

## MA288 Actuarial Seminar Spring 2009

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### Required Texts

1. *Actex Exam P Manual*, 2009 Edition, S. Broverman, Actex Publications, Winsted, CT.
2. *Risk Management and Insurance*, Anderson and Brown, Society of Actuaries. (Available online <http://www.soa.org>)

### Supplementary Books on Reserve

1. *Probability for Risk Management*, M. Hassett and D. Stewart, Actex Publications, 1999.
2. *Probability: The Science of Uncertainty with Applications to Investments, Insurance and Engineering*, Michael Bean, Brooks Cole, 2000.
3. *Risk Management and Insurance*, 8<sup>th</sup> Edition, by Williams, Smith, and Young, McGraw Hill, 1997.

**Prerequisites:** Calculus I, II, III, Probability. (MA201, 202, 203, 341)

**Objectives:** “The purpose of this course is to develop knowledge of the fundamental probability tools for quantitatively assessing risk. The application of these tools to problems encountered in actuarial science is emphasized. A thorough command of probability topics and the supporting calculus is assumed.” The preceding is from the course description of Exam P from the Society of Actuaries. Note that the course will cover several topics in probability that are important for actuarial science but which are not usually covered in a first probability course. Additionally, the student will study the basic concepts of insurance and risk management. A primary objective of this course is to help students further develop the problem-solving skills necessary to be successful on the Exam P/ Exam 1, which is jointly administered by the Society of Actuaries and the Casualty Actuarial Society. (We will refer to this exam as Exam P.)

**Actuarial Exam:** Exam P will be given in May 12-21, 2009. Registration deadline is April 2, 2009. Exam P is now a computer-based three hour exam consisting of 30 multiple choice problems. Application forms are available online: [www.soa.org](http://www.soa.org). Students should consult the detailed learning objectives ([www.soa.org](http://www.soa.org)) and also the information on: [http://www.beanactuary.org/exams/prob\\_exam.cfm](http://www.beanactuary.org/exams/prob_exam.cfm) It is assumed that all students in MA288 will register for this exam.

**Notes on preparing for the exam:** The exams of the Society of Actuaries and Casualty Actuarial Society are very difficult and require substantial outside work. To pass Exam P, students should expect to spend a minimum of 125 hours outside of class. Students are discouraged from working exclusively in groups; preparation for exams requires each student to develop problem-solving strategies.

**Help:** If you need help or would just like to talk, please use the sign-up sheet that will be posted on my door.

**Grading:** Grades will be based on two exams and a comprehensive final exam. Students who do not attend all classes, or who are late to class, will have their grade lowered. A grade of A in this class means that I believe you will pass Exam P. Any student who receives less than an A in the course (and has regularly attended class) and then immediately at the end of the course passes the exam may petition me to have his/her grade changed to an A.

**Academic Honesty.** Since a major objective of this course is to prepare students for the actuarial exam, cheating would be self-defeating for a student; it would not prepare him/her for the exam.

**MA288, Actuarial Seminar Assignments  
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**Abbreviations:** PS = Problem sets from *Exam P Study Manual, 2009 Edition*, by S. Broverman; WSY= *Risk Management and Insurance*, 8<sup>th</sup> Edition, by Williams, Smith, and Young; SoA=Society of Actuaries Study Note.

**Section 0: Calculus Review** **1.5 classes**

Do all problems in the notes: Actuarial Seminar Notes- Part I.

**Section 1: Basic Concepts of Probability, Intro to Risk Management** **1.5 classes**

1. PS1: 1-9..
2. WSY: Read chapters 4,10,12. Be able to define the following terms: life insurance, casualty insurance, reinsurance, deductible, underwriting, actuarial valuation, reserves, independent agent, direct writers, loss frequency, loss severity, pensions.

**Section 2: Combinatorial Principles** **1 class**

1. PS3: 1-7,9
2. Assigned problems from notes.

**Section 3: Conditional Probability and Independence** **2 classes**

1. Assigned problems from Probability Notes.
2. PS2: 2-13,16-21,24

**Section 4: Random Variables and Distributions** **2 classes**

1. PS4: 1-4,8-10,15,16

**Section 5: Expectation** **1 class**

1. PS5: 1-10,12,16-20,24,26,27

**Section 6: Particular Discrete Distributions** **2 classes**

1. PS6: 1-5,7,9-11,13-15,17-19,21-23,25

**Section 7: Particular Continuous Distributions, Mixed Distributions, survival functions** **2 classes**

1. PS7: 1-3,7,8,11,13-18,20,21

**Section 8: Multivariable Distributions** **4 classes**

1. PS8: 2-20,22,24,25,26,30,34
2. Assigned problems from Multivariable Notes.
3. PS6: 20
4. PS7: 6,9,10,12

**Section 9: Functions and Transformation of Random Variables  
(including sums and order statistics)** **2 classes**

1. PS9:1-7,9-22,24,26,28,30,31,33,35-40

**Section 10: Risk Management and Double Expectation** **4 classes**

1. Read Actuarial Seminar Risk Management Notes and do all problems
2. PS10: 1,3,5,6,8,11,12,19,23,25,31
2. SoA: Read entire study note.
3. PS9: 23,29,30,34

**Review/practice** **4 classes**

1. Practice Exams 1,2 and others as time permits.

**Exams** **2 classes**

**Total classes** **28 classes**