Actuarial Science (AS)

Courses

AS 5101. Theory of Interest. 3 Credit Hours.
In this course, simple, compound and effective interest functions are analyzed and used in the calculation of present value and future values of various investments. Annuities, loan amortization and bonds are discussed and techniques for computing their values at various dates are explored.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

AS 5102. Actuarial Modeling I. 3 Credit Hours.
This course introduces the discrete and continuous random variables measuring the future lifetime of a person. Among the topics covered are calculation of the mean, variance and probability functions for these random variables, introduction of a present value random variable measuring the present value of a life insurance and annuity benefit, calculation of premiums for life insurance and annuities using interest rates and calculation of reserves for insurance companies, examining future liabilities and inflow.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites:
AS 5101|Minimum Grade of B-|May be taken concurrently.

AS 5103. Actuarial Modeling II. 3 Credit Hours.
This course introduces multiple life functions that require the use of joint probability functions and the calculation of marginal probability distributions. Additional topics include the calculation of mean and variance for these joint random variables and multiple decrement theory. Various topics from Loss Models are also discussed including computation of mixed distributions through compounding of frequency distributions with severity distributions and the calculation of premiums for insurance policies with deductibles, limits and coinsurance.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites:
AS 5102|Minimum Grade of B-|May not be taken concurrently.

AS 5104. Actuarial Modeling III. 3 Credit Hours.
Estimation and fitting of survival, frequency and severity, and compound distribution loss models; credibility methods.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

AS 5105. Actuarial Economics. 3 Credit Hours.
This course develops the conceptual framework of microeconomics and macroeconomics with some applications in actuarial science. It offers the VEE credit for Economics as required by the Society of Actuary. Topics in microeconomics include interaction between supply and demand, consumer behavior, production choices, different types of competition, factor markets, and market failure. Topics in macroeconomics include business cycles, inflation, unemployment, monetary and fiscal policy, balance of payments, international economics, and economic growth.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

AS 5106. Actuarial Corporate Finance. 3 Credit Hours.
This course develops the conceptual framework for corporate finance and financial derivatives from an actuarial perspective. It prepares students for Exam FM and also offers VEE credit for corporate finance as required by the Society of Actuaries. Topics covered in this course include financial statements, asset valuation, capital budgeting, capital structure, the cost of capital and dividend policy. Financial derivatives, such as forwards, futures, swaps, and options, will be discussed in detail, and their application in corporate risk management will be examined.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.
AS 5107. Advanced Theory of Interest. 3 Credit Hours.
This course develops the theoretical basis of certain actuarial models and the application of those models to insurance and other financial risks. It prepares students for SOA Exam MFE or CAS Exam 3F. Topics covered in this course include Vasicek and Cox-Ingersoll-Ross bond price models, Black-Derman-Toy binomial model, Black-Scholes option-pricing model, exotic options, Itô’s lemma in the one-dimensional case. Simulation of lognormal stock prices and variance reduction techniques will be discussed and delta-hedging in risk management will be demonstrated.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.
College Restrictions: Must be enrolled in one of the following Colleges: Business & Mngmnt, Fox School.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites:
AS 5101|Minimum Grade of B-|May not be taken concurrently.

AS 5170. Special Topics. 3 Credit Hours.
Special Topics. Content varies.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

AS 5180. Special Topics. 3 Credit Hours.
Special Topics. Content varies.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

AS 5182. Independent Study. 1 to 6 Credit Hour.
Special study in a particular aspect of actuarial science under faculty supervision. Maximum of six hours may be counted toward degree requirements.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

AS 5190. Special Topics in Actuarial Science. 3 Credit Hours.
Special Topics - Actuarial Science. Content varies.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

AS 5196. Casualty Contingencies. 3 Credit Hours.
This highly participative course is designed to broaden perspectives on the business environment in which actuaries work. In addition to analyzing the issues behind daily events, several continuing issues will be analyzed including insurance pricing cycles, regulatory developments, the role of the actuary as an educator, advisor, objective information source and problem solver insurance company financial rating and solvency issues, accounting fraud and questionable financial transactions, insurance and the financial markets managing insurance operations, professional ethics, and the impact of current developments in underwriting, and reinsurance on the actuarial function.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

AS 5282. Independent Study. 1 to 3 Credit Hour.
Independent Study. Focus to be determined by instructor and student.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.