UW-Madison Actuarial Program Courses: Fall 2024

Course (Credit Hours)	Description	Prerequisites	Corresponding Actuarial Exams (SOA = Society of Actuaries, CAS = Casualty Actuarial Society)
Act Sci 303 (3 credits)	Theory and applications pertaining to the time value of money (financial mathematics). **Text:** *A Basic Course in the Theory of Interest and Derivatives Markets: A Preparation for the Actuarial Exam FM/2 - Marcel B. Finan*	Must have completed the second semester calculus course on series and sums	• SOA Financial Mathematics (FM) Exam • CAS Exam 2: Financial Mathematics
Act Sci 640 (4 credits)	Introduction to statistical learning theory and methods for analyzing and modeling risks in actuarial applications. Google Chrome is the recommended browser for viewing the following in an online format: **Text:** Regression Modeling with Actuarial and Financial Applications – Edward W (Jed) Frees - Cambridge **Text:** An Introduction to Statistical Learning with Applications in R, Second Edition – James, Witten, Hastie, Tibshirani - Springer **Text:** An Introduction to Statistical Learning with Applications in Python – James, Witten, Hastie, Tibshirani, Taylor - Springer	Must have completed a statistics class	• SOA Statistics for Risk Modeling (SRM) Exam • Portion of CAS Exam MAS-I: Modern Actuarial Statistics I • Portion of CAS Exam MAS-II: Modern Actuarial Statistics II

Act Sci 650 (3 credits)	First course of a two-semester sequence covering the foundations of long-term insurance. **Text:** *Actuarial Mathematics for Life Contingent Risks, Third Edition (2020), by Dickson, Hardy, and Waters*	Must have completed both probability and interest theory classes	• SOA Fundamentals of Actuarial Mathematics (FAM) Exam • Portion of CAS Exam MAS-I: Modern Actuarial Statistics I
Act Sci 651 (3 credits)	Second course of a two-semester sequence covering the foundations of long-term insurance. **Text:** *Actuarial Mathematics for Life Contingent Risks, Third Edition (2020), by Dickson, Hardy, and Waters*	Must have completed Act Sci 650	• SOA Advanced Long-Term Actuarial Mathematics (ALTAM) Exam
Act Sci 652 (3 credits)	First course of a two-semester sequence covering the foundations of short-term insurance (loss data analytics). **Text:** *Loss Data Analytics*	Completed or currently taking a statistics class	• SOA Fundamentals of Actuarial Mathematics (FAM) Exam • Portion of CAS Exam MAS-I: Modern Actuarial Statistics I
Act Sci 653 (3 credits)	Second course of a two-semester sequence covering the foundations of short-term insurance (loss data analytics). **Text:** *Loss Data Analytics*	Must have completed Act Sci 652	• SOA Advanced Short-Term Actuarial Mathematics (ASTAM) Exam • Portion of CAS Exam MAS-II: Modern Actuarial Statistics II