

STA4509H, Insurance Risk Models 1, Fall 2015

<i>Lecture times, location</i>	Wed 14:00 - 17:00 – SS6004
<i>Instructor</i>	Dr. Andrei Badescu, SS6024 tel: 416-946-7582 badescu@utstat.toronto.edu
<i>Instructor office hours</i>	By appointment.

Course Objective:

This course is designed to introduce you to some research topics in Mathematical Risk Theory.

Texts

I will use different books and several research papers. There is no mandatory textbook required. The notes from class will suffice.

- **Insurance Risk Models**, 1992, H. Panjer, G Willmot.
- **Introduction to Matrix Analytic Methods in Stochastic Modeling**, 1999, G Latouche, V. Ramaswami.
- **Lundberg Approximations for Compound Distributions with Insurance Applications**, 2000, G. Willmot, S. Lin.
- **Insurance Risk and Ruin**, 2005, D. Dickson.
- **Loss Models from Data to Decisions**, 2012, S. Klugman, H. Panjer, G. Willmot
- **Loss Models – Further Topics**, 2013, S. Klugman, H. Panjer, G. Willmot

Approximate Coverage:

1) *Discrete distributions*

- Frequency distributions
 - The $(a,b,0)$ and $(a,b,1)$ classes
 - Discrete Phase-type distributions (if time permits)
 - Mixed frequency distributions
- Compound frequency models

2) *Continuous distributions*

- Severity distributions
 - Coxian and related distributions
 - Mixture of Erlangs distribution
 - I. Subclasses
 - II. Distributional properties

III. Denseness

- Phase-type distributions
- Compound loss models

3) *Multivariate Distributions*

4) *Risk Measures*

5) *Aggregate loss model - applications*

a. Ruin Theory

b. Stochastic Claim reserving

c. Operational Risk

Marking Scheme:

The final course mark will be determined based on a final presentation worth 100%. The final presentation will be based on research papers assigned to you in class.

Oral Presentation - last two weeks of the term, after the Insurance Risk Models 2.

Deadline to drop the course – 23rd of September.

Updates

Blackboard will be used for all the information related to this course. The student should check this regularly.