

ACT. SCI. 2101: ACTUARIAL PROBABILITY
Spring 2011
Professor Michael R. Powers

Class Meetings: Tuesdays and Thursdays: 12:30 p.m. - 1:50 p.m.; Alter Hall 231

Office: Alter Hall 614

Office Hours: Tuesdays and Thursdays: 2:00 p.m. - 3:20 p.m.

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Required Text:

Averbach, B. and Mehta, J. S., *SOA Exam P and CAS Exam I Preparation Manual*, 2011, Temple University Actuarial Institute. (AM)

Optional Text:

Wackerly, D. D., Mendenhall, W. III, Scheaffer, R. L., *Mathematical Statistics with Applications* (7th Edition), 2008, Duxbury. (WMS)

Learning Objectives:

Students are expected to master the tools for quantitatively assessing risk as presented on the SOA Exam P / CAS Exam I professional examination. A thorough command of differential, integral, and multivariate calculus is assumed. The topics emphasized in this course are:

- General probability (set functions, basic axioms, independence);
- Bayes' Theorem;
- Univariate probability distributions (probabilities, moments, variance, mode, percentiles, and transformations);
- Multivariate probability distributions (joint, conditional, and marginal distributions – probabilities, moments, variance, and covariance);
- Order statistics; and
- Conditioning arguments.

Students who do not receive a final semester grade of at least a “C” in Act. Sci. 2101 will not be permitted to register for either Stat. 2512 or Act. Sci. 3501.

Schedule (Subject to Revision):

<u>Date</u>		<u>Topic</u>
January	18	Overview
	20	Univariate Random Variables (AM 2.2-2.4)
	25	Univariate Random Variables (AM 2.2-2.4)
	27	Problem Session
February	1	Review; Quiz 1
	3	Bivariate Random Variables (AM 2.5-2.6)
	8	Bivariate Random Variables (AM 2.5-2.6)
	10	Problem Session
	15	Review; Quiz 2
	17	Moments and Their Properties (AM 3.2-3.3)
	22	Moment Generating Functions (AM 3.4)
	24	Problem Session
March	1	Review; Quiz 3
	3	Transformations of Continuous Random Variables (AM 4.2-4.3)
	8	<i>No Class (Spring Recess)</i>
	10	<i>No Class (Spring Recess)</i>
	15	Transformations of Discrete Random Variables (AM 4.4)
	17	Problem Session

	22	Review; Quiz 4
	24	Discrete Probability Distributions (AM 5.2-5.7)
	29	Discrete Probability Distributions (AM 5.2-5.7)
	31	Problem Session
April	5	Review; Quiz 5
	7	Continuous Probability Distributions (AM 6.2-6.7, 6.9)
	12	Continuous Probability Distributions (AM 6.2-6.7, 6.9)
	14	Problem Session
	19	Review; Quiz 6
	21	Order Statistics (AM 4.5)
	26	Conditioning
	28	Problem Session
May	3	<i>No Class (Study Period)</i>
	5	(10:30 a.m. - 12:30 p.m.) Review; Quiz 7

Grading:	Six Highest Quiz Grades	15% each
	Class Participation	10%

Quizzes will be based upon readings, homework assignments, and class discussions. There will be seven quizzes in all, but only the six highest quiz grades will count toward a student's final grade. Make-ups will be given only in exceptional circumstances. If a student completes fewer than six quizzes, the quizzes that are missed will count as zeros in computing the final grade.