Department of Mathematics & Statistics
Concordia University

STAT 497 (MAST 679/MAST 881), Sec. I

Topics in Statistics & Probability

Winter 2021

Instructor: Dr. A. Sen
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Delivery Method: **Online** (via **Zoom**: link will be provided on Moodle course page).

Office Hours: Tuesdays, 16:30-17:30.

Class Schedule: Wednesdays, 11:45-14:15.

Text: The course will be based on selected chapters from**:**

1) Serfling, R.J. '*Approximation theorems of mathematical statistics*' (John Wiley, 1980 or 2009),
Available as e-book through Concordia Library at:
https://concordiauniversity.on.worldcat.org/oclc/49527610

2) van der Vaart, A. '*Asymptotic statistics*' (Cambridge University Press, 1998 or 2000),
Available as e-book through Concordia Library at:
https://doi-org.lib-ezproxy.concordia.ca/10.1017/CBO9780511802256

and journal articles.

Description: This course will cover selected topics from asymptotic theory of statistical inference, i.e., properties of statistical inference procedures when sample size is large. Needless to say, these properties are obtained via taking limit as sample-size goes to infinity. Even in moderately complex statistical models the large-sample properties, such as variance of an estimator, are less cumbersome to derive than the exact ones, i.e., those for a fixed sample-size. Both parametric and non-parametric framework will be considered. Topics to be covered include: Functional Delta-method, U-statistics, M-estimators, Rank statistics, Local asymptotic normality (LAN).

Evaluation: Assignments (3 or 4) **75%** and class presentations of assigned journal articles **25%.**

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

Academic Integrity and the Academic Code of Conduct
This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity." *[Undergraduate Calendar, Sec 17.10.2]*

Behaviour
All individuals participating in courses are expected to be professional and constructive throughout the course, including in their communications.

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Extraordinary circumstances
In the event of extraordinary circumstances and pursuant to the Academic Regulations the University may modify the delivery, content, structure, forum, location and/or evaluation scheme. In the event of such extraordinary circumstances, students will be informed of the change.