SPRING 2016 - ACMA 445 D100

LOSS MODELS: ESTIMATION AND SELECTION (3)

Class Number: 2898 *Delivery Method: In Person*

COURSE TIMES + LOCATION:

Tu 11:30 AM – 1:20 PM
SECB 1013, Burnaby

Th 11:30 AM – 12:20 PM
AQ 5030, Burnaby

EXAM TIMES + LOCATION:

Apr 13, 2016
8:30 AM – 11:30 AM
BLU 10021, Burnaby

INSTRUCTOR:

Yi Lu
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778-782-8037
Office: SC-K10558

PREREQUISITES:

ACMA 320.

Description

CALENDAR DESCRIPTION:

Quality of an estimator: unbiasedness, asymptotic unbiasedness, consistency, means squared error, uniform minimum variance. Confidence interval. Tests of hypotheses. Estimation for complete data. Estimation for grouped data. Estimation for modified data: Kaplan-Meier estimator, variances and confidence intervals of the empirical estimator, kernel density estimator. Parameter estimation. Variance of the estimators and confidence intervals. Model selection: graphical procedures, goodness-of-fit test, likelihood ratio test. Interpolation and smoothing. Covers part of the syllabus for Exam C of the Society of Actuaries and Exam 4 of the Casualty Actuarial Society. Quantitative.

COURSE DETAILS:

Course Outline:

This course covers the fundamentals of actuarial loss models. The topics covered correspond to chapters 12-17 of the required text and the study notes from SOA for Exam C. They include the following:

1. Review of mathematical statistics: point estimation, interval estimation, tests of hypotheses.
2. Estimation for complete data: empirical distributions for complete, individual data and grouped data.
3. Estimation for modified data: point estimation, Mean, variance, and interval estimation, kernel density models, approximations for large data sets.
4. Parameter estimation: method of moments and percentile matching, maximum likelihood estimation, variance and interval estimation, Bayesian estimation, estimation for discrete distribution.
5. Model selection: representations of the data and model, hypothesis tests, two types of selection criteria, extreme value models, copula models, models with covariates.
6. Risk measures: value at risk, conditional tail expectation.

This course is accredited under the Canadian Institute of Actuaries (CIA) University Accreditation Program (UAP) for the 2015-2016 academic year. Achievement of the established exemption grade in this course may qualify a student for exemptions from writing certain preliminary exams. Please note, a combination of courses may be required to achieve a single exemption. Please see http://www.cia-ica.ca/membership/uap for full details.

Grading

Assignments	10%
Midterm	40%
Final Exam	50%

NOTES:

All grading is subject to change.

Materials

REQUIRED READING:

Required Text:

***Loss Models: From Data to Decisions, 4th Edition*, 2012, S.A.Klugman, H.H. Panjer and G.E. Willmot; Publisher: Wiley**

RECOMMENDED READING:

***ACTEX Study Manual for SOA Exam C and CAS Exam 4, Fall 2005 Edition,* by S.A.Broverman, Publisher: ACTEX**

***Survival Models and Their Estimation, 3rd Edition,* by D. London, Publisher: ACTEX**

DEPARTMENT UNDERGRADUATE NOTES:

Students with Disabilites:
Students requiring accommodations as a result of disability must contact the Centre for Students with Disabilities 778-782-3112 or csdo@sfu.ca

Tutor Requests:
Students looking for a Tutor should visit http://www.stat.sfu.ca/teaching/need-a-tutor-.html. We accept no responsibility for the consequences of any actions taken related to tutors.

REGISTRAR NOTES:

SFU's Academic Integrity web site http://students.sfu.ca/academicintegrity.html is filled with information on what is meant by academic dishonesty, where you can find resources to help with your studies and the consequences of cheating. Check out the site for more information and videos that help explain the issues in plain English.

Each student is responsible for his or her conduct as it affects the University community. Academic dishonesty, in whatever form, is ultimately destructive of the values of the University. Furthermore, it is unfair and discouraging to the majority of students who pursue their studies honestly. Scholarly integrity is required of all members of the University. http://www.sfu.ca/policies/gazette/student/s10-01.html

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