MATERIALS FOR ACTUARIAL EXAMS

The Dolciani Math Center (7th Floor Hunter East) has review materials for the following topics to assist you in your preparation to take the ACTUARIAL EXAMS. Bring your ID card to the Learning Center and ask at the Circulation Desk for study guides and sample tests for the following:

Probability
1. **General Probability**   2. **Random Variables and Probability Distributions**   3. **Multivariate Distributions**   4. **Risk Management and Insurance**   **Practice Examinations**

Financial Mathematics & Financial Economics	
1. **Financial Mathematics** • The Measurement of Interest • Solution of Problems in Interest • Basic Annuities • More General Annuities • Yield Rates • Amortization Schedules and Sinking Funds • Bonds • Financial Instruments • More Advanced Financial Analysis	2. **Financial Economics** • Introduction to Derivatives • Forward Contracts • Call Options • Put Options • Comparing Contracts • Insuring Your Position • Put-Call Parity; Combining Options • Risk Management • Financial Forwards and Futures • Swaps **Five Original Practice Exams**

Construction and Evaluation of Actuarial Models

1. **Severity, Frequency, and Aggregate Loss**	2. **Empirical Models**	4. **Credibility**	
• Basic Probability • Variance • Conditional Variance • Expected Values • Parametric Distributions • Risk Measures • Deductibles & LER • Other Coverage Modifications • Bonuses • Discrete Distributions • Poisson/Gamma • Frequency-Exposure & Coverage Modifications • Aggregate Loss Models: Approximating Distribution • Aggregate Loss Models: The Recursive Formula • Aggregate Losses-Aggregate Deductible • Aggregate Losses: Miscellaneous Topics	• Review of Mathematical Statistics • The Empirical Distribution for Complete Data • Variance of Empirical Estimators with Complete Data • Kaplan-Meier and Nelson-Aalen Estimators • Estimation of Related Quantities • Variance of Kaplan-Meier and Nelson-Aalen Estimators • Kernel Smoothing • Approximations for Large Data Sets 3. **Parametric Models** • Method of Moments • Percentile Matching • Maximum Likelihood Estimators • Maximum Likelihood Estimators-Special Techniques • Variance of Maximum likelihood Estimators • Fitting Discrete Distributions • Hypothesis Tests: Graphic Comparison • Hypothesis Tests: Kolmogorov-Smirnov • Hypothesis Tests: Anderson-Darling • Hypothesis Tests: Chi-square • Likelihood Ratio Algorithm, Schwarz Bayesian Criterion	• Limited Fluctuation Credibility: Poisson Frequency • Limited Fluctuation Credibility: Non-Poisson Frequency • Limited Fluctuation Credibility: Partial Credibility • Bayesian Methods-Discrete Prior • Bayesian Methods-Continuous Prior • Bayesian Credibility: Poisson/Gamma • Bayesian Credibility: Normal/Normal • Bayesian Credibility: Bernoulli/Beta • Bayesian Credibility: Exponential/Inverse Gamma • Buhlmann Credibility: Basics • Buhlmann Credibility: Discrete Prior • Buhlmann Credibility: Continuous Prior • Buhlmann-Straub Credibility • Exact Credibility • Buhlmann As Least Squares Estimate of Bayes • Empirical Bayes Non-Parametric Methods	• Empirical Bayes Semi-Parametric Method 5. **Simulation** • Simulation-Inversion Method • Number of Data Values to Generate • Simulation-Applications • Bootstrap Approximation Practice Exams