<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Crosslisted with</th>
<th>Prerequisites</th>
<th>Description</th>
<th>Credit Hours</th>
<th>Max credits per semester</th>
<th>Max credits per degree</th>
<th>Grading Option</th>
<th>Prerequisite for</th>
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</thead>
<tbody>
<tr>
<td>ACTS 810</td>
<td>Introduction to Credibility, Smoothing of Data, and Simulation</td>
<td>ACTS 410</td>
<td>MATH 208 or 208H with a grade of &quot;Pass&quot; or &quot;C&quot; or better, or concurrent</td>
<td>Application of &quot;polynomial splines&quot; to actuarial data. Simulation of &quot;discrete&quot; and &quot;continuous random&quot; variables in context of actuarial models. Simulation to &quot;p-value&quot; of hypothesis test. &quot;Bootstrap method&quot; of estimating the &quot;mean squared error&quot; of an estimator.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>Graded</td>
<td>ACTS 404</td>
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<tr>
<td>ACTS 825</td>
<td>Survival Models</td>
<td>ACTS 425</td>
<td>STAT 463 with a grade of &quot;C&quot; or better.</td>
<td>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.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>Graded</td>
<td>ACTS 404</td>
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<td>ACTS 830</td>
<td>Actuarial Applications of Applied Statistics</td>
<td>ACTS 430</td>
<td>STAT 463 with a grade of &quot;C&quot; or better.</td>
<td>Data sets processed and analyzed using statistical software. Simple and multiple regression, instrumental variables, time series methods, and applications of methods in forecasting actuarial variables. Interest rates, inflation rates, and claim frequencies.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>Graded</td>
<td>ACTS 404</td>
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<tr>
<td>ACTS 840</td>
<td>Actuarial Applications of Applied Statistics</td>
<td>ACTS 440</td>
<td>MATH 208 or 208H with a grade of &quot;Pass&quot; or &quot;C&quot; or better, or parallel</td>
<td>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.</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>Graded</td>
<td>ACTS 405; ECON 365; FINA 365; FINA 338; FINA 363; FINA 367; FINA 375; FINA 382; FINA 401; FINA 450; FINA 464</td>
</tr>
</tbody>
</table>
ACTS 871 Life Contingencies II
Crosslisted with: ACTS 471
Prerequisites: ACTS 470 and STAT 462, each with a grade of "C" or better.
Notes: Second course of a two-course sequence that includes ACTS 470.
Description: Life insurance reserve for models based on a single life.
Introduction to multiple life models for pensions and life insurance and to multiple decrement models.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded
Prerequisite for: ACTS 403; ACTS 442, ACTS 842

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
Grading Option: Graded
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
Grading Option: Graded

ACTS 875 Actuarial Applications in Practice
Crosslisted with: ACTS 475
Prerequisites: ACTS 471/871; FINA 307/307H or FINA 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
Grading Option: Graded

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
Grading Option: Graded