May
23

Due: Wednesday, May 23 at 11:59 pm

Please submit to Learning Suite.

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.

Chapter 3: SEM part 2 formative quiz

May
23

Due: Wednesday, May 23 at 11:59 pm

Chapter 3: SEM part 2 formative homework

May
28

Due: Monday, May 28 at 11:59 pm

Pp. 119-130 of the book

SEM Simulated Project

May
28

Due: Monday, May 28 at 11:59 pm

Here is part 1.SEMstart.csv [Download \(plugins/Upload/fileDownload.php?fileId=5e4bfd2a-piRe-wknC-MNgG-pQf8965755ba&pubhash=gN27ftezdrpAXsFJTYCC_CA3Cp4635qpnhXEPtqvbfDQctldFNnK7T5QF6ticB0h4oGO1jJ-HmN-PXr7SdoDIQ==\)](#)

Chapter 3: SEM part 1 formative Quiz

May
28

Due: Monday, May 28 at 11:59 pm

All the material from Chapter 3 up to page 100 in the Wang & Wang.

Chapter 5 part 1(207-212) formative quiz

May
30

Due: Wednesday, May 30 at 12:00 pm

Chapter 5 part 1(207-212) formative homework

May
30

Due: Wednesday, May 30 at 11:59 pm

MIMIC practice

May
31

Due: Thursday, May 31 at 11:59 pm

Indirect Effects practice

May
31

Due: Thursday, May 31 at 11:59 pm

Mini Project Part II

Jun
04

Due: Monday, Jun 04 at 9:00 am

Mini Project Part II

Is the reduced measure invariant across genders?

Create a 5 slide presentation succinctly defending your decision. You may want to use the following resources.

M May 07 Monday	<p>Confirmatory Factor Analysis (Chapter 2)</p> <p>CFA Examples from the book</p> <p>BSI dataset (Chapter 2) (2).sav Download</p> <p>BSI-18 Complete categorical 2nd order.inp Download</p> <p>Model comparisons.xlsx Download</p> <p>Confirmatory Factor Analysis (Chapter 2) Chapter 2 CFA part two .pptx Download</p> <p>EFA:</p> <p>Dataset for classn=1000,stud & par_3.sav Download</p> <p>Annotated Output for SPSS</p> <p>NELS EFA SPSS.sps Download</p> <p>NELS EFA Output.spv Download</p> <p>Exporting data to MPLUS</p> <p>NELS MPLUS EXPORT.sps Download</p> <p>NELS Mplus export.csv Download</p> <p>NELS EFA Mplus.inp Download</p> <p>nels efa mplus.txt Download</p> <p>Parallel Analysis</p> <p>NELS EFA Mplus Parallel Analysis.inp Download</p> <p>nels efa mplus parallel analysis.txt Download</p> <p>nels efa mplus parallel analysis.gh5 Download</p> <p>nels efa mplus parallel analysis output.pdf Download</p>	Devotional -- Seeking Revelation (Rachel)	Getting started v Chapter 1: Form Chapter 2 (part
T May 08 Tuesday			
W May 09 Wednesday	<p>Data Presentations</p> <p>Aschliman Project Draft.docx Download</p> <p>ASI paper for stats (1).docx Download</p> <p>HeidiVogeler-FinalPaper-SAQandEDI.docx Download</p> <p>nels bootstrap example.txt Download</p> <p>CFA</p>	Devotional -- Seeking Revelation (Chunyue)	Yearning for Yearning for Chapter 2 (part Chapter 2 (part Chapter 2 (part
Th May 10 Thursday			Chapter 1: Form EFA book. Form
Week 3			
M May 14 Monday	<p>Missing Data</p> <p>Missing Data.pptx Download</p>	Devotional -- Seeking Revelation (Lisa)	CFA Project pre CFA article Pres Data Presentatio SEM article pres Chapter 2 (part Chapter 2 (part
W May 16 Wednesday	<p>Missing Data</p> <p>Missing Data.pptx Download</p> <p>Missing Data</p> <p>Missing Data.pptx Download</p>	Devotional -- Seeking Revelation (Alex)	Getting started v EFA book. Form EFA book. Form
Th May 17 Thursday			Chapter 3: SEM
Week 4			

W Jun 06 Wednesday	<p>Mixture Modeling (Chapter 6)</p> <p>Fan, W., & Hancock, G. R. (2012). Robust means modeling: An alternative for hypothesis testing of independent means under variance heterogeneity and nonnormality. <i>Journal of Educational and Behavioral Statistics</i>, 37(1), 137-156.</p> <p>LCA.dat Download Download</p> <p>Mixture Modeling (Chapter 6)</p>	<p>3/22/2018 Mini project in class: Start with Slide 78: https://www.statmodel.com/download/Topic%204new.pdf Pbworks: https://my.pbworks.com/</p> <p>Robust Means Modeling Syntax rmm doi1t1 gender.out Download</p> <p>LGM Output: configural multiwave.out Download investigating growth of the first indicator.out Download metric multiwave.out Download scalar multiwave.out Download lgm of doi with plot.out Download</p>	Holy Ghost -- Ra
Sa Jun 09 Saturday			Ch. 5 practice
Week 7			
M Jun 11 Monday	<p>Latent Growth Curve Models (Chapter 4)</p> <p>LCA in class practice</p>	<p>Here is some data that can be used for latent class analysis. LCAdata.csv Download</p>	Holy Ghost -- Ale
W Jun 13 Wednesday	<p>Student Final Presentations</p> <p>Student Final Presentations</p>	Chunyue and Lisa presenting	Chapter 3: SEM Holy Ghost- Chun
Su Jun 17 Sunday			
Week 8			
M Jun 18 Monday	<p>Student Final Presentations</p> <p>Final Exam: 105 SWKT 7:00am - 10:00am</p>		Holy Ghost -- Ad
W Jun 20 Wednesday	First Day of Spring Final Exams (06/20/2018 - 06/21/2018)		