

ACTU 459 (MAST 726/MAST 881), Sec. E
Loss Distributions
Winter 2025

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Class Schedule: Mondays-Wednesdays: 14:45-16:00.
Note: There will be a mid-term break from February 24 to March 2.

Office hours: TBA.

Goal: The problem of fitting probability distributions to loss data is studied. In practice, heavy tailed distributions are used (i.e. skewed to the right) which require some special inferential methods. The problems of point and interval estimation, test of hypotheses and goodness of fit are studied in detail under a variety of inferential procedures (empirical, maximum likelihood) and of sampling designs (individual/grouped data, truncation and censoring). Loss data sets serve as illustration of the methods.

The statistical package S-Plus or the (shareware) statistical software R or the spreadsheet EXCEL application will be used for data analysis.

Text: Klugman, S.A., Panjer, H.H. and G.E. Willmot (2012) "*Loss Models*", 5th Edition, Wiley, New York; you can also use the 4th (or 3rd) Edition, if you already own a copy.
The textbook will be available at:
<https://www.bkstr.com/concordiastore/home>

Note: Students should order textbooks as early as possible, especially for printed versions in case books are backordered or there are any shipping delays.

Other texts: Klugman, S.A., Panjer, H.H. and G.E. Willmot (2008) "*Loss Models*", 3rd Edition, Wiley, New York.

Hogg, R.V., McKean, J.W. and A.T. Craig (2005) "*Introduction to Mathematical Statistics*", 6th Edition, Pearson, Upper Saddle River, NJ.

Lawless, J.F. (2003) "*Statistical Models and Methods for Lifetime Data*", 2nd Edition, Wiley, Hoboken, NJ.

Calculators: The only calculators allowed in exams for this course are the ones approved by the SOA/CAS exams: the Texas Instrument calculator models BA-35, BA-II Plus*, BA-II Plus Professional, TI-30Xa, TI-30XII (IIS solar or IIB battery), TI-30XS MultiView (or XB battery). This rule will be strictly enforced.

* The memory of TI-30X II (IIS solar or IIB battery), TI-30X MultiView (XS Solar or XB Battery), BA II Plus, and BA II Plus Professional will need to be cleared by the examination supervisor upon the candidates' entrance to the examination room. For the BA II Plus and BA II Plus Professional, clearing will reset the calculator to the factory default settings.

Assignments: There will not be graded assignments. The evaluation is based on three tests and the modeling project (oral presentation and report). There will be no make-up exams.

Final Grade: The final grade will be determined as follows:

- a) 3 Exams: 80% (that is 30%, 25% and 25%, respectively)
- b) Project Oral: 5%
- c) Project Report: 15%

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]

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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.