**Syllabus**

**Course Number:** ERMA 8340

**Course Title:** Structural Equation Modeling

**Semester:** Spring, 2024

**Credit Hours:** 3 credit hours

**Prerequisites:** None

**Meeting Time:** Mondays 5:00~7:50 pm (Haley 3420)

**Instructor:** Chih-hsuan Wang

4010 Haley

wangchi@auburn.edu

**Office Hour:**  Office Hour: Tuesdays 12:00-2:00 pm and by appointment

**Date Syllabus Last Updated:** January 2024

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**Texts:**

Byrne, B. M. (2016). *Structural Equation Modeling with AMOS: Basic Concept, Applications, and Programming (3th ed.)*. Routledge. (ISBN#: 978-1138797031).

**Recommended Reading:**

American Psychology Association (2019). *Publication Manual of the American Psychological Association (7th ed.).* Washington D.C., American Psychological Association. (ISBN#: 978-1433832178)

Kline, R. B. (2023). Principles and Practice of Structural Equation Modeling (5th ed.). The Guilford Press. (ISBN: 978-1462551910)

Mertler, C. A., & Vannatta, R. A. (2021). *Advanced and Multivariate Statistical Methods: Practical Application and Interpretation (7th ed.)*. Routledge. (ISBN#: 978-0367497477)

Meyers, L. S., Gamst, G., & Guarino, A. J. (2016). *Applied Multivariate Research: Design and Interpretation (3rd ed.)*. Sage Publications, Inc. (ISBN#: 978-1506329765)

**Technology & Computer Software Requirements:**

1. Access to high-speed internet through smart mobile devices or computers.
2. Microsoft Office Word.
3. PDF file creator (e.g. Adobe Acrobat).
4. SPSS and AMOS.

**Other Prerequisite Skills:**

 Students taking this class are expected to be able to perform the following basic skills **at the beginning** of the class:

1. **Computer basic skills**: open, save, copy-paste, use track changes, make tables and create Word and PDF documents.
2. **Online learning platform basic skills**: open, download, and upload documents, review documents and video clips online, and **review instructor feedback on the Canvas. (More student resources for Canvas can be found here:** <http://wp.auburn.edu/biggio/canvas/student-help/> )

**IMPORTANT:**

1. We will be using the Canvas Learning Management System for this course. All course materials (syllabus, PPTs, lab assignments and data files, rubrics…etc.) will be available on Canvas. Please check the Canvas site frequently for announcements and handouts for class. I am not going to provide hard copies.
2. Our class will be delivered in F2F format.
3. I will not accept the work completed by hand unless it is the only way to do it.

**Course Description:**

This course is designed to provide students the understanding of factor analytic and structural equation modeling (SEM) statistical procedures. Regression and path analysis, prerequisites for understanding more complex models, are reviewed. This course emphasizes the conceptual and practical application of factor analysis and SEM. A hands-on approach to analyzing data using AMOS and interpreting output is used.

**Course Objectives**:

Upon completion of this course, the student will be able to:

* Gain an understanding of factor analytic procedures.
* Apply knowledge of factor analysis by analyzing data to assess factor analytic models.
* Apply knowledge of factor analysis through interpreting output and revising models as indicated by results.
* Interpret the results of the analyses in terms of the research hypothesis and/or purposes.

**Grading and Evaluation Procedures:**

| **Assignment** | **Potential Pts** |
| --- | --- |
| In-class Activity (4 assignments \* 15 pts each) | **60** |
| Final Project\* | **40** |
| Total  | **100** |

**Grading Scale:**

|  |  |
| --- | --- |
| **Grade** | **Points** |
| **A** | **90~100** |
| **B** | **80~89** |
| **C** | **70~79** |
| **D** | **60~69** |
| **F** | **<60** |

\* Rubrics for final project is at the end of this syllabus.

**Class Policy Statements**

* ***Zoom policy*** — When we meet on Zoom, your attendance, attention, and participation are expected. Zoom participation requires you to keep your video on and your microphone muted when you are not speaking. Although you may be participating from your domicile, our Zoom meetings are professional interactions. You should dress and behave as you would in a normal F2F classroom. To the extent possible, please minimize distractions in the background. I reserve the right to dismiss anyone from a Zoom meeting whose environment or behavior is distracting or problematic. If you have any issues with sharing your video feed, adhering to this policy, or anything else related to your use of Zoom please notify me via email in the first week of class. I’m happy to consider and provide accommodations, but you will need to be in communication with me.
* ***Email and Communication***
* All communication through emails needs to be via Auburn Tiger Email system. In other words, you need to use your university email address to send me emails, and I will do the same. **Emails will be responded within 48 hours excluding weekends and holidays.**
* All PPTs and announcements will be posted on the Canvas. You are responsible to check the Canvas before you come to the class.
* All assignments need to be uploaded on the Canvas. I will provide feedback on your assignments on the Canvas. You can check your grade for each assignment on the Canvas as well. However, I keep your official grades in my Excel file.
* If you need individual help, you can reach me during the office hours and/or make an appointment.
* ***Class Attendance***
* Points are not attached to attendance directly. However, excellent class attendance is expected. Students are responsible for initiating arrangements for missed work.
* Notify me in advance of your absence.
* Keep up with coursework.
* Participate in class activities via Zoom if possible.
* Notify me if you require a modification to the deadline of an assignment or exam before it is due.
* ***Electronic Device Policy***

Cell phones should be turned off or vibrate during face-to-face classes. Cell phone texting and/or reading are not permitted in class. Laptops and tablets in class could only be used for the purpose of the class.

* ***Assignment Policy***
* Due to the potential incompatibility of word processing programs and formats, and the potential for the transmission of viruses, absolutely no work for the course will be accepted as an E-mail and/or as an E-mail attachment, or on a disk etc. All graded work must be uploaded on the Canvas.
* All work submitted for the course must be typed.
* ***Late Assignments Policy***
* Assignments turned in late will receive a 2% reduction in earned points per day. The only exception will be in the case of emergency.
* Except for work requiring calculations, all work must be typed, or it will **not** be graded. Late penalty will be applied to work completed in writing and then turned in late in typed format for a grade.
* Assignments more than 2 weeks overdue will not be accepted.
* ***Incompletes and Withdrawals***

Grades associated with incomplete course work or withdrawal from class will be assigned in strict conformity to the University policy (see Auburn University Bulletin at <https://bulletin.auburn.edu/Policies/Academic/grades/> ).

If you wish to drop this course you may do so by the 10th class day with no grade assignment. From the 10th class day to mid-quarter a W (withdrawn-passing) grade will be recorded in your transcripts. After this period withdrawal from the course will only be granted under unusual circumstances and must be approved by the Dean of the College of Education.

Note that the incomplete grade (IN) policy is in effect. The new policy requires that students complete a form requesting that an IN grade be assigned. If this form is not completed and given to the instructor of the class, a grade will be assigned with a score of zero (0) for work that has not been completed and turned in by the time the instructor reports grades. To be eligible for a grade of IN, the student must have completed and have passed more than half of all class assignments/exams for semester.

* ***Academic Misconduct***

***Academic Honesty***

The Department of EFLT recognizes university policy regarding academic misconduct. Violations include, but are not limited to plagiarism, unauthorized assistance during examinations, submitting another’s work product as your own, using another’s words as your own without appropriate citation, sharing unauthorized materials with another that contain questions or answers to examinations, altering or attempting to alter assigned grades. In accordance with University policy regarding academic misconduct, students may be subject to several sanctions upon violations of the Student Academic Honesty Code. See the Tiger Cub publication for the current year for specifics regarding academic misconduct as well as student’s rights and responsibilities associated with the Code.

***Plagiarism***

For more information, see:

<http://www.collegeboard.com/student/plan/college-success/10314.html>

<http://owl.english.purdue.edu/owl/resource/589/01/>

<http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml>

* ***Disability Accommodations***

Students who need special accommodations in class, as provided for by the American Disabilities Act, should arrange a confidential meeting with the instructor during office hours the first week of classes — or as soon as possible if accommodations are needed immediately. If you have a conflict with my office hours, an alternate time can be arranged. To set up this meeting, please contact me by e-mail. You must bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have these forms but need accommodations, make an appointment with the Program for Students with Disabilities, 1228 Haley Center, 844‑2096 (V/TT).

**Tentative Course Content and Schedule**

| Week | Date | Topics | Assignment Due (on Sunday) |
| --- | --- | --- | --- |
| 1 | 1/15 | MLK Holiday, No meeting |  |
| 2 | 1/22 | IntroductionAMOS (Bryne Ch. 1-2) |  |
| 3 | 1/29 | Review Regression |  |
| 4 | 2/05 | Path Analysis using Regression Procedure(Meyers et al. Ch. 12)  |  |
| 5 | 2/12 | Path Analysis using AMOS (Meyers et al. Ch. 13) | Path analysis assignment due |
| 6 | 2/19 | Exploratory Factor Analysis (Meyers et al. Ch. 10) |  |
| 7 | 2/26 | Exploratory Factor Analysis | EFA assignment due |
| 8 | 3/04 | Spring Break |  |
| 9 | 3/11 | Confirmatory Factor Analysis (Bryne Ch. 3-5)(Meyers et al. Ch. 11) |  |
| 10 | 3/18 | Confirmatory Factor Analysis | CFA assignment due |
| 11 | 3/25 | Structural Equation Modeling (Bryne Ch. 9)(Meyers et al. Ch. 14) |  |
| 12 | 4/01 | Structural Equation Modeling | SEM assignment due |
| 13 | 4/08 | Project consultation (optional) |  |
| 14 | 4/15 | Latent Growth Modeling (Byrne Ch. 11) |  |
| 15 | 4/22 | No meeting | Final Project due |

NOTE: This is a tentative syllabus. Any changes will be announced in class. Students are responsible for being aware of the changes made.