

# STAT 472: Actuarial Models; Fall 2006

## Purdue University

- **General Information**

Instructor:	Prof. Frederi VIENS, Office MATH 504, (765) 49-46035, viens@purdue.edu
Office Hours:	Tuesday 11:45 am - 12:45 pm, in UNIV 117 or MATH 504 Thursday 9:35 am - 10:25 am, in UNIV 117 or MATH 504
Class Hours:	Section 1: Tu Th 1:30 pm - 2:45 pm, in UNIV 117 Section 2: Tu Th 3:00 pm - 4:15 pm, in UNIV 117
Textbook: (required)	Bowers, Gerber, Hickman, Jones & Nesbitt, Actuarial Mathematics, 2nd Edition (1997)
Textbook: (optional)	Cunningham, Herzog, London, Models for Quantifying Risk (2005)
Textbook: (recommended)	M. Gauger. Actex Study Manual Course 3 / Exam 3, Volume I, 2002 Edition. (Purchase 3-volume pack).

- **Catalog Course Description.** Mathematical foundations of actuarial science emphasizing probability models for life contingencies as the basis for analyzing life insurance and life annuities and determining premiums. This course, together with its sequel, STAT 473, provides most of the background for Course 3 (Exam M) of the Society of Actuaries and the Casualty Actuarial Society.

See the following web document for Society of Actuaries list of exam topics, specifically page 36 Option A: [http://www.soa.org/ccm/cms-service/stream/asset/?asset\\_id=22914069](http://www.soa.org/ccm/cms-service/stream/asset/?asset_id=22914069)

- **Homework.** Homework will have an approximate frequency of two assignments every three weeks. Selected portions of the assignments will be graded. You are encouraged to discuss the assignments with other students but you must write up your homework independently; identical solutions are NOT acceptable. Your homework must reflect YOUR understanding of the material. See note below about **plagiarism**<sup>1</sup>. Late homeworks will not be accepted. Your total homework grade will constitute **10 %** of your total grade in the class.
- **Exams.** All exams will be closed-book, closed-notes.

- **Midterm Exams.** This class will have two (2) specially scheduled midterm exams. Tentative dates for these exams are: Friday October 6, 5:30pm-7pm, and Friday December 1, 5:30pm-7pm. **Notify instructor immediately at start of semester if a conflict exists with these dates and times.**
- These exams will cover all material seen in class up to and including a week before each exam. Each midterm exam is worth **25%** of your total grade in the class.
- The **Final Exam**, given during finals week, will be at a date and time to be decided by the University. The Final Exam will cover all material seen in class for the entire semester. The Final Exam is worth **40%** of your total grade in the class.

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<sup>1</sup>Plagiarism is the act of presenting someone else's work as your own. This includes finding the answer to a given problem in a book, in someone else's assignment, or requesting the answer from someone, and copying from it. Contrary to popular belief, a complete correct solution to a given mathematical problem is almost never unique, and plagiarism in a mathematical assignment is very easy to detect.

- **Outline of Course Topics**

The following list of topics corresponds approximately to those given on the Society of Actuaries website for the requirements for Exam M. Chapter numbers refer to the required textbook. Each topic will take an average class time of 12 hours (2 weeks) of class time, although some topics will take more time, and some less. It is likely that the last topic (multiple decrement models) will not be covered until the Spring semester (STAT 473).

- – Survival Distributions and Life Tables  
*Chapter 3*
- Life Insurance:  
*Chapter 4, sections 4.1-4.4,*
- Life Annuities:  
*Chapter 5, sections 5.1-5.4,*
- Net Premiums:  
*Chapter 6, sections 6.1-6.4,*
- Net Premium Reserves:  
*Chapter 4, sections 7.1-7.6,*  
*Chapter 8, sections 8.1-8.4,*
- Multiple Life Models:  
*Chapter 9, sections 9.1-9.7,*
- Multiple Decrement Models:  
*Chapter 10, sections 10.1-10.6,*  
*Chapter 11, sections 11.1-11.3.*