

MATH 419C LONG-TERM ACTUARIAL MATHEMATICS III
SPRING 2019 (Mar 26 – May 31)
MWF 11 - 11:50am in SAMUELSON 117

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Office Hours: MWF 12-1pm and by appointment

Required Text: Dickson, D. C., Hardy, M., Hardy, M. R., & Waters, H. R. (2013). *Actuarial mathematics for life contingent risks*. Second edition. Cambridge University Press. We'll be covering Chapters 9, 10, and 12 this quarter.

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

- Compare and contrast long-term coverages in insurance (life, health, general) and retirement benefits (pensions, retiree health care).
- Estimate survival models using nonparametric methods.
- Formulate Markov chain survival models.
- Estimate model quantities using approximations for fractional ages.
- Design an appropriate actuarial model for a given situation or application.
- Assess the appropriateness of an actuarial model for a given application.

Prerequisite: MATH 419B or permission.

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

- Two in-class exams (35% total); tentative dates: Mon, April 22 and Mon, May 20
- Comprehensive final exam (25%); given Fri, June 7, from 8 – 10am
- Homework (30%)
- Group project and presentation (10%); 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.

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

Exam LTAM: The 419ABC sequence covers the SOA Exam LTAM material. For more information regarding Exam LTAM, see <https://www.soa.org/Education/Exam-Req/edu-exam-ltam-detail.aspx>

Homework: Weekly homework will be assigned in class. Due dates will be announced at the time of the assignment. Homework must be done neatly, stapled, and written on clean-edged paper. Your work should be clear, in a logical order, and provide sufficient explanation. Credit will not be given for late homework. Collaboration on homework is permitted, but **copying is not permitted. You must write up every problem on your own**, even if you worked with others to figure it out. Credit will not be given to any party for work which is identical.

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

Group Project and Presentation: During this quarter, you will be given an advanced topic in life insurance (such as variable annuities, Lee-Carter model, chain ladder method, Solvency 2, etc.) and a corresponding journal article. Your project will involve doing background research on this topic, reading and understanding this paper, summarizing the paper, performing mathematical or statistical analysis as outlined in the paper, and preparing slides for a presentation of the topic and paper. More details will be given later in the quarter.

Other Information: Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning, discuss your concerns with the instructor. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information.

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