ACTUARIAL SCIENCE (ACTS)

ACTS 810 Introduction to Credibility, Smoothing of Data, and Simulation
Crosslisted with: ACTS 410
Prerequisites: STAT 463.
Description: Full, partial, Buhlmann, and Buhlmann-Straub credibility models. Introduction to empirical Bayes and statistical distributions used to model loss experience. Application of "polynomial splines" to actuarial data. Simulation of "discrete" and "continuous random" variables in context of actuarial models. Simulation to "p-value" of hypothesis test. "Bootstrap method" of estimating the "mean squared error" of an estimator.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: ACTS 404

ACTS 825 Survival Models
Crosslisted with: ACTS 425
Prerequisites: STAT 463 with a grade of "C" or better.
Description: Parametric and tabular survival models. Estimation based on observations that might not be complete. Concomitant variables. Use of population data. Applications to groups with impaired lives.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: ACTS 404

ACTS 830 Actuarial Applications of Applied Statistics
Crosslisted with: ACTS 430
Prerequisites: STAT 463 with a grade of "C" or better.
Notes: Data sets processed and analyzed using statistical software.
Description: Introduction to forecasting in actuarial science. Simple and multiple regression, instrumental variables, time series methods, and applications of methods in forecasting actuarial variables. Interest rates, inflation rates, and claim frequencies.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: ACTS 404

ACTS 840 Interest Theory
Crosslisted with: ACTS 440
Prerequisites: MATH 208/208H with a grade of "Pass" or "C" or better, or parallel.
Description: Application of financial mathematics to problems involving valuation of financial transactions; equivalent measures of interest; rate of return on a fund; discounting or accumulating a sequence of payments with interest; and yield rates, length of investment, amounts of investment contributions or amounts of investment returns for various types of financial transactions; loans and bonds. Introduction to the mathematics of modern financial analysis. Calculations involving yield curves, spot rates, forward rates, duration, convexity, and immunization.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Format: LEC
Prerequisite for: ACTS 405; ECON 365; FINA 365; FINA 338; FINA 363; FINA 367; FINA 375; FINA 382; FINA 401; FINA 450
ACTS 873 Introduction to Risk Theory
Crosslisted with: ACTS 473
Prerequisites: STAT 462 with a grade of "C" or better.
Description: Applications of compound distributions in modeling of insurance loss. Continuous-time compound Poisson surplus processes, computation of ruin probabilities, the distributions of the deficit at the time of ruin, and the maximal aggregate loss. The effect of reinsurance on the probability of ruin.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: ACTS 403

ACTS 874 Introduction to Property/Casualty Actuarial Science
Crosslisted with: ACTS 474
Prerequisites: STAT 462 with a grade of "C" or better.
Description: Mathematical, financial, and risk-theoretical foundations of casualty actuarial science. Risk theory, loss reserving, ratemaking, risk classification, credibility theory, reinsurance, financial pricing of insurance, and other special issues and applications.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ACTS 875 Actuarial Applications in Practice
Crosslisted with: ACTS 475
Prerequisites: ACTS 471/871; FINA 307/307H or 338.
Description: Principles and practices of pricing and/or funding and valuation for life, health, property and liability insurance, and annuities and pension plans. Commercially available actuarial modeling software.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ACTS 930 Fundamentals of Pension Mathematics
Description: Basic theory of pension mathematics. Funding methods, unit credit, entry age normal, aggregate cost, actuarial assumptions, tax deductible contributions, multi-employer pension plans, deposit administration dividend formulas, variable annuities, and ERISA.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ACTS 950 Seminar in Actuarial Science
Credit Hours: 1-3
Min credits per semester: 1
Max credits per semester: 3
Max credits per degree: 3
Format: LEC