## Actuarial Science

**ACTS 6301** Theory of Actuarial Models: Life Contingencies I (3 semester hours) The purpose of this class is to develop the student's knowledge of the theoretical basis of life contingent actuarial models and the application of those models to insurance and other financial risks. Life contingencies, survival models, life insurances, annuities and premiums will be studied. This class covers parts of CAS Exam 3L and SOA Exam MLC. Prerequisite: **STAT 5351** or instructor consent required (3-0) T

**ACTS 6302** Theory of Actuarial Models: Financial Economics (3 semester hours) This 3 semester hour course develops the student's knowledge of the theoretical basis of certain actuarial models and the application of those models to insurance and other financial risks. The topics discussed include interest rate models, rational valuation of derivative securities, mathematical and probabilistic foundation of risk management. This class covers parts of CAS exam 3F and SOA exam MFE. Prerequisite: **STAT 5351** or instructor consent required. (3-0) T

**ACTS 6303** Theory of Actuarial Models: Life Contingencies II (3 semester hours) The purpose of this class is to develop the student's knowledge of the theoretical basis of life contingent actuarial models for multiple lives and the application of those models to insurance and other financial risks. Reserves, life contingencies for multiple lives, expenses and stochastic processes will be studied. This class covers parts of CAS Exam 3L and SOA Exam MLC. Prerequisite: **ACTS 6301** or instructor consent required. (3-0) T

**ACTS 6304** Construction and Evaluation of Actuarial Models I (3 semester hours) Introduction to useful frequency and severity models beyond those covered in Theory of Actuarial Models. Discussion of the steps involved in the modeling process and how to carry out these steps in solving business problems. At the end of the course the students should be able to: 1) analyze data from an application in a business context; 2) determine a suitable model including parameter values; and 3) provide measures of confidence for decisions based upon the model. This class also provides an introduction to a variety of tools for the calibration and evaluation of the models. This class covers parts of CAS Exam 4/SOA Exam C. Prerequisite: **STAT 5351** or instructor consent required. (3-0) T

**ACTS 6305** Construction and Evaluation of Actuarial Models II (3 semester hours) Introduction to useful frequency and severity models beyond those covered in Principles of Actuarial Models. The topics discussed include parametric models, credibility and simulation. This class covers parts of CAS Exam 4/SOA Exam C. Prerequisite: **ACTS 6304** or instructor consent required. (3-0) T

**ACTS 6306** Advanced Actuarial Applications (3 semester hours) Special topics in actuarial science will be discussed. This class covers parts of CAS Exam 5 (Basic Techniques for Ratemaking and Estimating Claim Liabilities)/SOA Exam FAP (Fundamentals of Actuarial Practice). Prerequisite: Instructor consent required. (3-0) R

**ACTS 6308** Actuarial Financial Mathematics (3 semester hours) The purpose of this 3 semester hour course is to provide an understanding of the fundamental concepts of financial mathematics, and how those concepts are applied in calculating present and accumulated values for various streams of cash flows as a basis for future use in: reserving, valuation, pricing, asset/liability management, investment income, capital budgeting, and valuing contingent cash flows. The students will also be given an introduction to financial
instruments, including derivatives, and the concept of no-arbitrage as it relates to financial mathematics. This class covers topics of Exam 2/FM. Prerequisite: Instructor consent required. (3-0) R