



## Structural Equation Modeling Seminar

**Location:** BH-511, Burnside Hall, 805 Sherbrooke Street West, McGill University

**Dates:** February 20 to 24, 2012

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### Course objectives and content

This intensive, graduate-level, five-day seminar deals with the principles, assumptions, strengths, limitations, and applications of the family of techniques known as structural equation modeling (SEM). Basic SEM techniques, including path analysis, confirmatory factor analysis (CFA), and full “LISREL” (structural regression) models, will be covered. Some familiarity with basic statistical techniques, such as multiple regression and exploratory factor analysis, is assumed, but higher levels of quantitative knowledge are not required.

The presentation of topics will be conceptually rather than mathematically oriented, and many examples of the application of SEM to different kinds of actual research problems are considered. There will be a strong emphasis on avoiding common kinds of mistakes in the analysis of structural equation models. Computer tools for SEM will be described, and there will be opportunities for participants to gain hands-on practice with actual SEM analyses on site.

### Trainer

This training session will be under the responsibility of Dr. Rex B. Kline, Professor, Department of Psychology, Concordia University.<sup>2</sup>

### General course information

The sessions are in English. Morning sessions will be used for theoretical presentations. Some time in the afternoon sessions on Tuesday and Wednesday will be reserved for computer exercises using the LISREL program.

### Schedule

The seminar is scheduled from **9:00am to 5:00pm**.

### Seminar web site

<http://psychology.concordia.ca/fac/kline/sem/qicss.html>

### Main Source (optional)

Kline, R. B. (2010). *Principles and practice of structural equation modeling* (3rd ed.). New York: Guilford Press. (See book resource site at <http://www.quilford.com/kline>)

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## Other Seminar Readings (see seminar website)

MacCallum, R. C., & Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology*, 51, 201–226. doi:10.1146/annurev.psych.51.1.201

Sava, F. A. (2002). Causes and effects of teacher conflict-inducing attitudes towards pupils: A path analysis model. *Teaching and Teacher Education*, 18, 1007–1021. doi:10.1016/S0742-051X(02)00056-2

## Topics and Reading Schedule

Day 1: Background concepts: Data preparation, overview of computer tools, types of models

Day 2: Path analysis: Effects, estimation, testing, Amos example, computer practice (LISREL SIMPLIS)

Day 3: Confirmatory factor analysis: Models, nonnormality, EQS example, computer practice (LISREL SIMPLIS)

Day 4: Structural-regression model: Variations, LISREL example

Day 5: Finish scheduled topics, open question period

## Software Programs

Listed below are freely-available versions of some SEM computer programs that can be downloaded over the Internet:

<u>Program</u>	<u>Web address</u>	<u>Limits</u>
Amos 5 student version	<a href="http://amosdevelopment.com/download/">http://amosdevelopment.com/download/</a>	8 variables, 54 parameters
LISREL 8.8 student version	<a href="http://www.ssicentral.com/lisrel/student.html">http://www.ssicentral.com/lisrel/student.html</a>	15 variables
LISREL 8.8 full version	<a href="http://www.ssicentral.com/lisrel/downloads.html">http://www.ssicentral.com/lisrel/downloads.html</a>	15-day trial
Mx Graph	<a href="http://www.vcu.edu/mx/index.html">http://www.vcu.edu/mx/index.html</a>	None (full version)
Mplus demo version	<a href="http://www.statmodel.com/demo.shtml">http://www.statmodel.com/demo.shtml</a>	8 variables, 2 levels

## Software Resources

Syntax examples (Kline) <http://psychology.concordia.ca/fac/kline/sem/syntax.pdf>  
LISREL for Windows [www.ssicentral.com/lisrel/techdocs/GSWLISREL.pdf](http://www.ssicentral.com/lisrel/techdocs/GSWLISREL.pdf)

## Eligibility

The course is open to graduate students and postdoctoral fellows as well as to professors and practising researchers.

A maximum of 25 participants will be selected on the basis of the relevance of the course to their curriculum, research, or teaching.

## Registration

The online registration period will run from **January 18 to 30, 2012**. Selection results will be announced at the beginning of **February, 2012**.

## For more information

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