

Actuarial Mathematics I, Math 630

- **Rationale**

The Math 630/631/632 is designed to introduce students to the mathematical content of the theory of life contingencies and financial economics. The sequence includes material from several new Examinations of the Society of Actuaries (SOA) and the Casualty Actuarial Society (CAS), especially Exam M. The sequence is required for the undergraduate major in actuarial science.

SOA and CAS recently enlarged its Exam M. New material on financial economics is added, and the exam is split into two parts, Exam MLC (life contingency) and Exam MFE (financial economics). To reflect this change in Exam M, the number of credits of each course in the sequence needs to be increased from 3-credit to 4-credit. The old material of the sequence is redistributed to 630, 631 and a third of 632, and two thirds of 632 is used to cover the new financial economics material.

- **Prerequisite**

Mathematics 618, and Mathematics 530 or Statistics 420 or Statistics 520 or equivalent; or permission of instructor. Math 618 can be taken concurrently with 630.

- **Text**

Actuarial Mathematics, 2nd edition, Newton L. Bowers, Jr., et al, SOA, 1997.

- **Syllabus**

Week 1	Probability for the Age-at-Death, Life Tables
Week 2	The Deterministic Survivorship Group, Other Life Table Characteristics, Assumption for Fractional Ages
Week 3	Analytical Laws of Mortality, Select and Ultimate Tables
Week 4	Insurance Payable at the Moment of Death, and at the End of the Year of Death
Week 5	Differential Equations for Insurance Payable, Continuous Life Annuities, Discrete Life Annuities and m -thly Payments
Week 6	Apportionable Annuities-Due and Complete Annuities-Immediate
Week 7	Continuous and Discrete Premiums, m -thly Payment Premiums
Week 8	Apportionable Premiums, Accumulation Type Benefits
Week 9 & 10	Benefit Reserves

- **Grade**

Two midterms at 100 points each, and a final exam at 200 points. The course grade is based on the total 400 points.

- **Disability Statement**

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as

possible of their needs. The Office for Disability Services is located in f 50 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu>.

- **Academic Misconduct Statement**

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but riot limited to, cases of plagiarism arid dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee. For additional information, see the Code of Student Conduct (<http://studentaffairs.osu.edu/resource-csc.asp>).