ACMA 335-3E
RISK THEORY

Summer 2004
EVENING COURSE

Instructor: Ken Collins

Prerequisite:

None

Corequisite:

STAT 280 or STAT 285 must precede or be taken concurrently

Required Text:

Loss Models: From Data to Decisions by Klugman, Panger and Wilmot; Publisher Wiley

Actuarial Mathematics (2nd ed) by Bowers, Gerber, et al.; Publishers: Society of Actuaries

Courseware:

- R. D. Luce and H. Raiffa, "Games and Decisions," John Wiley, NewYork, 1996, 12-38.
- J. Pratt, "Risk Aversion in the Small and in the Large," Econometrica, Jan. - April 1964, 32, 122-36.
- J. Hadar and W. R. Russell, "Rules for Ordering Uncertain Prospects," Am.Econ. Rev., March 1969, 59, 25-34.

Outline:

1. **The Economics of Insurance:** utility theory, optimal insurance. Exploration of risk tolerance measures as described by Pratt and others.
2. **Collective Risk Models for a Single Period:** aggregate claims, define compound Poisson distributions, approximations.
3. **Collective Risk Models Over an Extended Period:** define Poisson processes; ruin theory; adjustment coefficient; discrete time model; first surplus below the initial level; maximal aggregate loss.
4. **Analyze the impact of reinsurance on probability of ruin and maximum aggregate loss.**

Note: This course covers part of the syllabus for Course 3 and background material for Course 4 of the Society of Actuaries

Grading:

Assignments - 10%
Midterms (2) - 40%
Final Exam - 50%
The grading is subject to change.

Students should be aware that they have certain rights to confidentiality concerning the return of course papers and the posting of marks. Please pay careful attention to the options discussed in class at the beginning of the semester.

Revised December 2003