The course has three parts to it. The first part of the course will cover standard statistical asymptotic theory for estimators and test statistics; the emphasis will be on methods suited to econometric models. The second part will deal with non-parametric estimation and inference; we shall work out the asymptotics for nonparametric kernel estimators and discuss other estimators, such as series estimators. The third (shorter) part will be a discussion of parametric and non-parametric methodology.

References.

Lecture notes.
(L) Some lecture notes (brief outline of content for the different topics) will be posted.

Books.


Topics

1. Introduction.
   The nature of exact results.
   Asymptotic results. Overview.
2. Review of deterministic convergence, continuity.
3. Convergence in probability, a.s.: definitions, examples, relation; continuous mapping theorem; corollaries.
   Consistency and asymptotic unbiasedness of estimators.
   W, ch II; P&P, 2.1-2.
5. Laws of large numbers.
   W. Ch. III; P&P, 3.1,3.2.
7. Uniform integrability. WLLN for indep UI sequence. Khinchin WLLN.
   P&P, 2.4.
   W.IV.1; P&P 2.3-2.3.
Central limit theory. Asymptotic distributions of estimators and test statistics.


10. Asymptotic theory for M-estimators. Uniform convergence, stochastic equicontinuity, consistency, asymptotic normality.
   Amemiya, 4.1; N&McF2.1-2.3.


Part 2. Nonparametric and semiparametric methods and asymptotic theory.

   LR, 1.1-1.3, 16-1.9, 1.11

   LR 2.1, 2.2, 2.4

   LR 7.1, 8.3

15. Testing parametric form of a regression function.
   LR 12.1.

Part 3. Discussion of methodology

Selected papers.

Several assignments will be given in the course. Each student will be required to give a short presentation on an assigned topic.

Assessment.

The mark will be based on the final exam grade (70%) and on the mark for the presentation (30%).

McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/integrity for more information).