



THE UNIVERSITY OF IOWA
DEPARTMENT OF STATISTICS & ACTUARIAL SCIENCE

ACTS:4150 Fundamentals of Short-Term Actuarial Math
Spring 2024
12:30 p.m.–1:20 p.m., MWF, 3 SH

Course Syllabus

Contact Information

Instructor: Dr. Zhiwei (Josh) Tong

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Held in person unless otherwise announced. Also available by appointment.

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Course Description and Objectives

This course covers the actuarial mathematics, statistics, and models used in non-life insurance practice. Topics covered in this course include: severity, frequency, and aggregate models; parametric estimation; an introduction to credibility; pricing and reserving for short-term insurance coverages; survival estimation; option pricing fundamentals. The assumed knowledge for this course is a good understanding of mathematical statistics, calculus, and linear algebra.

This course is part of the SOA University-Earned Credit (UEC) program at the University of Iowa. For more information on the UEC program, see [this website](#), and for more information on Exam FAM, see [this website](#).

Course Materials

Lecture notes containing the most important materials will be posted on **ICON** (<http://icon.uiowa.edu>). Please **print out and bring** a copy of the lecture notes for each class meeting. Keep an eye on ICON also for announcements, homework assignments, exam schedules, etc.

Some study manuals can greatly help to deepen your understanding. SOA sample questions are useful for preparing for the exams of this course. Recommended but not required textbooks for this course are

1. Klugman, S.A., Panjer, H.H., and Willmot, G.E. (2019). *Loss Models: From Data to Decisions* (5th ed.). Wiley. ISBN: 978-1-119-52378-9.
2. Brown, R.L. and Lennox, W.S. (2022). *Introduction to Ratemaking and Loss Reserving for Property and Casualty Insurance* (5th ed.). ACTEX. ISBN: 978-1-64756-787-3.

The University System

Final course grades will be assessed based on your performance in the following activities:

Item	Weight	Schedule
Attendance	5%	Attendance and active engagement are encouraged
Assignments	24%	7 assignments spread throughout the semester
Quizzes	20%	5 quizzes spread throughout the semester
Midterm	16%	Between March 4 and 8
Final	35%	Between May 6 and 10

- **Attendance: 5%**

Your active attendance and engagement may have a positive effect on your final grade.

- **Assignments: 24%**

There will be an assignment every two weeks, totaling seven assignments throughout the entire semester. Assignments will be released on Fridays and will be due the following Friday. Your solutions are to be scanned and submitted via ICON. Late submissions will only be accepted at the instructor’s discretion. Discussion with fellow classmates is encouraged, but the work you submit must ultimately be your own. The lowest assignment score for each student will be dropped when calculating both the final university grade and UEC grade.

- **Quizzes: 20%**

There will be five 20-minute open-book quizzes. They are tentatively scheduled during class on the Mondays of Teaching Weeks 4, 6, 10, 12, and 14, respectively. The purpose of these quizzes is to encourage regular study.

- **Midterm Examinations: 16%**

There will be a 45-minute, open-book midterm examination, tentatively scheduled for Teaching Week 7. The exact date will be announced later in class and on ICON.

- **Final Examination: 35%**

There will be a comprehensive, 2-hour **closed-book** final examination. It is scheduled to take place during the University Final Exam Week (May 6–10, 2024). The exact schedule will be announced in class and on ICON once it has been finalized by the Registrar.

Any schedule changes will be communicated both during class and on ICON. If a specific evaluation item is missed due to unforeseen and unavoidable circumstances, scores from the other evaluation items will be weighted more heavily towards the final grade calculation.

Grading scheme. Plus/minus grades will be given in this course, and undergraduate and graduate students will be treated as two separate groups when it comes to assigning final grades. An *approximate* guide is as follows:

Undergraduate students		
A- [85,90)	A [90,95)	A+ [95,100]
B- [70,75)	B [75,80)	B+ [80,85)
C- [55,60)	C [60,65)	C+ [65,70)
D- [40,45)	D [45,50)	D+ [50,55)
F [0,40)		

Graduate students		
A- [86.5,91)	A [91,95.5)	A+ [95.5,100]
B- [73,77.5)	B [77.5,82)	B+ [82,86.5)
C- [59.5,64)	C [64,68.5)	C+ [68.5,73)
D- [46,50.5)	D [50.5,55)	D+ [55,59.5)
F [0,46)		

The UEC Grading System

A different grading system will be adopted for calculating the UEC score. This system will only take into account the scores from the assignments and the final examination. The assignments will account for 20% of the score, while the final examination will account for the remaining 80%. To obtain the UEC credit, a minimum UEC score of 85% is required.

Miscellaneous

Academic Honesty and Misconduct

All students in CLAS courses are expected to abide by the CLAS Code of Academic Honesty. Undergraduate academic misconduct must be reported by instructors to CLAS according to these procedures. Graduate academic misconduct must be reported to the Graduate College according to Section F of the Graduate College Manual.

Student Complaints

Students with a complaint about a grade or a related matter should first discuss the situation with the instructor, and finally with the Director or Chair of the school, department, or program offering the course.

Undergraduate students should contact CLAS Undergraduate Programs for support when the matter is not resolved at the previous level. Graduate students should contact the CLAS Associate Dean for Graduate Education and Outreach and Engagement when additional support is needed.

Drop Deadline for this Course

You may drop an individual course before the deadline; after this deadline you will need collegiate approval. You can look up the drop deadline for this course here. When you drop a course, a “W” will appear on your transcript. The mark of “W” is a neutral mark that does not affect your GPA. Directions for adding or dropping a course and other registration changes can be found on the Registrar’s website. Undergraduate students can find policies on dropping CLAS courses here. Graduate students should adhere to the academic deadlines and policies set by the Graduate College.

Attendance and Absences

University regulations require that students be allowed to make up examinations that have been missed due to illness, religious holy days, military service obligations (including service-related medical appointments), or other unavoidable circumstances or University-sponsored activities.

Students with UI-authorized activities must discuss their absences with the instructor as soon as possible. Religious obligations must be communicated within the first three weeks of classes.

Exam Policies

Communication: UI Email

Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community. For the privacy and the protection of student records, UI faculty and staff can only correspond with UI email addresses.

Mental Health Resources and Student Support

Students are encouraged to be mindful of their mental health and seek help as a preventive measure or if feeling overwhelmed and/or struggling to meet course expectations. Students are encouraged to talk to their instructor for assistance with specific class-related concerns. For additional support and counseling, students are encouraged to contact University Counseling Service (UCS). Information about UCS, including resources and how to schedule an appointment, can be found at counseling.uiowa.edu. Find out more about UI mental health services at mentalhealth.uiowa.edu.

Student Care and Assistance provides assistance to University of Iowa students who are experiencing a variety of crisis and emergency situations, including but not limited to medical issues, family emergencies, unexpected challenges, and sourcing basic needs such as food and shelter. More information on the resources related to basic needs can be found at this website. Students are encouraged to contact Student Care & Assistance in the Office of the Dean of Students (Room 135 IMU, dos-assistance@uiowa.edu, or 319-335-1162) for support and assistance with resources.

University Policies

On this website, you will find the university course policies and resources for students. You will find information about the following topics:

- Free Speech and Expression
- Absences for Religious Holy Days
- Classroom Expectations
- Non-discrimination
- Sexual Harassment/Misconduct and Supportive Measures
- Sharing of Class Recordings

Accommodations for Students with Disabilities

The University is committed to providing an educational experience that is accessible to all. If a student has a diagnosed disability or other disabling condition that may impact the student's ability to complete the course requirements as stated in the syllabus, the student may seek accommodations through Student Disability Services (SDS). SDS is responsible for making Letters of Accommodation (LOA) available. The student must provide an LOA to the instructor as early in the semester as possible, but requests not made at least two weeks prior to the scheduled activity for which an accommodation is sought may not be accommodated. The LOA will specify what reasonable course accommodations the student is eligible for and those the instructor should provide. Additional information can be found on the SDS website.