CATALOGUE DESCRIPTION: The Minor in Actuarial Mathematics is designed for students whose majors are not mathematics, but who wish to obtain sufficient mathematics and statistics so that they can have the option of going into the actuarial field.

The requirements entail 16 credits:

Math 241: Calculus III (4 credits)

One of the three pairs of 3-credit courses:

Math 461: Linear Algebra for Scientists and Engineers (3 credits) (Math 240: Introduction to Linear Algebra, which has 4 credits, may be substituted for Math 461.)
Stat 470: Actuarial Mathematics (3 credits)

Recommended: Math 424 (Mathematics of Finance) and/or Stat 430 (Introduction to Statistical Computing and SAS).

Minor faculty coordinator: Professor Eric Slud, Dept. of Mathematics (evs@math.umd.edu)

DISCUSSION PERTAINING TO THE COURSES: The minor coursework begins with Math 241 (4 credits), which is the third of the 3-course sequence of calculus courses designed for physical science, engineering and mathematics students and which form the foundation for a mathematics major. The student will be required to complete four upper-level courses, three of which focus on statistics. First is the pair of statistics courses in (1), or the pair in (2), or the pair in (3):

(1) Stat 400 and 401, which together introduce students to the basic topics in probability and statistics, such as random variables, standard distributions, the law of large numbers, unbiased and consistent estimators, interval estimation, analysis of variance, and maximum likelihood estimators, hypothesis testing, regression, and non-parametric methods.

(2) Stat 410 and 420: Stat 410 provides an introduction to probability theory, including random variables, distribution functions, moments, limit theorems. Stat 420 presents theoretical concepts of statistics, such as sufficiency, completeness, the information inequality and optimal testing, and sets forth key methods of inference, such as the use of likelihood, least squares, and nonparametric methods.

(3) Stat 410 and 401: Stat 410 provides an introduction to probability theory, including random variables, distribution functions, moments, limit theorems. Stat 401 includes unbiased and consistent estimators, interval estimation, analysis of variance, and maximum likelihood estimators, hypothesis testing, regression, and non-parametric methods.

The student obtaining the Minor will be required to complete the following two courses:

Math 461: Math 461 is a course that provides the basic concepts of linear algebra: solutions to systems of linear equations, matrices, eigenvalues, and quadratic forms. Linear algebra is
prerequisite for Stat 470 on actuarial mathematics. Although the 3-credit Math 461 exists primarily for science and engineering majors, it is not available for mathematics majors. Math 240, a 4-credit linear algebra course primarily for mathematics majors, can be substituted.

Stat 470: Stat 470 is an introduction to calculations of life-insurance premiums, including compound interest, probability distribution and expected values derived from life tables, regular probabilistic behavior of large populations, and expected values arising in insurance problems.