

**COLORADO STATE UNIVERSITY  
MATHEMATICS MAJOR  
CONCENTRATION IN ACTUARIAL SCIENCE**

NAME: \_\_\_\_\_ CSUID: \_\_\_\_\_ ADVISER: \_\_\_\_\_ TERM OF GRAD: \_\_\_\_\_

LOCAL ADDRESS: \_\_\_\_\_ ZIP: \_\_\_\_\_ PH: \_\_\_\_\_ E-Mail: \_\_\_\_\_

<b>CORE COURSES</b> (38 credits)	<b>MATHEMATICAL SCIENCES</b> (44 credits) (Grade of C or higher required in all Mathematics, Computer Science, Statistics courses in this column).	<b>ADDT'L COURSES</b> (38 credits)
<b>FRESHMAN SEMINAR</b> <u>1</u> _____ MATH 192 First-Year Seminar in Mathematical Sciences [1]	<b>MATHEMATICS</b> <u>28</u> _____ MATH 160 Calc for Physical Scientists I [4] _____ MATH 161 Calc for Physical Scientists II [4] _____ MATH 235 Intro to Math' Reasoning [2] _____ MATH 261 Calc for Physical Scientists III [4] _____ MATH 369 Linear Algebra [3] _____ MATH 317 Advanced Calc One Variable [3] _____ MATH 345 Differential Equations [4] _____ MATH 495A Preparation Exam I [1]	<b>BUSINESS</b> <u>18</u> _____ ACT 210 Intro Financial Accounting [3] _____ FIN 300 Principles of Finance [3] _____ FIN 310 Finan. Markets and Inst. [3] _____ FIN 342 Risk Mgmt & Insurance [3] _____ FIN 370 Financial Management [3] _____ BUS 205 Legal/Ethical Issues [3]
<b>COMMUNICATION</b> <u>6</u> _____ CO 150 College Composition [3] _____ JTC 300 Prof. And Tech. Comm. [3]	<b>COMPUTER SCIENCE</b> <u>4</u> Select <b>4 credits</b> from CS 150 [3], CS 152 [2], CS 163 [4], CS 164 [4], MATH 151 [1], MATH 152 [1], and MATH/CS 158 [1]. _____ [ ] _____ [ ] _____ [ ]	<b>UNRESTRICTED ELECTIVES</b> <u>20</u> _____ [ ] _____ [ ]
<b>BIOLOGICAL/PHYSICAL SCIENCES</b> <u>10</u> Select from Category 3A either two courses with labs or three courses including at least one with a lab. _____ [ ] _____ [ ] _____ [ ]	<b>STATISTICS</b> <u>12</u> _____ STAT 315 Statistics for Engr & Sci [3] _____ STAT 420 Probability/Math Stats I [3] _____ STAT 421 Intro Stochastic Processes I [3] _____ STAT 430 Probability/Math Stats II [3]	<b>GRADUATION REQUIREMENTS</b> Total credits (at least 120 credits) [ ] Upper-Division credits (at least 42 credits) [ ] CSU Grade Point Average (at least 2.0) [ ] MATH 117, MATH 118, MATH 124, MATH 125 and MATH 126 can only be counted as unrestricted electives toward any Math degree. Transfer students must complete a minimum of 9 upper-division credits in mathematics at CSU, excluding MATH 340 and mathematics courses ending in -80 to -99.
<b>ARTS/HUMANITIES</b> <u>6</u> Select two courses from Category 3B _____ [3] _____ [3]	<b>MINOR, SECOND MAJOR</b> MINOR: _____ SECOND MAJOR: _____	See the Colorado State University General Catalog for a complete statement of graduation requirements. Visit the Math Department web site for information on updated courses and requirements: <a href="http://www.math.colostate.edu">www.math.colostate.edu</a>
<b>SOCIAL/BEHAVIORAL SCIENCES</b> <u>9</u> _____ ECON 202 Microeconomics [3] _____ ECON 204 Macroeconomics [3] _____ ECON /AREC 335 Intro Econometrics [3]		
<b>HISTORICAL PERSPECTIVES</b> <u>3</u> Select one course from Category 3D _____ [3]		
<b>GLOBAL/CULTURAL AWARENESS</b> <u>3</u> Select one course from Category 3E _____ [3]		

Actuarial science is the mathematics of risk management. Actuaries create programs to protect people financially from expected and unexpected events, such as illnesses, accidents, unemployment or premature death. Their work requires making financial analyses based on broad business perspectives and management insight, using mathematical, financial and analytic skills.

Actuaries specialize in such areas as group benefits, individual life and annuity insurance, investments, pensions or property and casualty insurance. Here is a sample of the many activities in which actuaries are involved:

- Projecting what the AIDS epidemic will cost life and health insurance companies in five, ten and twenty years
- Determine the rates for malpractice insurance for doctors
- Developing long-term health care benefits and insurance policies
- Studying various social security programs
- Designing new computer software packages and programs for actuaries
- Determining rates for automobile and homeowners insurance
- Assisting companies in financial and tax planning
- Reviewing and developing insurance policies for unusual or catastrophic events
- Creating a new pension program for a business
- Advising on the benefits costs for labor union contract negotiations

The Society of Actuaries (SOA) is the professional organization for life actuaries and The Casualty Actuary Society (CAS) is the professional organization for casualty and property actuaries. Actuaries work in many capacities within insurance companies, consulting and accounting firms, private corporations, government agencies, and colleges and universities. They hold positions in general management, investments, research, long-range planning and accounting, marketing and underwriting.

Both life and casualty actuaries must pass a series of exams to achieve Associateship and then Fellowship in their respective society. The following exams can be applied toward credit for Associateship in both societies, SOA and CAS:

Exam 1: Mathematical Foundations of Actuarial Science

Exam 2: Interest Theory, Economics and Finance

Preparation for Exam 1: M261, ST420, ST430

Preparation for Exam 2: ECCC 202, ECCC 204, FIN 310, FIN 300

Students should have passed one or more exams by time of graduation, or shortly thereafter. Otherwise the chances for getting a starting actuary position might be diminished. Most insurance and consulting companies provide their employees with study time, study materials, and exam preparation courses. Many employers reward successful exam performance with a pay increase or bonus.

As active participants in the business and financial community, actuaries use many different skills on the job. They need analytical, financial, mathematical, and quantitative skills to solve certain business problems, while leadership abilities are a key to attaining top management positions. Communication skills are also important to the successful actuaries, since their work requires close interaction with both technical and non-technical people.

Actuaries must look at the overall picture, use hindsight and foresight as a guide before making a business decision. A degree in actuarial science, economics, mathematics, finance or statistics is considered good preparation for a career as an actuary. Courses in accounting, marketing, computer science, foreign languages, business writing, social sciences and speech are highly recommended.