

The University of Iowa
College of Liberal Arts and Sciences
Department of Statistics and Actuarial Science
ACTS:6160 (22S:171) Topics in Actuarial Science
2:30 - 3:20 PM MWF 30 SH **Fall Semester 2018**

Instructor: Dr. E.S.W. Shiu Office: 362 SH Phone: 335 2580 E-mail: elias-shiu@uiowa.edu
Office Hours: 10 – 11 AM Tuesday, Wednesday and Friday, or by appointment

Department: Statistics & Actuarial Science, 241 SH Phone: 335 2082

D.E.O.: Dr. Joseph B. Lang Phone: 335 0712 E-mail: joseph-lang@uiowa.edu

Prerequisites: C+ or better in 22S:181 (ACTS:4180) and 22S:183 (ACTS:4380)

Various journal papers will be distributed later. The following are useful references.

H.H. Panjer (editor) (1998) *Financial Economics: With Applications to Investments, Insurance, and Pensions*. The Actuarial Foundation. This was a textbook for the old Exam 6.

R.L. McDonald (2013) *Derivatives Markets*, 3rd edition, Pearson. A textbook for Exam IFM.

J. Berk and P. DeMarzo (2017) *Corporate Finance*, 4th edition, Pearson. A textbook for IFM.

R. Feng (2018) *An Introduction to Computational Risk Management of Equity-Linked Insurance*, Chapman & Hall.

Lo, A. (2018) *Pricing Derivatives*, Chapman & Hall.

Luenberger, D. (1997) *Investment Science*, Oxford University Press.

Topics:

Fundamental Theorem of Asset Pricing

Method of Esscher Transforms

Risk-Neutral (Equivalent Martingale Measure) Pricing

Pricing Compound Options and Multi-Asset Options

Portfolio Theory

Asset Pricing Models

Brownian Motion and Black-Scholes Equation

American Options; Closed-Form Formulas for the Perpetual Case

Adjustment Coefficient

Barrier Options and Their Use in Modeling Policy Lapses and Surrenders

Interest Rate Risk Management, Redington's Theory of Immunization and its Generalization

Applications to Insurance/Annuity Products: SPDAs, Variable Annuities, Equity-Indexed

Annuities, Fair Value of Liabilities, Reserving Issues

There will be two Friday evening midterm exams, October 12 (Friday) and November 16 (Friday), 6:30 to 8:30 pm, C125 PBB. You are to use an official SOA calculator.

Tentatively, the final grade (H.W. 8% + Exams 28% + 28% + 36%) will be assigned as follows: C–[59.5, 64); C[64, 68.5); C+[68.5, 73); B–[73, 77.5); B[77.5, 82); B+[82, 86.5); A–[86.5, 91); A[91, 95.5); A+[95.5, 100]

Administrative Home

The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at <https://clas.uiowa.edu/students/handbook>.

Electronic Communication

University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences ([Operations Manual, III.15.2](#), k.11).

Accommodations for Disabilities

The University of Iowa is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (which includes but is not limited to mental health, attention, learning, vision, and physical or health-related conditions). A student seeking academic accommodations should first register with Student Disability Services and then meet with the course instructor privately in the instructor's office to make particular arrangements. Reasonable accommodations are established through an interactive process between the student, instructor, and SDS. See <https://sds.studentlife.uiowa.edu/> for information.

Nondiscrimination in the Classroom

The University of Iowa is committed to making the classroom a respectful and inclusive space for all people irrespective of their gender, sexual, racial, religious or other identities. Toward this goal, students are invited to optionally share their preferred names and pronouns with their instructors and classmates. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University's Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity, diversity@uiowa.edu, or visit diversity.uiowa.edu.

Academic Honesty

All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College's [Code of Academic Honesty](#): "I pledge to do my own academic work and to excel to the best of my abilities, upholding the [IOWA Challenge](#). I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled ([CLAS Academic Policies Handbook](#)).

CLAS Final Examination Policies

The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. No exams of any kind are allowed during the last week of classes. All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of a final exam.

Making a Suggestion or a Complaint

Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident (CLAS [Academic Policies Handbook](#)).

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI [Office of the Sexual Misconduct Response Coordinator](#) for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather

In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the [Department of Public Safety website](#)