Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of Educational Psychology

2. Course prefix, number and complete title of course: EPSY653 Advanced Structural Equation Modeling

3. Course description (not to exceed 50 words): Advanced topics of structural equation models; includes exploratory factor analysis under the structural equation modeling framework, testing factorial invariance, structural equation models with categorical observed variables, multilevel structural equation models, latent growth models, and growth mixture models

4. Prerequisite(s): EPSY 651 & EPSY 652

5. Is this a variable credit course? ☐ Yes ☒ No If yes, from ________ to ________

6. Is this a repeatable course? ☐ Yes ☐ No If yes, this course may be taken ________ times.

Will this course be repeated within the same semester? ☐ Yes ☒ No

7. Has this course been taught as 489/689? ☐ Yes ☒ No If yes, how many times? ________

Indicate the number of students enrolled for each academic period it was taught. 

8. This course will be:

a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)

   Ph.D. in EPSY with specialization in Research, Measurement, and Statistics

b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

9. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

10. Prefix: EPSY 653

    Course #: Advanced Structural Equation Modeling

    Lect Lab SCH CIP and Fund Code Admin Unit Acad Year HCE Code
    0 3 0 0 0 3 1 3 0 6 0 3 0 0 0 4 0 9 2 0 1 0 1 1 0 0 3 6 3 2

Approval recommended by:

Head of Department Date

Chair, College Review Committee Date

Head of Department (if cross-listed course) Date

Dean of College Date

Submitted to Coordinating Board by:

Dean of College Date

Associate Director, Curricular Services Date Effective Date
TEXAS A&M UNIVERSITY
Department of Statistics
MS 3143  TAMU
COLLEGE STATION, TEXAS 77843-3143

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Email: longneck@stat.tamu.edu

November 19, 2008

MEMORANDUM

TO: Dr. Victor Willson, Department Head
Department of Educational Psychology

FROM: Michael Longnecker, Associate Department Head
Department of Statistics

SUBJECT: New Course Offerings

The Department of Statistics does not object to the Department of Educational Psychology offering the courses: EPSY 653 - Advanced Structural Equation Modeling, EPSY 637 - Qualitative Methods and Analysis, and EPSY 654 - Longitudinal Data Analysis.

These courses does not overlap with any of our graduate service courses.
EPSY 653  Advanced Structural Equation Modeling  
Time: Wed 1:50-4:30pm  
Classroom: Harrington Tower Rm717  

Instructor: Dr. OiMan Kwok  
Office hours: Wed. Noon-1:30pm  
Office: 718A Harrington Tower  
Phone: (979)458-1407 [Office]  
               (979)862-1256 [Fax]  
Email: omkwok@neo.tamu.edu  

TA: Mark Hsu  
Office hours: Thurs. 2-4pm  
Office: EREL (718 Harrington Tower)  

Course Syllabus

Course Description
This is the follow-up course for EPSY 651 Theory of Structural Equation Modeling. This course extends the original EPSY 651 course by covering the latest advanced topics related to structural equation models.

Course Objectives
Structural equation models are a class of statistical techniques that incorporate regression analysis, path analysis, confirmatory factor analysis, and full scale models incorporating both measurement and structural components. These techniques are useful for both experimental and non-experimental data; for cross-sectional datasets; for multiple-group comparisons; and for longitudinal datasets. This course will cover the advanced topics of structural equation models including: exploratory factor analysis under the structural equation modeling framework, testing factorial invariance, structural equation models with categorical observed variables, multilevel structural equation models, latent growth models, and growth mixture models. We will be using the SEM software program including LISREL and MPLUS to perform statistical analyses.

There are four major goals of this course:
1. To understand the concepts related to Structural Equation Modeling;
2. To be able to specify your own models and analyze the data using one of the SEM programs;
3. To be able to interpret the statistical findings to lay persons.

Prerequisites
Students are expected to have taken both EPSY651 and EPSY652. Students who have not taken the required courses have to meet with me before they register for this course.

Assignments and Course Evaluation
Grades will be based on the following:
a) Assignments (60%)
b) Final in-class presentation (40%)
Grading Policy
86-100    A
71-85     B
61-70     C
51-60     D
Below 50  F

Note: You are encouraged to work with other students on the assignments. You will work with two partners (i.e., 3 students per group) on the final presentation. You may analyze your own data or data which were collected by other individual (as long as that individual has not analyzed the data addressing the same research questions you are attempting to answer). The final presentation (20 minutes) should include the following four sections: Introduction, method, results, and discussion. Your group will also need to turn a written paper for your final presentation (in APA format). You should apply the SEM techniques you learn from this course to your final project. Your group should schedule a meeting with me to talk about your final presentation before noon, 11/5/09 (Wed).

Textbook

Supplementary articles on various topics will be posted on the class webpage.

Software
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<thead>
<tr>
<th>Program</th>
<th>Website</th>
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<tbody>
<tr>
<td>MPlus</td>
<td><a href="http://statmodel.com">http://statmodel.com</a></td>
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<tr>
<td>LISREL</td>
<td><a href="http://ssicentral.com">http://ssicentral.com</a></td>
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<tr>
<td>NCSSCALC</td>
<td><a href="http://www.ncss.com/download.html">http://www.ncss.com/download.html</a></td>
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Course Outline
<table>
<thead>
<tr>
<th>Class Number</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1-2</td>
<td>Brief review of SEM (matrix algebra, matrix representation of the structural equation models, mean structure and variance-covariance structure)</td>
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<tr>
<td>3</td>
<td>Exploratory factor analysis under the structural equation modeling framework</td>
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<td>4</td>
<td>Structural equation models with categorical observed variables</td>
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<td>5-6</td>
<td>Multiple group comparison and testing factorial invariance</td>
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<tr>
<td>7-8</td>
<td>Review of multilevel analysis and introduction of multilevel structural equation models for cross-sectional data</td>
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<tr>
<td>9-11</td>
<td>Multilevel SEM for longitudinal data and latent growth models</td>
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<tr>
<td>12-14</td>
<td>Growth mixture models and multilevel growth mixture models</td>
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Additional Class Readings

General


*Exploratory factor analysis under the structural equation modeling framework*


*Structural equation models with categorical observed variables*


*Multiple group comparison and testing factorial invariance*


Review of multilevel analysis and introduction of multilevel structural equation models


Multilevel SEM for longitudinal data and latent growth models


Growth mixture models and multilevel growth mixture models


Students with Special Needs
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Disabilities Services in Room B118, Cain Hall. The telephone number is 845-1637. Any student who could require assistance in the event of a necessary evacuation of the building in which this class is taught are asked to notify the instructor so that individuals can be identified to assist him/her during an evacuation.

Handouts
The handouts used in this course are copyrighted. By "handouts" I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant permission.

Academic Dishonesty
Academic Integrity Statement: An Aggie does not lie, cheat, or steal or tolerate those who do. As commonly defined, plagiarism consists of passing off as one's own ideas, words, writings, etc. which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues, without which research cannot be safely communicated. If you have any questions regarding plagiarism, please consult the Honor Council Rules and Procedures on the web at http://www.tamu.edu/aggiehonor