Math 417A Loss Models I Fall 2011

MWF 12:00 – 12:50 Science Building 203

Instructor: Cen-Tsong Lin

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Office Hours: 9:00 – 10:00 AM Monday – Friday or by appointment

Prerequisite: Math411C

Course description:
The students will be introduced to useful frequency and severity models. They will understand the steps involved in the modeling process and how to carry out these steps in solving business problems. The students should be able to:
(i) analyze data from an application in a business context;
(ii) determine a suitable model including parameter values; and
(iii) provide measures of confidence for decisions based upon the model.
The students will be introduced to a variety of tools for the calibration and evaluation of the models.

Learning outcomes:
After taking this sequence, the students are expected to be familiar with survival, severity, frequency and aggregate probability models, and use statistical methods to estimate parameters of such models given sample data. The students are further expected to identify steps in the modeling process, understand the underlying assumptions implicit in each family of models, recognize which assumptions are applicable in a given business application, and appropriately adjust the models for impact of insurance coverage modifications.
Students who are interested in actuarial career are encouraged to take Exam C/4 after finishing this course. The syllabus and study materials information is available in the following URL:
http://www.beanactuary.org/exams/preliminary/exams/syllabi/2012-Feb-exam-C.pdf

Required Text: Klugman, Panjer and Willmot, *Loss Models: From Data to Decisions*, 3rd Edition, Wiley 2008

Course outlines:

- Basic distribution quantities (Chapter 3)
  - Moments
  - Quantiles
  - Tails of distributions
  - Measures of Risk
- Characteristics of actuarial models (Chapter 4)
  - The role of parameters
- Continuous models (Chapter 5)
  - Creating new distributions
  - Selected distributions and their relationships
  - The linear exponential family
- Discrete distributions and processes (Chapter 6)
  - The Poisson distribution
  - The negative binomial distribution
  - The binomial distribution
  - The (a, b, 0) class
  - Truncation and modification at zero

Grading Policy

Three tests: (Fridays) 10/7, 10/28 and 11/18	60%
Homework assignments	15%
Final exam (Friday) 12/9/2011 12:00 – 2:00	25%
Total	100%

Note: Homework assignments will be assigned daily throughout the quarter; these assignments are due one week after they are assigned.