

## 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)  
([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

#### Find a dataset

Jan 14 Due: Tuesday, Jan 14 at 9:00 am

Locate a dataset for your own use throughout the class.

You can use these sites if you would like or bring your own data:

- [Distant Learning Dataset Training \(DLDT\)](https://nces.ed.gov/training/datauser/) (https://nces.ed.gov/training/datauser/)
- [Education Data Analysis Tool \(EDAT\)](https://nces.ed.gov/edat/index.aspx?agmnt=1) (https://nces.ed.gov/edat/index.aspx?agmnt=1)
- [EDAT User's Guide](https://nces.ed.gov/edat/help.aspx#ContactEdatSupport) (https://nces.ed.gov/edat/help.aspx#ContactEdatSupport)

#### Practice recoding data (DBL)

Jan 16 Due: Thursday, Jan 16 at 9:00 am

Complete the recoding assignment (assignment #1) in the DBL.

#### Recoding (unit 1)

Jan 21 Due: Tuesday, Jan 21 at 9:00 am

Use this [dataset](https://www.dropbox.com/s/8ccjmbjq18xgwag/RecodingQuiz.sav?dl=0) (https://www.dropbox.com/s/8ccjmbjq18xgwag/RecodingQuiz.sav?dl=0) (link: https://www.dropbox.com/s/8ccjmbjq18xgwag/RecodingQuiz.sav?dl=0):

1. Remove any date variables.
2. Recode any string variables and remove the original string variable (like we did in class when we removed ID after creating IDn)
3. Recode **any** missing data as -999.
4. Run descriptive statistics in SPSS on all the variables in the file. Save the output file (.spv)
5. Save the data file as .csv.
6. Create an Mplus input file reading in these variables. Include DATA, FILE, VARIABLES, MISSING, USEVARIABLES, ANALYSIS, and OUTPUT

**Submit** the .csv file of recoded data and the SPSS output file (.spv) of the descriptive statistics.

#### Accountability - Ch. 1

Jan 21 Due: Tuesday, Jan 21 at 9:00 am

You will be asked to indicate if you read Ch. 1 in Wang & Wang or Byrne. Dr. Larsen may want you to read both.

#### Accountability - Ch. 2

Jan 23 Due: Thursday, Jan 23 at 9:00 am

On this quiz, you will indicate if you've read Ch. 2 in Wang & Wang.

#### SEM draw and interpret (unit 2)

Jan 23 Due: Thursday, Jan 23 at 9:00 am

Submit a file (PowerPoint or Google Slides or something similar will probably work best) where you illustrate using appropriate shapes and arrows pointed in the correct direction(s):

- A latent variable with 4 indicators
- Label the factor loadings for the indicators
- Error terms for each indicator
- Error term for the latent variable
- The latent variable regressed on one predictor (measured with no measurement error)

### Accountability - Ch. 2 REVIEW

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Jan  
28

Due: Tuesday, Jan 28 at 9:00 am

Did you re-read Ch. 2?

### CFA draw and interpret (unit 3)

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Jan  
28

Due: Tuesday, Jan 28 at 9:00 am

Submit a file (PowerPoint or something similar will probably work best) where you illustrate using appropriate shapes and arrows pointed in the correct direction(s) for a CFA which includes:

- 1 latent variable with 4 continuous indicators
- Error terms for the indicators

Write Mplus syntax that would run this imaginary model. Include DATA, NAMES ARE, USEVARIABLES ARE, MISSING, and MODEL statements. Submit both your diagram of the model and your Mplus syntax. These can be in the same file or in separate files.

### CFA practice (DBL)

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Jan  
30

Due: Thursday, Jan 30 at 9:00 am

### Assumption checking assignment

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Jan  
30

Due: Thursday, Jan 30 at 9:00 am

### LINEM

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Jan  
30

Due: Thursday, Jan 30 at 9:00 am

Correctly match each aspect of LINEM.

### CFA article presentation

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Feb  
04

Due: Tuesday, Feb 04 at 12:00 pm

Find an article that uses confirmatory factor analysis. Prepare and submit a 5-slide presentation about that article.

1. Look for:

- a. Do they have sufficient data (sufficient sample size based on rules of thumb - 5 people per item)
- b. LINEM FC - did they address or account for them?
- c. Type of data - categorical, continuous, or censored continuous
- d. Type of estimation used (eg., maximum likelihood (FIML) - weighted least squares, Bayesian estimation)
- e. Do they discuss how they handled missing data?
- f. Do they have a model? Does the picture make sense?
- g. Is the model defensible?
  - i. Did they justify the model using goodness of fit statistics? Which ones?
  - ii. Do the factor loadings make sense? (Are there "weird" factor loadings - really large values as compared to others? )
  - iii. If there are multiple factors is the correlation/covariance between the factors reasonable? (no correlations are above .85 for discriminant validity, and for convergent validity your factors that are supposed to correlate do at a level of .7 or more)
  - iv. Are your factor loadings statistically significant?
  - v. Is the Rsquared (communalities) reasonable - did they justify them?
  - vi. Did they use modification indices? Does it make sense that item residuals are correlated and that correlation is the reason the fit improved with application of modification indices?

- h. Do you agree with the conclusions? If not, why not? If so, why?  
i. Class will analyze information based on criteria

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#### Accountability - Worthington and Whittaker article

Feb  
13 Due: Thursday, Feb 13 at 9:00 am

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Read this article: Worthington, R. L., & Whittaker, T. A. (2006). Scale development research a content analysis and recommendations for best practices. The Counseling Psychologist, 34(6), 806-838.

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#### Goodness of Fit Cut-offs

Feb  
13 Due: Thursday, Feb 13 at 9:00 am

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Match the goodness of fit to its cut off, as well as review the LINEM assumptions.

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#### CFA practice #2 (DBL)

Feb  
13 Due: Thursday, Feb 13 at 9:00 am

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#### Accountability - Worthington and Whittaker REVIEW

Feb  
20 Due: Thursday, Feb 20 at 9:00 am

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Review this article: Worthington, R. L., & Whittaker, T. A. (2006). Scale development research a content analysis and recommendations for best practices. The Counseling Psychologist, 34(6), 806-838.

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#### Stupid Rules

Feb  
20 Due: Thursday, Feb 20 at 9:00 am

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Identify which rules are not useful and should be avoided, as well as reviewing LINEM and cut-offs.

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#### Factor Retention and Item Deletion

Feb  
20 Due: Thursday, Feb 20 at 9:00 am

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Identify rules useful for retaining factors and deleting items, as well as reviewing LINEM, goodness of fit cut-offs, and stupid rules.

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#### Worthington and Whittaker DBL

Feb  
20 Due: Thursday, Feb 20 at 11:59 pm

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#### EFA practice (DBL)

Feb  
25 Due: Tuesday, Feb 25 at 9:00 am

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#### Accountability - Ch. 3 and Ch. 1 REVIEW

Feb  
27 Due: Thursday, Feb 27 at 9:00 am

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#### SEM MIMIC basic (DBL)

Mar  
03 Due: Tuesday, Mar 03 at 9:00 am

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#### Accountability - Ch. 3 REVIEW

Mar  
03 Due: Tuesday, Mar 03 at 9:00 am

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#### Missing Data quiz

Mar

03

Due: Tuesday, Mar 03 at 11:59 pm

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What is the syntax in Mplus to invoke the "missing data trick"?

What does that syntax for the "missing data trick" tell Mplus to estimate?

What needs to be true in order for the Full Information Maximum Likelihood (FIML) technique to return trustworthy results?

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### SEM practice indirect effects (DBL)

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Mar

05

Due: Thursday, Mar 05 at 9:00 am

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### Accountability - Ch. 5

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Mar

10

Due: Tuesday, Mar 10 at 9:00 am

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### SEM interaction practice (DBL)

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Mar

10

Due: Tuesday, Mar 10 at 9:00 am

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### Multigroup measurement invariance (DBL)

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Mar

12

Due: Thursday, Mar 12 at 9:00 am

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### Measurement invariance article presentation

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Mar

19

Due: Thursday, Mar 19 at 9:00 am

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- **Slide 1** - summary slide - what are the biggest things that people need to know to understand the context of your article?
  - **Slide 2 - 4** - Select one set of questions to answer on *each* slide from the following list:
    1. Why did the researchers pick the grouping variable that they selected? What is their justification? Do you agree with their argument? Why or why not?
    2. Was there anything you would change with the way the authors formulated their model (anything that should be taken out or put in)? Why or why not?
    3. What are the implications for any analytical choices that you find problematic (i.e., categorical treated as continuous, use of partial invariance, not completing the full testing process through scalar invariance, missing data choices, sample size choices, etc.)?
    4. Where would you go from here? What are the next logical steps you would recommend to the authors?
    5. Do you agree with the conclusions of the authors? Why or why not?
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### Accountability - Ch. 5 REVIEW

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Mar

19

Due: Thursday, Mar 19 at 11:59 pm

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Re-read Ch. 5 - especially p. 207 - 210 p. 222, 231, 236 - focus on meaning of syntax shown on these pages p. 288

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### Multivariate measurement invariance (DBL)

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Mar

19

Due: Thursday, Mar 19 at 11:59 pm

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### Accountability - Ch. 4

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Mar

26

Due: Thursday, Mar 26 at 9:00 am

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### Accountability - Ch. 4 REVIEW

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Mar

31

Due: Tuesday, Mar 31 at 9:00 am

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Concentrate on the latter part of the chapter this time.

## LGM linear practice (DBL)

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Mar  
31

Due: Tuesday, Mar 31 at 9:00 am

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## LGM Part 2

### LGM practice covariates (DBL)

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Apr  
02

Due: Thursday, Apr 02 at 9:00 am

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### Final Presentation

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Apr  
09

Due: Thursday, Apr 09 at 9:00 am

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Please submit to learning suite.

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

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### Final Project

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Apr  
22

Due: Wednesday, Apr 22 at 11:59 pm

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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 consist of a paper (15-20 pages) double-spaced, APA style where:

- (a) student will state hypothesis,
  - (b) check assumptions for SEM,
  - (e) run SEM , and
  - (f) write a short conclusion.
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## 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

In accordance with Title IX of the Education Amendments of 1972, Brigham Young University prohibits unlawful sex discrimination against any participant in its education programs or activities. The university 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 all university employees in a teaching, managerial, or supervisory role to report all incidents of Sexual Misconduct that come to their attention in any way, including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Incidents of Sexual Misconduct should be reported to the Title IX Coordinator at [t9coordinator@byu.edu](mailto:t9coordinator@byu.edu) or (801) 422-8692. Reports may also be submitted through EthicsPoint at <https://titleix.byu.edu/report> (<https://titleix.byu.edu/report>) or 1-888-238-1062 (24-hours a day).

BYU offers confidential resources for those affected by Sexual Misconduct, including the university's Victim Advocate, as well as a number of non-confidential resources and services that may be helpful. Additional information about Title IX, the university's Sexual Misconduct Policy, reporting requirements, and resources can be found at <http://titleix.byu.edu> (<http://titleix.byu.edu>) or by contacting the university's Title IX Coordinator.

### Student Disability

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. A disability is a physical or mental impairment that substantially limits one or more major life activities. Whether an impairment is substantially limiting depends on its nature and severity, its duration or expected duration, and its permanent or expected permanent or long-term impact. Examples include vision or hearing impairments, physical disabilities, chronic illnesses, emotional disorders (e.g., depression, anxiety), learning disorders, and attention disorders (e.g., ADHD). If you have a disability which impairs your ability to complete this course successfully, please contact the University Accessibility Center (UAC), 2170 WSC or 801-422-2767 to request a reasonable accommodation. The UAC can also assess students for learning, attention, and emotional concerns. If you feel you have been unlawfully discriminated against on the basis of disability, please contact the Equal Employment Office at 801-422-5895, D-285 ASB for help.

### 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 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.

## Schedule

Date	Complete before class	Learning Objectives	In class activities
Week 1			
T Jan 07 Tuesday	<p><b>LINEM Opens</b></p> <p>Start looking for a dataset. These sites may help:</p> <ul style="list-style-type: none"> <li>• <a href="#">Distant Learning Dataset Training (DLDT)</a></li> <li>• <a href="#">Education Data Analysis Tool (EDAT)</a></li> <li>• <a href="#">EDAT User's Guide</a></li> <li>• <a href="https://www.data.gov/">https://www.data.gov/</a></li> </ul> <p>Buy or access the textbook (Wang &amp; Wang <a href="#">Structural Equation Modeling: Applications using Mplus</a>)</p> <p>Access this book through the HBLL and read Ch. 1 (<a href="#">Byrne</a>)</p> <p><b>Assumption checking assignment Opens</b></p> <p><b>Factor Retention and Item Deletion Opens</b></p> <p><b>Goodness of Fit Cut-offs Opens</b></p> <p><b>Stupid Rules Opens</b></p>	<p><a href="#">Learning plan for Jan. 7</a></p>	<p>Devotional -- Ross Larsen</p> <p><b>Accessing Citrix and using Kumo</b></p> <ol style="list-style-type: none"> <li>1. Accessing <a href="#">Citrix</a> to use SPSS and Mplus (Note: There are two methods - web browser or desktop)</li> <li>2. Connect cloud storage (Google Drive, Box, Dropbox, etc.) to Citrix via <a href="#">Kumo</a></li> </ol>
Th Jan 09 Thursday	<p><b>Accountability - Ch. 1 Opens</b></p> <p><b>Accountability - Ch. 2 Opens</b></p> <p><b>Accountability - Ch. 2 REVIEW Opens</b></p> <p><b>Accountability - Worthington and Whittaker REVIEW Opens</b></p> <p><b>Accountability - Worthington and Whittaker article Opens</b></p> <p><b>Accountability - Ch. 3 and Ch. 1 REVIEW Opens</b></p> <p><b>Accountability - Ch. 4 Opens</b></p> <p><b>Accountability - Ch. 4 REVIEW Opens</b></p> <p><b>Accountability - Ch. 5 Opens</b></p> <p><b>Accountability - Ch. 3 REVIEW Opens</b></p> <p><b>Accountability - Ch. 5 REVIEW Opens</b></p>	<p><a href="#">Learning Plan for Jan. 9</a></p> <p>Datasets for in class practice:</p> <p><a href="#">Dataset 1 ECI17mis.sav</a></p> <p><a href="#">Fill-in-the-blank Mplus input file</a></p>	<p>Devotional -- Celina (Come follow me)</p>
Week 2			
T Jan 14 Tuesday	<p><b>Find a dataset</b></p>	<p><a href="#">Learning plan for Jan. 14</a></p> <p>Datasets for in class practice:</p> <p><a href="#">Dataset 1 ECI17mis.sav</a></p> <p><a href="#">Fill-in-the-blank Mplus input file</a> for descriptive statistics</p>	<p>Devotional -- Heidi (Come follow me)</p>
Th Jan 16 Thursday	<p><b>Practice recoding data (DBL)</b></p>	<p><a href="#">Learning plan for Jan. 16</a></p> <p><a href="#">Dataset</a> for in class practice (JO2015msgu.sav)</p> <p>Descriptive and Mplus export for ECI17mis.sps <a href="#">Download</a></p>	<p>Devotional -- Jonathon (Come follow me)</p>
Week 3			

M Jan 20 Monday	<b>Martin Luther King Jr Day</b>		
T Jan 21 Tuesday	<b>Accountability - Ch. 1 Closes Recoding (unit 1)</b>	<a href="#">Learning plan for Jan. 21</a>	Devotional -- Susanna (Come follow me)
Th Jan 23 Thursday	<b>Accountability - Ch. 2 Closes SEM draw and interpret (unit 2)</b>	<a href="#">Learning plan for Jan. 23</a> Dataset from book:  BSI dataset (Chapter 2)MPLUS EXPORT.sav <a href="#">Download</a> CFAwalkthrough input file in Mplus.inp <a href="#">Download</a>  cfa of bsi somatization.txt <a href="#">Download</a>	Devotional -- Rebecca (Come follow me)
Week 4			
T Jan 28 Tuesday	<b>CFA draw and interpret (unit 3) Accountability - Ch. 2 REVIEW Closes</b>	<a href="#">Learning plan for Jan. 28</a>	Devotional -- Danny (Come follow me)
Th Jan 30 Thursday	<b>CFA practice (DBL) LINEM Closes Assumption checking assignment Closes</b>	<a href="#">Learning plan for Jan. 30</a> <a href="#">Dataset 2</a> for CFA practice (EC15f1ct)	Devotional -- Shiloh (Come follow me)
Week 5			
T Feb 04 Tuesday		<a href="#">Learning plan for Feb. 4</a>	Devotional -- Alicia (Come follow me) <b>CFA article presentation</b>
Th Feb 06 Thursday		<a href="#">Learning plan for Feb. 6</a>	Devotional -- Cecil (Come follow me)
Week 6			
T Feb 11 Tuesday	Last two CFA articles. CFA practice #2	<a href="#">Learning plan for Feb. 11</a>	Devotional -- Rebecca (Come follow me)
Th Feb 13 Thursday	<b>Goodness of Fit Cut-offs Closes Accountability - Worthington and Whittaker article Closes CFA practice #2 (DBL)</b>	<a href="#">Learning plan for Feb. 13</a> <a href="#">Dataset A</a> for EFA practice <a href="#">Dataset B</a> for EFA practice EFA fill-in-the-blank .inp <a href="#">file</a>	Devotional -- Ester (Come follow me)
Week 7			
T Feb 18 Tuesday	<b>Monday Instruction</b>		
Th Feb 20 Thursday	<b>Accountability - Worthington and Whittaker REVIEW Closes Worthington and Whittaker DBL Stupid Rules Closes Factor Retention and Item Deletion Closes</b>	<a href="#">Learning plan for Feb. 20</a>	Devotional -- Ross (Covenant Belonging)
Week 8			
T Feb 25 Tuesday	<b>EFA practice (DBL)</b>	<a href="#">Learning plan for Feb. 25</a> Missing Data.pptx <a href="#">Download</a>	Devotional -- Heidi (Covenant Belonging)



Th Feb 27 Thursday	<b>Accountability - Ch. 3 and Ch. 1 REVIEW Closes</b>	<a href="#">Learning plan for March 3</a> <a href="#">Learning plan for Feb. 27</a>  oc_allcountries_allrounds-no dates or string, missing -9999 merged composites.sav <a href="#">Download</a> oc_allcountries_allrounds-no dates or string, missing -9999 merged composites.csv <a href="#">Download</a> Young lives skeleton.inp <a href="#">Download</a>  <a href="#">Boss assignment</a>	Devotional -- Celina (Covenant Belonging)
Week 9			
T Mar 03 Tuesday	<b>SEM MIMIC basic (DBL) Accountability - Ch. 3 REVIEW Closes Missing Data quiz</b>	<a href="#">Dataset 1</a> for SEM practice (JS2015g) <a href="#">Dataset 2</a> for SEM practice (JB2019gr)	Devotional -- Jonathan (Covenant Belonging)
Th Mar 05 Thursday	<b>SEM practice indirect effects (DBL)</b>	<a href="#">Learning plan for March 5</a>	Devotional -- Alicia (Covenant Belonging)
Week 10			
T Mar 10 Tuesday	<b>Accountability - Ch. 5 Closes SEM interaction practice (DBL)</b> Read Chapter 5 before class today.  Justice for self input: Justice for self CFA.inp <a href="#">Download</a> CSV file: justiceBeliefsIND (1) Mplus export.csv <a href="#">Download</a> JusticeBeliefsIND (1) Mplus export.sav <a href="#">Download</a>	<a href="#">Learning plan for March 10</a> <a href="#">Dataset</a> for multigroup invariance (male and religious, JB2019gr)	Devotional -- Cecil (Covenant Belonging)
Th Mar 12 Thursday	<b>Multigroup measurement invariance (DBL)</b> Basic CFA <a href="#">inp file</a> for DBL problem #1	<a href="#">Learning plan for March 12</a> <a href="#">Dataset</a> for multiwave (2 timepoints, 1 factor, 4 indicators) invariance	Devotional -- Elisse (Covenant Belonging)
Week 11			
T Mar 17 Tuesday			Devotional -- Jesse (Covenant Belonging)
Th Mar 19 Thursday	<b>Accountability - Ch. 5 REVIEW Closes Multiwave measurement invariance (DBL)</b>		Devotional -- Susanna (Covenant Belonging) <b>Measurement invariance article presentation</b>
Week 12			
T Mar 24 Tuesday			Devotional -- Danny (Covenant Belonging)

Th Mar 26 Thursday	<b>Instructor Ratings Open</b> <b>Accountability - Ch. 4 Closes</b> <a href="#">Sign up sheet for student consulting</a> Data and Mplus skeleton for today: oc_allcountries_allrounds-no dates or string, missing -9999.sav <a href="#">Download</a> oc_allcountries_allrounds-no dates or string, missing -9999.csv <a href="#">Download</a> Young lives LGM skeleton.inp <a href="#">Download</a> <a href="#">Google sheet of answers</a>  Shiloh <a href="#">video</a> of DBL assignment (14 minutes)		Devotional -- Rebecca (Covenant Belonging)
Week 13			
T Mar 31 Tuesday	<b>LGM linear practice (DBL)</b> <b>Accountability - Ch. 4 REVIEW Closes</b> LGM part 2 <a href="#">Recorded lecture</a>		Devotional -- Ester (Covenant Belonging)
Th Apr 02 Thursday	<b>LGM practice covariates (DBL)</b> Consulting		Devotional --
Week 14			
T Apr 07 Tuesday	Consulting		Devotional --
Th Apr 09 Thursday	Final Project student presentations	<b>Final Presentation</b>	Devotional --
Week 15			
T Apr 14 Tuesday	Final student presentations		Devotional -- Celina
Th Apr 16 Thursday	<b>Winter Exam Preparation (04/16/2020 - 04/16/2020)</b>		
Week 16			
W Apr 22 Wednesday	9-10:50 am Final Student presentations	<b>Final Project</b>	Devotional -- Alicia