

MATH 417C SHORT-TERM ACTUARIAL MATHEMATICS III
SPRING 2020 (April 8 – June 8)

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Virtual Office Hours: MW 12-12:40PM and by email

Required Text: *Loss Models: From Data to Decisions*, Fifth Edition, 2019, by Klugman, Panjer, and Willmot, Wiley, ISBN: 978-1-119-52378-9. This quarter we'll be covering Chapter 15. You may also use the fourth edition of *Loss Models*, but it is your sole responsibility to make sure that the corresponding chapters and homework problems are consistent with the fifth edition.

Optional Text: *Introduction to Ratemaking and Loss Reserving for Property and Casualty Insurance*, Fourth Edition, 2015, by Brown and Lennox, ACTEX, ISBN: 978-1625424747. This quarter we'll be covering Chapter 2, 3, 4, and 5.

Course Description: Mathematical tools for short-term insurance, including construction and selection of parametric models and credibility procedures.

Course Goals: Upon successful completion of this course, the student will be able to:

- Compare and contrast different types of short-term insurance and forms of reinsurance.
- Compare and contrast the different forms of experience rating.
- Estimate unpaid losses for short-term insurance.
- Evaluate premiums using pure premium and loss ratio methods.
- Design an appropriate actuarial model for a given situation or application.
- Assess the appropriateness of an actuarial model for a given application.

Prerequisite: MATH 417B

Course Assessment: Your overall grade will be determined by the following:

- Two midterm exams (35% total); tentative dates: Between Week 4 – Week 5 and between Week 8 – Week 9. Exact dates will be announced at least a week ahead.
- Comprehensive final exam (25%); given during finals week. Exact dates will be announced at least a week ahead.
- Homework (40%); see below for more information.

Course grades will be assigned based upon the following scale:

93-100%=A 90-92.9%=A- 87-89.9%=B+ 83-86.9%=B 80-82.9%=B- 77-79.9%=C+ 73-76.9%=C
70-72.9%=C- 67-69.9%=D+ 63-66.9%=D 60-62.9%=D- below 60%=F

The instructor reserves the right to adjust the above scale (in the student's favor) if deemed appropriate.

Course structure:

Every week, lecture videos will be posted on Canvas via Panopto. Go to the Math 417C course in Canvas and click "Panopto Recordings" on the left navigation menu. The corresponding slides will be posted on Canvas under "Files". Please watch these videos before attempting the weekly homework assignments.

Homework must be done neatly and submitted through Canvas as a single pdf file. Many smartphones have built-in functions to convert pictures to pdf files. In addition, here is a list of some apps with scanning capability: Adobe Scan, Cam Scanner, Microsoft Office Lens, Tiny Scanner. Your work should be clear, in a logical order, and provide sufficient explanation. Credit will not be given for late homework. You are welcome to work with others and to consult books, but your solutions must be written up in your own words. All your collaborators and sources should be listed. Credit will not be given to any party for work which is identical.

Weekly office hours will be administered via Blackboard Ultra. Go to the Math 417C course in Canvas, click "Blackboard Ultra" on the left navigation menu, click on "Short-Term Actuarial Math III-Course Room", and follow prompts to join session.

Spring 2020 resources: The math department maintains a list of resources for this unusual spring quarter:
<https://www.cwu.edu/math/spring-2020-resources-students>

Required calculator: A scientific or graphing calculator is also required. If you are planning to take Exam STAM (see below), some recommended calculators are TI-30Xa, TI-30X II (IIS solar or IIB battery), or TI-30XS MultiView (or XB).

Exam STAM: The 417ABC sequence covers the SOA Exam STAM material. For more information regarding Exam STAM, see <https://www.soa.org/education/exam-req/edu-exam-stam-detail>

Exams: Any changes to the tentative exam schedule will be announced in advance. Make-up arrangements must be made at least three days prior to an exam unless you can document an unexpected circumstance beyond your control that prevented you from taking the exam.

Academic Honesty: Consult university policies ([CWUP 5-90-040\(22\)](#), [CWUR 2-90-040\(22\)](#), and [WAC 106-125-020](#)) for student conduct, cheating, plagiarism, and other academic expectations. CWU's policies and recommendations for academic misconduct will be followed, leading to disciplinary action up to and including failing the course.

Diversity Statement: CWU expects every member of the university community to contribute to an inclusive and respectful culture for all in its classrooms, work environments, and at campus events. As a student in this course, you are expected to treat your professors, fellow students, and other people affiliated with your work at CWU with respect, regardless of their sex, race and color, religion and creed, national origin, sexual orientation, gender identify and gender expression, disability and use of assistive devices or a service animal, and veteran or military status.

Disability Support Services: CWU is committed to creating a learning environment that meets the needs of its diverse student body. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations: Hogue Hall 126, (509) 963-2214, ds@cwu.edu

Religious Holiday Absences: In compliance with RCW 28B.137.010, CWU makes every effort to deal reasonably and fairly with students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Students must present written notice to their instructor within the first two weeks of class listing the specific dates on which accommodations are required. Contact the Dean of Student Success at (509) 963-1515 for further information or questions.

Expectations for Student Conduct: Students in this class are expected to interact with students and the professor professionally. Instances of disruptive conduct¹, obstructive conduct¹, or harassment² will be referred to the Dean of Student Success.

The instructor reserves the right to change the policies contained in this syllabus as dictated by developments during the quarter. Changes will be announced via email and on Canvas.

1. Per WAC 106-125-020, the term "disruptive" or "obstructive" conduct means conduct, not protected by law, that interferes with, impedes, or otherwise unreasonably hinders the normal teaching, learning, research, administrative, or other functions, procedures, services, programs, or activities of the university. The term includes disorderly conduct, breach of the peace, violation of local or university noise policies, lewd or obscene conduct, obstruction of pedestrian or vehicular traffic, tampering with student election processes, or interfering with the orderly conduct of university investigations or disciplinary proceedings, including interfering with or retaliating against any witness, party, or other participant.
2. The term "harassment" means unwelcome and offensive conduct, including verbal, nonverbal, or physical conduct, that is directed at a person because of such person's protected status and that is sufficiently serious as to deny or limit the ability of a student to participate in or benefit from the university's educational program, or that creates an intimidating, hostile, or offensive environment for any campus community member(s). Protected status includes a person's actual or perceived race, color, national origin, gender, disability, or other status protected by law.