What is an actuary?

Although actuarial science was started in England over 200 years ago, it is still a relatively unknown profession. It is multidisciplinary, as evidenced by the following description from the Society of Actuaries, the largest actuarial organization:

An actuary is a business professional who analyzes the financial consequences of risk. Actuaries use mathematics, statistics and financial theory to study uncertain future events, especially those of concern to insurance and pension programs. They evaluate the likelihood of those events, design creative ways to reduce the likelihood and decrease the impact of adverse events that actually do occur.

Actuaries are an important part of the management team of the companies that employ them. Their work requires a combination of strong analytical skills, business knowledge and understanding of human behavior to design and manage programs that control risk.

SOA members work in life insurance, retirement systems, health benefit systems, financial and investment management and other emerging areas of practice. The majority of actuaries work within the insurance industry, although a growing number of actuaries work in other fields.

The Society of Actuaries and its sister organization, the Casualty Actuarial Society, created the professional designations: Fellow of the Society of Actuaries (FSA) and Fellow of the Casualty Actuarial Society (FCAS). Both designations carry significant prestige around the world and signify that an individual has been properly trained to practice as an actuary.

To become an FSA or FCAS, a student must pass a series of examinations administered by the actuarial societies. It takes a student approximately five to ten years to achieve these professional designations.

The websites www.soa.org and www.beanactuary.org contain a wealth of information about:

- The Role of an Actuary
- Actuarial Exams
- Career Opportunities

These websites are very useful resources for both high school and college students.
The University of Connecticut Actuarial Science Program began in 1976 with the creation of two new courses – Theory of Interest and Life Contingencies. The department also began administering the professional actuarial exams on campus at that time. From the start, the program grew rapidly and in the spring of 1979, the first majors in mathematics/actuarial science were graduated. In 1984 we added a concentration in actuarial science at the master’s level. As of 2009, we have awarded 6 doctoral degrees in mathematics with a thesis topic in actuarial science. We have also added a Professional Master’s in Applied Financial Mathematics.

The Janet and Mark L. Goldenson Center for Actuarial Research offers students the opportunity to participate in academically rigorous research projects on real-world problems. The center partners top actuarial students and faculty at UConn with actuarial professionals in the insurance and financial services industries from firms in Hartford and the region.

Today, the program has approximately 212 undergraduate students, 40 master’s level students, and 5 students working on a doctoral thesis in actuarial science. We estimate that, since its inception, our program has contributed 600 baccalaureate and 375 master’s graduates to the workforce.

The primary goal of our program is to provide students with a sound foundation in actuarial science and to prepare them for the examinations administered by the Society of Actuaries and the Casualty Actuarial Society, with the objective that each student passes at least two exams before graduating.

- 3 -
Recommended Courses

Reflecting the multidisciplinary aspect of the actuarial profession, students majoring in actuarial science are either required or encouraged to take courses from the following departments:

**Accounting (ACCT)**
- 2001 Principles of Financial Accounting
- 2101 Principles of Managerial Accounting

**Economics (ECON)**
- 1200 Principles of Economics
- 1201 Principles of Microeconomics
- 1202 Principles of Macroeconomics
- 2201 Intermediate Microeconomics Theory
- 2202 Intermediate Macroeconomics Theory
- 2411 Money and Banking

**Finance (FNCE)**
- 3221 Risk Management and Insurance or
- 4324 Health insurance
- 4325 Life Insurance and Retirement Security
- 4326 Risk Management: Property and Liability Exposure

**Mathematics (MATH): Preliminary**
- 1131 Calculus I (1151 Honors)
- 1132 Calculus II (1152 Honors)
- 2110 Multivariable Calculus (2130 Honors)
- 2210 Applied Linear Algebra
- 2410 Elementary Differential Equations (2420 Honors)

**Mathematics (MATH): Actuarial Science**
- 2194W Pedagogical Seminar
- 2610 Introduction to Actuarial Science
- 2620 Financial Mathematics I
- 3160 Probability
- 3170 Elementary Stochastic Processes
- 3550 Programming for Actuaries
- 3610 Probability Problems (Exam P Preparation)
- 3615 Financial Mathematics Problems (Exam FM Preparation)
- 3621 Applied Actuarial Statistics
- 3630 Actuarial Mathematics I
- 3631 Actuarial Mathematics II
- 3632 Loss Models
- 3634 Actuarial Models
- 3650 Financial Mathematics II
- 3660 Advanced Financial Mathematics
- 3670W Technical Writing for Actuaries

**Statistics (STAT)**
- 3115 Analysis of Experiments
- 3375 Introduction to Mathematical Statistics I
- 3445 Introduction to Mathematical Statistics II
- 4825 Applied Time Series

Since financial models are utilized extensively by the profession, knowledge of one or more computer languages and facility with a spreadsheet package are also strongly encouraged.
<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Cr</th>
<th>Spring</th>
<th>Cr</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRESHMAN</td>
<td>MATH 1131/1151(H)</td>
<td>4</td>
<td>MATH 1132/1152(H)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECON 1201--CA2</td>
<td>3</td>
<td>ECON 1202/Any</td>
<td>3</td>
<td>Satisfies VEE-Econ; Can sub ECON 1200 (4 cr) for ECON 1201/1202</td>
</tr>
<tr>
<td></td>
<td>ENGL 1010 or 1011</td>
<td>4</td>
<td>GEN ED/W--CA1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GEN ED/Lab--CA3</td>
<td>4</td>
<td>GEN ED/Non-Lab--CA3</td>
<td>3</td>
<td>Switch Lab/Non-Lab if ECON 1200 is chosen</td>
</tr>
<tr>
<td></td>
<td>INTD</td>
<td>1</td>
<td>COMM 1000--CA2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td></td>
<td>16</td>
<td>Add 1 credit to Spring if ECON 1200 chosen and &quot;Any&quot; added</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td></td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>SOPHOMORE</td>
<td>MATH 2110/2130(H)</td>
<td>4</td>
<td>MATH 3160</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 2620</td>
<td>3</td>
<td>MATH 3550</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 2210</td>
<td>3</td>
<td>Minor 1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACCT 2001</td>
<td>3</td>
<td>ACCT 2101/ECON 2411</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GEN ED--CA 1A (DD)</td>
<td>3</td>
<td>MATH 3615/FM Study</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td></td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>JUNIOR</td>
<td>MATH 2610*</td>
<td>3</td>
<td>MATH 3170*</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 3670 W</td>
<td>3</td>
<td>MATH 3660</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STAT 3375</td>
<td>3</td>
<td>STAT 3445</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minor 2</td>
<td>3</td>
<td>MATH 3650</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 3610/P Study</td>
<td>1</td>
<td>GEN ED--CA 1B (DD)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>13</td>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Can sub FNCE 3221/4325</td>
<td>*Same as STAT 3965 in fall</td>
<td>Study and sit for SOA Course MFE/CAS 3F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SENIOR</td>
<td>MATH 3630</td>
<td>3</td>
<td>MATH 3631</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 3632*</td>
<td>3</td>
<td>MATH 3634</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STAT 3115</td>
<td>3</td>
<td>STAT 4825</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minor 3</td>
<td>3</td>
<td>GEN ED--CA 1C</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minor 4</td>
<td>3</td>
<td>GEN ED--CA 1D</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
<td>BADM 3740</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>18</td>
<td></td>
<td>18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*MATH 3632 can sub for Math 3634 per Registrar--but taking MATH 3632 &amp; MATH 3634 best.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Required Courses for Actuarial Science Major in **BOLD**

Optional Business Minor: ACCT 2101 + FNCE 3221, 4324, 4325, 4326

Optional Economics Minor: ECON 2411 + ECON 2201, 3451, 2202, 2301
Scholarship Program

There is a strong demand for our graduates in the large financial services industry in Connecticut, the northeast, and throughout the country. The quality of our students is evidenced by the financial support of our corporate sponsors who provide roughly $75,000 per year in support of our program:

- ACTEX Publications, Inc.
- Actuaries' Club of Hartford & Springfield
- Aetna
- CIGNA
- D.W. Simpson
- Guardian Life Insurance Company
- The Hartford
- ING
- Lincoln Financial Group
- MassMutual Financial Group
- Mercer
- Phoenix Life Insurance
- Prudential Financial
- Sun Life Financial
- Swiss Re
- Towers Watson
- Travelers
- USI Consulting Group

This money is used primarily to award undergraduate scholarships. Additionally, it enhances the program in many ways, such as allowing us to offer more class sections to accommodate the growing number of students in the actuarial science major and enabling us to offer more and varied courses requested by those in the industry. We have also established endowments whose sum has passed the $500,000 mark.

Scholarships are awarded to undergraduate actuarial science students who excel academically, exhibit strong leadership skills, and provide community services. In 2010, 21 students were awarded scholarships of $2500 each.
Employment/Study Opportunities

Every fall semester, we have a career fair in which over thirty companies visit our campus to speak with interested students about actuarial opportunities and study opportunities through their organizations. Following this event and continuing into the spring, many of these organizations conduct on-campus interviews both through Career Services and directly through the actuarial science department. Following these interviews, many of our students are offered summer internships and full-time positions in the organizations’ actuarial development programs.

The following is a list of some of the participating organizations:

- ACTEX Publications, Inc.
- Aetna
- Blue Cross/Blue Shield of Massachusetts
- BPP Professional Education
- Buck Consultants
- Chartis
- CIGNA
- Deloitte Consulting
- Fidelity Investments
- Guardian Life Insurance Company
- Hanover Insurance
- The Hartford
- Hewitt Associates
- Hooker & Holcombe, Inc.
- Humana
- ING
- John Hancock
- LECG
- Liberty Mutual Group
- Lincoln Financial Group
- MassMutual Financial Group
- Mercer
- MetLife
- Milliman
- New York Life
- Phoenix Life Insurance
- PricewaterhouseCoopers
- Prime Advisors
- Prudential Financial
- SALT Solutions
- Sun Life Financial
- Swiss Re
- Towers Watson
- Travelers
- UnitedHealth Group
- USI Consulting Group
- Vantis Life
- Wellcare Health Plans, Inc.
- WellPoint

Occasionally we are approached by an organization looking to enter into a work study program. Under this arrangement, the student works twelve to sixteen hours per week during the academic year.
Gamma Iota Sigma

Gamma Iota Sigma is an international academic fraternity for students pursuing careers in risk management, insurance and actuarial science. The purpose of the fraternity is to promote and encourage student interest in these fields, increase business knowledge, and prepare students for their future professions. GIS strives to facilitate interaction between educational institutions and industry through networking, company speakers, and recruiting events. Through these activities, GIS members are able to meet with industry leaders and form contacts that will serve them throughout their careers.

The University of Connecticut-Storrs Gamma Iota Sigma XI Chapter was chartered on February 12, 1978. The goal of the XI Chapter is to act as a professional and social medium for bringing together actuarial science majors at UConn. It is the responsibility of this chapter to maintain a strong relationship with the national organization and the other individual chapters.