

ACTU 459 (MAST 726/MAST 881), Sec. E
Loss Distributions
Winter 2020

Instructor: Dr. I. Cojocaru, Office: LB 1036 (SGW), Phone: 514-848-2424, Ext. 8656
Email: ionica.groparu-cojocaru@concordia.ca

Class Schedule: Mondays-Wednesdays: 14:45-16:00.

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 minimum distance) and of sampling designs (individual/grouped data, truncation and censoring). Loss data sets serve as illustration of the methods.

A reasonable understanding of undergraduate mathematical statistics is the only prerequisite for the course. The statistical package S-Plus or the (shareware) statistical software R or the spreadsheet EXCEL application will be used for data analysis.

The course prepares for the Loss Models part of the Society of Actuaries (SOA) Exam STAM and the Casualty Actuarial Society (CAS) Exam MAS-I. It includes the more advanced material needed for the CAS exam, such as GLMs with real insurance data. A grade of B or better is needed in this course, as well as in Actu-457 and 459, to apply to the Canadian Institute of Actuaries (CIA) for exemption of Exam STAM of the SOA. Note that for the moment the CIA does not give exemptions for MAS-I or MAS-II.

Text: Klugman, S.A., Panjer, H.H. and G.E. Willmot (2012) "Loss Models", 4th Edition, Wiley, New York, Chapters 3-7, 10-16 (you can also use the 3rd Edition, 2008 if you already owe a copy).

Other texts: Klugman, S.A., Panjer, H.H. and G.E. Willmot (2008) "Loss Models", 3rd Edition, Wiley, New York, Chapters 12-19.

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.

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

Tests and Project:	Test 1:	Week 5
	Test 2:	Week 9
	Test 3:	Week 12
	Project Orals and Reports:	Week 13-15

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

- a) Tests: 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.

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]