Department of Mathematics & Statistics
Concordia University

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

Selected Topics in Probability Statistics & Actuarial Math
Levy Processes
Winter 2026

Instructor: Dr. X. Zhou
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Office Hours: Wednesdays, 10:00-11:30.

Class Schedule: Wednesdays & Fridays, 11:45–13:00.
Note: There will be a mid-term break from March 2 to March 8.

Textbook: *Introductory Lectures on Fluctuations of Levy Processes with Application* by A.E. Kyprianou, 2nd Edition, Springer.
Gerber-Shiu Risk Theory by A.E Kyprianou, Springer.

Outline: This course is an introduction to the modern theory of Levy processes. Topics covered include:

- Levy-Ito decomposition
- Subordinators
- Wiener-Hopf factorization
- Spectrally negative Levy processes
- Scale functions
- Reflected Levy processes
- Basic excursion theory
- Applications in risk theory and branching processes

Evaluation: Each student gives a short presentation at the end of the class.
The course mark will be determined by attendance (50%) and the presentation (50%).

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.

Student Services
You may wish to access the many services available to you as a Concordia student. An overview of these resources can be found here: https://www.concordia.ca/students/services.html

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: https://www.concordia.ca/conduct/academic-integrity.html" *[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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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.