

Michigan State University
STT 455 Actuarial Models I
Fall 2019

Instructor: Haiyan Liu

Office: C344 Wells Hall

Office hours: 4:00pm - 5:00pm, M W

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Lectures: 3:00pm - 3:50pm, M W F, A130 Wells Hall

Prerequisites: STT 441 (Probability) and MTH 360 (Financial Mathematics I)

Required Textbook: The primary source of material will be blackboard notes delivered in class. The sources for the notes will be the **required** textbook *Actuarial Mathematics for Life Contingent Risks* (second edition) by David C. M. Dickson, Mary R. Hardy and Howard R. Waters.

A recommended website is <https://users.math.msu.edu/users/valdezea/stt455f14/index.html> created by Emil Valdez.

A recommended reference book for this course is Actuarial Mathematics (Second Edition) by Bowers, N.L., Gerber, H.U., Hickman, J.C., Jones, D.A., and Nesbitt, C. J.

Course Objective: The objective of this course is to learn how to calculate and estimate the distribution of the future lifetime of an individual, how to value life insurance benefits and life annuities, and learn the premium calculation for insurance policies and annuities.

Topics and tentative schedule:

1. Survival models (Chapter 2, Weeks 1-3)
2. Life tables (Chapter 3.1-3.9, Weeks 4-5)
3. Insurance benefits (Chapter 4 excluding the 1/mthly case, Weeks 6-8)
4. Annuities (Chapter 5.1-5.5, 5.8-5.10, Weeks 9-11)
5. Premiums (Chapter 6.1-6.8, Weeks 12-14)

Homework:

Homework 1	Monday, 9/30
Homework 2	Monday, 10/28

- Homework will be handed in for grading. Group study is encouraged but the homework submitted must be **in your own words**.
- Homework should be handed in to the instructor at the **beginning** of the class on the due date. **Late submission** of homework will **not** be accepted.

In-class Quiz:

- There will be five in-class quizzes and one question in each quiz. The quizzes will be graded by yourself in class, and handed in to the instructor after class.
- Schedule: At the beginning of classes (3:00pm-3:10pm) on the following dates:
9/11, 9/25, 10/9, 10/23, 11/6

Examinations:

	Exam 1	Exam 2	Exam 3
Date	Friday 10/4	Friday 11/1	Friday 12/6
Time	3:00pm - 3:50pm	3:00pm - 3:50pm	3:00pm - 3:50pm
Location	A130 Wells Hall	A130 Wells Hall	A130 Wells Hall

- All exams are closed-book. You may bring in one “cheat-sheet” for each exam. These are to be no larger than a standard sheet of notebook paper (roughly size A4 printer paper), must be hand-written, and you may use both sides. Phones, tablets, computers, classmates, or other aids are prohibited.
- There will be no final exam.
- Any student unable to attend the exam through illness should provide a medical certificate as soon as possible after the exam. Make-up exam will be provided for students with a legitimate excuse. You will get zero grade if you miss exams without a legitimate excuse.

Assessment:

Homework	In-class Quiz	Exam 1	Exam 2	Exam 3
10% (5% each)	10%(2% each)	25%	25%	30%

The final score will be converted into grades according to the following grading scale.

Grade	4.0	3.5	3.0	2.5	2.0	1.5	1.0
Score	90%-100%	85%-89%	80%-84%	75%-79%	70%-74%	65%-69%	60%-64%

Resource for Persons with Disabilities (RCPD):

- To make an appointment with a specialist, contact:
(517) 353-9642 or TTY: (517) 355-1293
- Web site for RCPD: <http://MYProfile.rcpd.msu.edu>

Academic Honesty:

Article 2.3.3 of the Academic Freedom Report states that “The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards.” In addition, the (insert name of unit offering course) adheres to the policies on academic honesty as specified in General Student Regulations 1.0, Protection of Scholarship and Grades; the all-University Policy on Integrity of Scholarship and Grades; and Ordinance 17.00, Examinations. (See [Spartan Life: Student Handbook and Resource Guide](#) and/or the MSU Web site: <https://msu.edu>.) Therefore, unless authorized by your instructor, you are expected to complete all course assignments, including homework, lab work, quizzes, tests and exams, without assistance from any source. You are expected to develop original work for this course; therefore, you may not submit course work you completed for another course to satisfy the requirements for this course. Also, you are not authorized to use the www.allmsu.com Web site to complete any course work in this course. Students who violate MSU academic integrity rules may receive a penalty grade, including a failing grade on the assignment or in the course. Contact your instructor if you are unsure about the appropriateness of your course work. (See also the [Academic Integrity](#) webpage.)