ACTUARIAL SCIENCE & RISK MANAGEMENT (ASRM)

ASRM Class Schedule (https://courses.illinois.edu/schedule/DEFAULT/DEFAULT/ASRM)

Courses

ASRM 199 Undergraduate Open Seminar credit: 1 to 5 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/199)
Covers special topics. Approved for Letter and S/U grading. May be repeated in the same term up to 12 hours or separate terms up to 12 hours.

ASRM 210 Theory of Interest credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/210)
Study of compound interest and annuities; applications to problems in finance. Prerequisite: MATH 231 or equivalent.

ASRM 390 Introduction to Actuarial Research credit: 0 to 3 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/390)
Guided research on introductory actuarial topics. Approved for Letter and S/U grading. May be repeated in separate terms. Prerequisite: Instructor approval required.

ASRM 392 Actuarial Problem Solving credit: 1 Hour. (https://courses.illinois.edu/schedule/terms/ASRM/392)
Methods and techniques of solving problems in actuarial mathematics for advanced students intending to enter the actuarial profession. Approved for S/U grading only. May be repeated in the same or separate terms to a maximum of 4 hours. Prerequisite: Instructor approval.

ASRM 398 Actuarial Internship credit: 0 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/398)
Full-time or part-time practice of actuarial science in an off-campus government, industrial, or research laboratory environment. Summary report required. Approved for S/U grading only. May be repeated in separate terms. Prerequisite: After obtaining an internship, Actuarial Science students must request entry from the Director of the Actuarial Science Program.

ASRM 401 Actuarial Statistics I credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/401)
Same as STAT 409. See STAT 408. Prerequisite: Consent of instructor.

ASRM 402 Actuarial Statistics II credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/402)
Same as STAT 409. See STAT 408. Prerequisite: Consent of instructor.

ASRM 406 Linear Algebra with Financial Applications credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/406)
Emphasizes techniques of linear algebra and introductory and advanced applications to actuarial science, finance and economics. Topics include linear equations, matrix theory, vector spaces, linear transformations, eigenvalues and eigenvectors and inner product spaces. In addition, current research topics such as modeling, data mining, and generalized linear models are explored. 3 or 4 undergraduate hours. 3 or 4 graduate hours. Prerequisite: MATH 241, ASRM 210 (formerly MATH 210) or FIN 221; or consent of instructor.

ASRM 409 Stochastic Processes for Finance and Insurance credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/409)
An introduction to stochastic processes and their applications to finance and insurance. Topics include conditional probability, conditional expectation, Markov chains, Poisson processes, reliability theory, Brownian motion and elementary introductions to insurance risk theory and option pricing theory. 3 or 4 undergraduate hours. 3 or 4 graduate hours. Prerequisite: ASRM 401 (formerly MATH 408) or MATH 461.

ASRM 410 Investments and Financial Markets credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/410)
Theoretical foundation in financial models and their applications to insurance and other financial risks. Topics include derivative markets, no arbitrage pricing of financial derivatives, interest rate models, dynamic hedging and other risk management techniques. 3 undergraduate hours. 3 graduate hours. Prerequisite: ASRM 401 (formerly MATH 476) and MATH 567. Prerequisite: Credit or concurrent registration in STAT 409 or STAT 440.

ASRM 450 Methods of Applied Statistics credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/450)
Same as STAT 431. See STAT 420. Prerequisite: Consent of instructor.

ASRM 451 Basics of Statistical Learning credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/451)
Same as STAT 432. See STAT 432. Prerequisite: Consent of instructor.

ASRM 453 Applied Bayesian Analysis credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/453)
Same as STAT 451. See STAT 431. Prerequisite: Consent of instructor.

ASRM 461 Loss Models credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/461)
Foundation in the actuarial modeling process; construction, selection and validation of empirical models and parametric models. Also covers survival, severity, frequency and aggregate loss models; statistical methods to estimate model parameters. 3 undergraduate hours. No graduate credit. Credit is not given for ASRM 461 (formerly MATH 478) and ASRM 561 (formerly MATH 568). Prerequisite: ASRM 401 (formerly MATH 408), MATH 461 or MATH 463; credit or concurrent registration in ASRM 402 (formerly MATH 409) or MATH 464.

ASRM 469 Casualty Actuarial Mathematics credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/469)
An introduction to property/casualty actuarial science, exploring its mathematical financial, and risk-theoretical foundations. Specific topics include risk theory, loss reserving, ratemaking, risk classification, credibility theory, reinsurance, financial pricing of insurance, and other special issues and applications. 3 or 4 undergraduate hours. No graduate credit. Credit is not given for ASRM 469 (formerly MATH 479) and ASRM 569 (formerly MATH 569). Prerequisite: ASRM 210 (formerly MATH 210); credit or concurrent registration in ASRM 402 (formerly MATH 409); or consent of instructor.

ASRM 471 Life Contingencies I credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/471)
Distribution of the time-to-death random variable for a single life, and its implications for evaluations of insurance and annuity functions, net premiums, and reserves. 4 undergraduate hours. 4 graduate hours. Prerequisite: ASRM 401 (formerly MATH 408) and ASRM 210 (formerly MATH 210).
ASRM 472 Life Contingencies II  credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/472)
Continuation of ASRM 471. Introduction to tabular or parametric survival models with single or multiple-life states; life insurance and annuity premium calculations; reserve and profit measures; introductions to universal life insurances, participating insurances, pension plans and retirement benefits. 3 undergraduate hours. No graduate credit. Credit is not given for ASRM 472 (formerly MATH 472) and ASRM 575 (formerly MATH 565). Prerequisite: ASRM 471 (formerly MATH 471).

ASRM 490 Actuarial Research  credit: 1 to 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/490)
Guided research on actuarial topics. 1 to 4 undergraduate hours. 1 to 4 graduate hours. Approved for Letter and S/U grading. May be repeated in separate terms. Prerequisite: ASRM 390 or consent of instructor.

ASRM 499 Topics in Actuarial Science  credit: 1 to 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/499)
Covers special topics in actuarial science. 1 to 4 undergraduate hours. 1 to 4 graduate hours. Approved for Letter and S/U grading. May be repeated. Prerequisite: Consent of instructor.

ASRM 510 Financial Mathematics  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/510)
Theoretical basis of financial models and their applications to insurance and other financial risks. Topics include derivative markets, no-arbitrage pricing of financial derivatives, interest rate models, dynamic hedging and other risk management techniques. 4 graduate hours. No professional credit. Credit is not given for ASRM 410 (formerly MATH 476) and ASRM 510 (formerly MATH 567). Prerequisite: ASRM 402 (formerly MATH 409) or MATH 464.

ASRM 552 Predictive Analytics  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/552)
Focuses on financial and insurance applications of statistical learning techniques to build predictive models, with integrated case studies and training on computational software packages and effective communication of statistical results. Topics include the model building process, data preparation, model selection, refinement and validation. Same as CSE 542 and STAT 542. 390 STAT 542.

ASRM 561 Loss Data Analytics & Credibility  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/561)
Introduction to the actuarial modeling process: construction, selection and validation of empirical and parametric models. Survival, severity, frequency and aggregate loss models; statistical methods to estimate model parameters. 4 graduate hours. No professional credit. Credit is not given for ASRM 461 (formerly MATH 478) and ASRM 561 (formerly MATH 568). Prerequisite: ASRM 401 (formerly MATH 408), MATH 461 or MATH 463.

ASRM 575 Life Insurance and Pension Mathematics  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/575)
Tabular and parametric survival models with single or multiple-life states; life insurance and annuity premium calculations; reserving, and profit measures; introduction to universal life insurances, participating insurances, pension plans and retirement benefits. 4 graduate hours. No professional credit. Credit is not given for ASRM 472 (formerly MATH 472) and ASRM 575 (formerly MATH 565). Prerequisite: ASRM 471 (formerly MATH 471).

ASRM 595 Advanced Topics in Actuarial Science and Risk Analytics  credit: 1 to 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/595)
Covers special topics in actuarial science and risk analytics. 1 to 4 graduate hours. No professional credit. May be repeated if topics vary. Prerequisite: Consent of instructor.

ASRM 597 Reading Course  credit: 0 to 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/597)
Independent study in actuarial science and risk analytics. 0 to 4 graduate hours. No professional credit. Approved for Letter and S/U grading. May be repeated. Prerequisite: Consent of instructor.

ASRM 598 Literature Seminar  credit: 0 to 4 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/598)
Students present seminars and discussions on advanced topics in areas of actuarial and financial mathematics and advanced analytics. 0 to 4 graduate hours. No professional credit. Approved for Letter and S/U grading. May be repeated in separate terms or up to 8 hours in the same term if topics vary. Prerequisite: Consent of instructor.

ASRM 599 Thesis Research  credit: 0 to 16 Hours. (https://courses.illinois.edu/schedule/terms/ASRM/599)
Research topics in actuarial science and risk analytics. 0 to 16 graduate hours. No professional credit. Approved for S/U grading only. May be repeated if topics vary. Prerequisite: Consent of Instructor.