

5 Degree Options

5.a Actuarial Science

Description: Actuaries are the leading professionals in finding ways to manage risk, and they are the analytical backbone of our society's financial security programs. With specialized training in mathematics and business, most actuaries are employed in the financial services sector, including insurance companies, commercial banks, investment banks, consulting firms, and retirement funds. Actuaries are also employed by large corporations as well as the state and federal government. Actuarial responsibilities involve research, planning, forecasting, and decision-making as regards risk and contingency in financial and insurance programs. Actuaries use applied mathematics to define, analyze and solve complex financial and social problems. They apply their knowledge to all aspects of insurance, financial and pension operations and are found wherever insurance-related problems arise. The actuary's primary work is to design risk management programs that will meet specific financial and social needs and operate on a sound financial basis. The programs may involve life insurance, health insurance, pensions and other employee benefit plans, property and liability insurance, social insurance (such as social security), or insurance on financial investments.

The professional designations of actuaries depend on the organization to which they belong, and their progress in the actuarial exam system. After passing a series of exams, an actuary receives the designation of Associate. For example, actuaries who specialize in property and casualty receive the Associate of the Casualty Actuarial Society (ACAS) designation. Actuaries who analyze pensions or investments receive the Associate of the Society of Actuaries (ASA) designation. After receiving the Associate designation, the actuary may elect to continue to take the actuary exams in order to achieve the highest designation of Fellow. To become a Fellow in the Society of Actuaries, it is necessary to pass a series of actuarial exams. The entire process of becoming an actuarial Fellow can take 3 to 7 years of study and work experience beyond the bachelor's degree. For the first actuarial exam, a student needs a substantial background in calculus-based probability. Additional courses in economics, business, insurance, and finance provide further preparation and background for subsequent exams. However, even though their training is basically in mathematics, business, and economics, practicing actuaries must have good understanding on human behavior and deal with people with greatly varying educational backgrounds, and so must be able to explain and communicate complicated concepts effectively. Communication skills, both written and oral, are essential for success as an actuary.

Job Market and Salary Information: Employment of actuaries is expected to grow at much faster pace than average, 26%, according to the Bureau of Labor Statistics. Recently, new employment opportunities arose from the need to analyze risks related to health-care costs, complex financial instruments, and climate change. Annual salaries for actuaries compare favorably with those of other professionals with comparable education and experience. According to The Ezra Penland Actuarial Recruitment 2013 US Actuarial Salary Surveys (<http://www.ezrapenland.com/salary/>), new actuarial associates with passing five actuarial exams earned between \$69,000 and \$88,000, whereas actuarial fellows with 6 years of experience averaged between \$85,000 and \$117,000. The average annual starting salary for graduates with a bachelor's degree in actuarial science and passing one actuarial exam was approximately

\$50,000-\$65,000. For those who successfully pass subsequent exams, salary increases come rapidly. Along with salaries, most actuaries receive excellent fringe benefits from their employers.

Suggestions: A broad range of training is needed to become a skilled actuary. Students need broad training in mathematics, business, economics, and finance as well as development of their communication skills. Additional experience (e.g. summer internships) or skills (e.g. computer programming) will be attractive to employers. Job prospects for entry-level positions are tremendously improved for those who have passed at least one or two of the initial actuarial exams.

Resource Faculty: Lesperance, Moore, and Yin

Recommended Additional Courses: Acctg 230 and 231, EconS 101 and 102, and Fin 325, provide additional background for actuarial exams.

Note: You may need certification in a major or minor in order to register for certain College of Business courses. A minor in Business, for example, is recommended.

Information about the actuarial exams and review materials can be downloaded from the Society of Actuaries web site at <http://www.soa.org>.