University of Connecticut
Department of Mathematics

MATH 3639: Actuarial Loss Models

Spring 2026[1]

Lecture Time:	MoWe 3:35 pm – 4:50 pm
Lecture Room:	MONT 225 (Monteith)
Course Webpage:	HuskyCT `https://lms.uconn.edu/`
Instructor:	Bin Zou
Office:	MONT 428
Office Hours:	Wednesday 2:30 – 3:30 pm or by appointment (Webex)
Phone:	860 486 3921
E-mail:	bin.zou@uconn.edu
Webex Room:	`https://uconn-cmr.webex.com/meet/biz17006`
Personal Website:	`https://sites.google.com/site/zoubin019/`

Course Description

This course is an *introductory* course to non-life actuarial mathematics, and it is also a *core* course in actuarial science. It covers three essential topics: (see tentative plans for details) (1) loss models; (2) risk measures; (3) model construction and evaluation.

The topics covered by this course correspond to Topics 1–4 (severity models; aggregate models; coverage modifications; construction and selection of parametric models) in the SOA ASTAM Exam syllabus; see `https://www.soa.org/education/exam-req/edu-exam-astam/study/`.

Course Prerequisites

There are no official prerequisites for this course, although undergraduate level calculus, probability, and statistics are helpful.

Required Textbook

Tse, Yiu-Kuen, 2023. Nonlife Actuarial Models: Theory, Methods and Evaluation. Cambridge University Press, 2nd edition. ISBN: 9781009315081.

Accompanying book slides (for the first edition) can be downloaded from the link below: `http://www.mysmu.edu/faculty/yktse/NAM/NAMbase.htm`.

[1]This Version: January 19, 2026. Please check the course website on HuskyCT for the latest updates.

Course Materials

All the course materials (e.g., lecture slides, homework, etc.) will be posted on **HuskyCT**. Please visit the course website on HuskyCT regularly.

I taught MATH5639 (graduate version of this course) virtually in Fall 2020 and all the course materials can be accessed here: `https://sites.google.com/site/zoubin019/teaching/math-5639-actuarial-loss-models`.

Grade Evaluation

There are **three** independent components that contribute to the grade of this course. Please see Table 1 for details.

Component	Weight	Remarks	Tentative Date
Homework	30%	about one per Chapter	see each HW
Midterm Exam	25%	Chapters 1-3	TBA
Final Exam	45%	All covered chapters	TBA

Table 1: Grading Components of the Course

- **Homework Assignments**

  There will be around 6-7 homework assignments, approximately **one per chapter** (or topic). Due dates and total points will be specified in the instructions of each homework.

  In calculating the homework scores, the **worst** performance will be dropped out. Therefore, the final homework score is computed as follows (capped at 30):

$$\min\left\{\frac{\text{Sum of your best } (N-1) \text{ homework scores}}{100\times(N-1)},\ 100\%\right\}\times 30,$$

  in which N is the total number of homework.

  Note 1. Your homework submission should represent your own *independent* work. Any form of collaboration is forbidden. However, you may ask me for hints, if needed.

  Note 2. The due time is often the starting time of a lecture day, so the best way is to submit your work in person to me on that day. However, if you cannot come to that lecture, please notify me ahead and submit your homework online, as a **single pdf**, via HuskyCT.

  Note 3. The total points of each homework may vary but will likely exceed 100 (since there may be bonus points).

  Note 4. All deadlines are based on Eastern time (local CT time). Late submissions, within 24 hours, will be graded with a discount of 80%. Submission late for more than 24 hours will receive 0 credit.

Note 5. In principle, there is **no** make-up homework. Please be noted again that you do have one chance for missing homework, since the worst performance will be dropped.

- **Midterm Exam**

  This course has **one** Midterm exam, and it will take place **in class**, for a total of 75 minutes. This exam covers Chapters 1-3 from the required textbook, so please expect it shortly after we finish Chapter 3.

- **Final Exam**

  This course has **one** Final exam, and it will take place in the exam week, with the exact time and date set by the UConn Registry Office. All materials covered in this course may be tested in the Final exam.

  Detailed information about the two exams will be posted on HuskyCT, about one week ahead of their dates.

Tentative Plans

I plan to cover the following chapters from the required textbook:

- Chapter 1: Claim-frequency distribution
- Chapter 2: Claim-severity distribution
- Chapter 3: Aggregate-loss models
- Chapter 4: Risk measures
- Chapter 10: Model estimation and types of data
- Chapter 11: Nonparametric model estimation
- Chapter 12: Parametric model estimation
- Chapter 13: Model evaluation and selection

Communications

The **best way** to contact me is via email **bin.zou@uconn.edu**.
I recommend you put **MATH 3639** in the email **subject line** and use UConn email for all communications.
It is your responsibility to check your UConn email on a regular basis for important announcements. I also highly recommend you turn on the "notification" function on HuskyCT, so that every time I post an announcement, you will receive a notification email from the system.

Course Feedback

Your feedback is always welcome and appreciated. If you have any comments or suggestions, which you think may help improve the lecture quality and learning outcome, please do not hesitate to contact me, either via email or in person.

Academic Integrity

A fundamental tenet of all educational institutions is academic honesty; academic work depends upon respect for and acknowledgment of the research and ideas of others. Misrepresenting some-one else's work as one's own is a serious offense in any academic setting and it will not be condoned.

Academic misconduct includes, but is not limited to, providing or receiving assistance in a manner not authorized by the instructor in the creation of work to be submitted for academic evaluation (e.g. papers, projects, and examinations); any attempt to influence improperly (e.g. bribery, threats) any member of the faculty, staff, or administration of the University in any matter pertaining to academics or research; presenting, as one's own, the ideas or words of another for academic evaluation; doing unauthorized academic work for which another person will receive credit or be evaluated; and presenting the same or substantially the same papers or projects in two or more courses without the explicit permission of the instructors involved.

A student who knowingly assists another student in committing an act of academic misconduct shall be equally accountable for the violation, and shall be subject to the sanctions and other remedies described in The Student Code.

Policy Against Discrimination, Harassment and Related Interpersonal Violence

The University is committed to maintaining an environment free of discrimination or discriminatory harassment directed toward any person or group within its community - students, employees, or visitors. Academic and professional excellence can flourish only when each member of our community is assured an atmosphere of mutual respect. All members of the University community are responsible for the maintenance of an academic and work environment in which people are free to learn and work without fear of discrimination or discriminatory harassment. In addition, inappropriate amorous relationships can undermine the University's mission when those in positions of authority abuse or appear to abuse their authority. To that end, and in accordance with federal and state law, the University

prohibits discrimination and discriminatory harassment, as well as inappropriate amorous relationships, and such behavior will be met with appropriate disciplinary action, up to and including dismissal from the University. Additionally, to protect the campus community, all non-confidential University employees (including faculty) are required to report sexual assaults, intimate partner violence, and/or stalking involving a student that they witness or are told about to the Office of Institutional Equity. The University takes all reports with the utmost seriousness. Please be aware that while the information you provide will remain private, it will not be confidential and will be shared with University officials who can help. More information is available at `equity.uconn.edu` and `titleix.uconn.edu`.

Students with Disabilities

In compliance with University of Connecticut policy and equal access laws, I am available to discuss appropriate accommodations that you may require as a student with a disability. Please consult the Center for Students with Disabilities, see `http://csd.uconn.edu/`.

Code of Conduct for candidates

This course prepares students for a professional examination administered by the Society of Actuaries (SOA) for which credit is also awarded by the Casualty Actuarial Society (CAS). Actuarial Candidates, as defined by these organizations, must adhere to the Code of Conduct for Candidates (SOA) and Code of Professional Ethics for Candidates (CAS).

Resources

- If you experience distress, please find support through the Student Health and Wellness-Mental Health. They are located in Storrs on the main campus in the **Arjona Building, 4th Floor**, or contact the office at **(860) 486-4705**, or `https://studenthealth.uconn.edu/` for services or questions.
- Dean of Student Office [Link]
- Writing Center [Link]
- Student Responsibilities [Link]
- Quantitative Learning Center [Link]