

Structural Equation Modeling Seminar

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

Dates: February 22 to 26, 2010

Financial support for this Data Training School is provided by the Social Sciences and Humanities Research Council of Canada, the Fonds québécois de recherche sur la société et la culture and the universities affiliated to QICSS¹.

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. Also, 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 using the LISREL program.

Trainer

This training session will be under the responsibility of Dr. Rex B. Kline², associate professor, Department of Psychology, Concordia University.

General course information

The sessions are in English. Morning sessions will be used for theoretical presentations. Some time in the afternoon sessions will be reserved for computer exercises.

Schedule

The seminar is scheduled from **9:30am to 5:30pm**.

Seminar Web Site

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

Main Source (optional)

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: Guilford Press. (See book resource site at www.guilford.com/pr/kline.htm)

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.

Sava, F. A. (2002). Causes and effects of teacher conflict-inducing attitudes towards pupils: A path analysis

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Topics and Reading Schedule

Day 1: Background concepts: Data preparation, overview of computer tools, types of models (Chaps. 1-4)

Day 2: Path analytic models: Effects, estimation, testing, EQS example, computer practice (Chaps. 5-6; Sava, 2002)

Day 3: Confirmatory factor analysis: Models, nonnormality, Mplus example, computer practice, (Chap. 7; MacCallum & Austin, 2000)

Day 4: Structural-regression models: Variations, LISREL example, computer practice (Chaps. 8, 12)

Day 5: Multiple group analysis in SEM, avoiding mistakes, (Chap. 13)

Software Programs

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

Program	Web address	Limits
Amos 5 student version	http://amosdevelopment.com/download/	8 variables, 54 parameters
LISREL 8.8 student version	http://www.ssicentral.com/lisrel/student.html	15 variables
LISREL 8.8 full version	http://www.ssicentral.com/lisrel/downloads.html	15-day trial
Mx Graph	http://www.vcu.edu/mx/index.html	None (full version)

Software Resources

Syntax examples (Kline)	http://psychology.concordia.ca/fac/kline/sem/syntax.pdf
LISREL for Windows resources	www.ssicentral.com/lisrel/techdocs/GSWLISREL.pdf
Amos student version tutorial	http://ssc.utexas.edu/consulting/tutorials/stat/amos/

Eligibility

The course is open to graduate students and postdoctoral fellows as well as to professors and practising researchers. Some familiarity with basic statistical techniques, such as multiple regression, is assumed, but higher levels of quantitative knowledge are not required.

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 5th to January 26th 2010**. Selection results will be announced on **February 1st 2010**.

For more information

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