

ACTS:4130 - Quantitative Methods for Actuaries

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Course Schedule: 2:30–3:20 P.M., Monday, Wednesday and Friday, 40 SH

Office Hours: 1:30–2:20 P.M. on Monday, Wednesday and Friday, or by appointment

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Course Description

This course is designed to build up a foundation for B.S. and M.S. students in Actuarial Science. It covers two separate parts:

1. Preparation for Life Contingencies

In the first part, after reviewing some basics in probability theory including conditional probability, conditional expectation, we shall develop a probabilistic framework that is crucial to valuing contingent cash flows required in SOA Exam MLC (Models for Life Contingencies). Topics include survival models, life tables, and insurance benefits. These topics will prepare you to take the two follow-up courses in life contingencies.

2. Probability Models

In the second part, we shall review and learn a bit more advanced topics including Markov chains, the exponential distribution, and the Poisson process. These will be important for you to take various future courses in Actuarial Science. They are specifically required by SOA Exam MLC (Models for Life Contingencies) and CAS Exam S (Statistics and Probabilistic Models).

Textbooks

- Dickson, David C. M.; Hardy, Mary R.; Waters, Howard R. Actuarial Mathematics for Life Contingent Risks (2nd Edition), 2013. [Its solutions manual is available.]

Chapter 1: Introduction to Life Insurance

Chapter 2: Survival Models

Chapter 3: Life Tables and Selection

Chapter 4: Insurance Benefits

- Ross, Sheldon M. Introduction to Probability Models (11th edition), 2014.
Chapter 3: Conditional Probability and Conditional Expectation
Chapter 4: Markov Chains
Chapter 5: The Exponential Distribution and the Poisson Process

Evaluation System

Everyone needs to be aware that absence from classes without a reason can affect the final grade. You will find that problems from the textbook and the past SOA exams are useful in preparing for exams of this course. You are to use a CAS/SOA approved calculator during all exams of this course.

1. Homework: 15%

Normally, I assign the questions every Monday and ask you to hand in your solutions at the beginning of the class on the following Monday. You are always welcome to discuss homework problems with me during my office hours or by appointment. You are also encouraged to discuss homework problems with other students. However, **what you hand in must ultimately be your own work.**

2. Midterm: 40%

It is a closed-book exam consisting of short-answer type questions. The schedule of this midterm is: 6:30-8:30 PM, Tuesday, October 10, 2017, Room W128 CB

3. Final: 45%

Similar to the midterm, the final exam is closed-book and consists of short-answer type questions. Its schedule will be announced later by the Registrar.

4. Grading

Tentatively, the final grade for graduate students will be assigned according to

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

and the final grade for undergraduate students will be assigned according to

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

This is not an absolute scale and may be slightly adjusted depending on the situation.

For the CLAS (College of Liberal Arts and Sciences) policies and procedures, please click: <http://clas.uiowa.edu/faculty/teaching-policies-resources-syllabus-insert>