

ACTS:4280 Life Contingencies II
The University of Iowa
The College of Liberal Arts and Sciences
Fall Semester 2025

Course meeting time and place MWF 12:30 to 1:20 pm 14 SH

Department of Statistics & Actuarial Science

<https://stat.uiowa.edu/>

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Student Drop-in Hours: 2 to 3:30 pm TTh, or by appointment.

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Student Complaints Students with a complaint about a grade or a related matter should first discuss the situation with the instructor and finally with the DEO (Chair) of the department, school or program offering the course. Sometimes students will be referred to the department or program's Director of Undergraduate Studies (DUS) or Director of Graduate Studies (DGS). Undergraduate students should contact [CLAS Undergraduate Programs](#) for support when the matter is not resolved at the previous level. Graduate students should contact the [CLAS Graduate Affairs Manager](#) when additional support is needed.

Course's College (Administrative Home) The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the add and drop deadlines, academic misconduct policies, and other undergraduate policies and procedures. Other UI colleges may have different policies.

Drop Deadline for this Course You may drop an individual course before the drop deadline; after this deadline you will need collegiate approval. You can look up the **drop deadline for this course** [here](#). When you drop a course, a "W" will appear on your transcript. **The mark of "W" is a neutral mark that does not affect your GPA. To discuss how dropping (or staying in) a course might affect your academic goals, please contact your Academic Advisor.** Directions for adding or dropping a course and other registration changes can be found on the [Registrar's website](#). Undergraduate students can find policies on dropping CLAS courses [here](#). **Graduate students should adhere to the [academic deadlines](#) and policies set by the Graduate College.**

UI Email Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community. For the privacy and the protection of student records, UI faculty and staff can only correspond with UI email addresses.

Textbooks/Material The required textbook is *Actuarial Mathematics for Life Contingent Risks*, 3rd ed (2020), by D.C.M. Dickson, M.R. Hardy, and H.R. Waters, Cambridge University Press. We also study the SOA publication "Variable Annuity Guarantees" ALTAM-21-23. For option-pricing theory, we use John Hull's *Options, Futures, and Other Derivatives*, a textbook for FSA Exam INV 201 Quantitative Finance.

Description of Course This course is based on the syllabus for the Advanced Long-term Actuarial Mathematics (ALTAM) exam of the SOA. We shall cover AMLCR's Chapters 8, 9, 10, 11 (but not Sec. 11.12), 13 (up to and including Sec. 13.6), 14, 17 (up to and including Sec. 17.6), and Sections 3.4, 3.10, 7.2.4, 7.4, 15.2, 15.3, 18.5, 18.6, in addition to the "Variable Annuity Guarantees" study note.

Learning Outcomes The course endeavors to help students

- understand key concepts concerning estimation and construction of multiple state mortality/morbidity and individual/joint life models for insurance and annuity contracts, including calculations involving the present value random variables associated with benefits and expenses for single life, joint life, CCRCs, or other state-dependent insurance and annuity contracts;
- analyze emerging surplus, and to set premiums and reserves, using profit testing;
- understand how retirement benefits are accrued, valued, and funded;
- understand the policy design and benefits of Universal Life contracts and be able to assess and quantify account values, premiums, and reserves;
- understand various types of equity-linked life insurance guarantees, options that are embedded in life insurance and annuity contracts, and be able to price, reserve, and hedge the risk inherent in these options based on the Black-Scholes option-pricing model.

Course ICON site

To access the course site, log into [Iowa Courses Online \(ICON\)](#) using your Hawk ID and password.

Grading System There will be two Friday midterm exams (6:30 to 8:30 pm), October 10 and November 14, in Room S107 PBB. The **final** examination, which is **cumulative** (covering material from throughout the course), will be held in the week of December 15. All exams are closed book and closed note; no crib sheets are allowed. You are to use an SOA-approved calculator. Tentatively, your numerical grade will be calculated by the formula,

HW 7% + Midterm Exams 25% + 25% + Final Exam 43%,

and translated to a University of Iowa grade as follows:

Undergraduates 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]

Graduate students 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]

The formula for SOA's UEC score is: HW 20% + Final Exam 80%.

To get ALTAM credit from the SOA, you need to achieve 85% or better. Note that your midterm exam marks contribute to your University of Iowa grade, but **not** to the SOA UEC score.

Attendance and Accommodations

Absences from Class University regulations require that students be allowed to make up examinations which have been missed due to illness, religious holy days, military service obligations, including service-related medical appointments, jury duty, or other unavoidable circumstances or other university-sponsored activities. Students should work with their instructors regarding making up other missed work, such as assignments, quizzes, and classroom attendance.

Absences for Religious Holy Days The university is prepared to make reasonable accommodations for students whose religious holy days coincide with their classroom assignments, test schedules, and classroom attendance expectations. Students must notify their instructors in writing of any such religious holy day conflicts or absences within the first few days of the semester or session, and no later than the third week of the semester. If the conflict or absence will occur within the first three weeks of the semester, the student should notify the instructor as soon as possible. See [Policy Manual 8.2 Absences for Religious Holy Days](#) for additional information.

Absences for Military Service Obligations Students absent from class or class-related requirements due to U.S. veteran or U.S. military service obligations (including military service-related medical appointments, military orders, and National Guard Service obligations) shall be excused without any grading adjustment or other penalty. Instructors shall make reasonable accommodations to allow students to make up, without penalty, tests and assignments they missed because of veteran or military service obligations. Reasonable accommodations may include making up missed work following the service obligation; completing work in advance; completing an equivalent assignment; or waiver of the assignment without penalty. In all instances, students bear the responsibility to communicate with their instructors about such veteran or military service obligations, to meet course expectations and requirements.

Accommodations for Students with Disabilities The University is committed to providing an educational experience that is accessible to all students. If a student has a diagnosed disability or other disabling condition that may impact the student's ability to complete the course requirements as stated in the syllabus, the student may seek accommodations through [Student Disability Services](#) (SDS). SDS is responsible for making [Letters of Accommodation \(LOA\)](#) available to the student. **The student must provide an LOA to the instructor as early in the semester as possible, but requests not made at least two weeks prior to the scheduled activity for which an accommodation is sought may not be accommodated.** The LOA will specify what reasonable course accommodations the student is eligible for and those the instructor should provide. Additional information can be found on the [SDS website](#).

Other Expectations of Student Performance

Free Speech and Expression The University of Iowa supports and upholds the First Amendment protection of freedom of speech and the principles of academic and artistic freedom. We are committed to open inquiry, vigorous debate, and creative expression inside and outside of the classroom. Visit the [Free Speech at Iowa website](#) for more information on the university's policies on free speech and academic freedom.

Non-discrimination Statement The University of Iowa prohibits discrimination in employment, educational programs, and activities on the basis of race, creed, color, religion, national origin, age, sex, pregnancy (including childbirth and related conditions), disability, genetic information, status as a U.S. veteran, service in the U.S. military, sexual orientation, gender identity, or associational preferences. The university also affirms its commitment to providing equal opportunities and equal access to university facilities. For additional information on nondiscrimination policies, contact the Senior Director, Office of Civil Rights Compliance, the University of Iowa, 202 Jessup Hall, Iowa City, IA 52242-1316, 319-335-0705, ui-ocr@uiowa.edu. Although not required, students have the option to share their pronouns and chosen/preferred names in class and through [MyUI](#). Instructors and advisors can find information about a student's chosen/preferred name in MyUI.

Classroom Expectations Students are expected to comply with University policies regarding appropriate classroom behavior as outlined in the [Code of Student Life](#). While students have the right to express themselves and participate freely in class, it is expected that students will behave with the same level of courtesy and respect in the virtual class setting (whether asynchronous or synchronous) as they would in an in-person classroom. Failure to follow behavior expectations as outlined in the [Code of Student Life](#) may be addressed by the instructor and may also result in discipline under the [Code of Student Life](#) policies governing E.5 Disruptive Behavior or E.6 Failure to Comply with University Directive.

Class Recordings The unauthorized video or audio recording of academic activities (e.g., lectures, course discussions, office hours, etc.) by a student is prohibited. Students with a reasonable accommodation for recording approved by Student Disability Services should notify each instructor and provide the Letter of Accommodation prior to using the accommodation. A student may record classroom activities with prior written permission from the instructor and notice to other students in the class that audio or video recording may occur. Any and all classroom recording must be for personal academic use only. The distribution, sharing, sale, or posting of recordings on the internet (including social media), in whole or in part, is prohibited and doing so may be a violation of the Code of Student Life and/or state or federal privacy, copyright, or other laws.

Academic Honesty and Misconduct All students in CLAS courses are expected to abide by the [college's standards of academic honesty](#). Undergraduate academic misconduct must be reported by instructors to CLAS according to [these procedures](#). Graduate academic misconduct must be reported to the Graduate College according to Section F of the [Graduate College Manual](#).

Artificial Intelligence (AI) Policy The midterm and final exams are closed book and closed note; no crib sheets are allowed. For homework assignments, you can use A.I., but you must explicitly point out which parts of the homework assignment you have used A.I., and how.

Date and Time of the Final Exam The [final examination date and time](#) will be announced by the Registrar generally by the fifth week of classes, and it will be announced on the course ICON site once it is known. **Do not plan your end of the semester travel plans until the final exam schedule is made public. It is your responsibility to know the date, time, and place of the final exam.** According to the Registrar's final exam policy, students **have a maximum of two weeks after the announced final exam schedule** to request a change if an exam conflict exists or if a student has more than two exams scheduled for the same day (see the [policy](#) here).

Student Support Resources and Related Policies

Mental Health Students are encouraged to be mindful of their mental health and seek help as a preventive measure or if feeling overwhelmed and/or struggling to meet course expectations. Students are encouraged to talk to their instructor for assistance with specific class-related concerns. For additional support and counseling, students are encouraged to contact University Counseling Service (UCS). Information about UCS, including resources and how to schedule an appointment, can be found at counseling.uiowa.edu. Find out more about UI mental health services at: mentalhealth.uiowa.edu.

Basic Needs and Student Support It can be difficult to maintain focus and be present if you are experiencing challenges with meeting basic needs or navigating personal crisis situations. The Office of the Dean of Students can help. Contact us for one-on-one support, identifying options, and to locate and access basic needs resources (such as food, rent, childcare, etc.).

[Student Care and Assistance](#) 132 IMU dos-assistance@uiowa.edu 319-335-1162

Basic Needs info:

- [Food Pantry at Iowa](#)
- [Clothing Closet](#)
- [Basic Needs and Support Resources](#)

Sexual Harassment/Sexual Misconduct and Supportive Measures The University of Iowa prohibits all forms of sexual harassment, sexual misconduct, and related retaliation. The [Policy on Sexual Harassment and Sexual Misconduct](#) governs actions by students, faculty, staff and visitors. Incidents of sexual harassment or sexual misconduct can be reported to the [Office of Civil Rights Compliance](#) or to the [Department of Campus Safety](#). Students impacted by sexual harassment or sexual misconduct may be eligible for academic supportive measures and can learn more by [contacting the Office of Civil Rights Compliance](#). Information about confidential resources and videos explaining these resources can be found on the [Office of Civil Rights Compliance website](#).

Conflict Resolution The Office of the Ombudsperson is a confidential, impartial, informal, and independent resource for any member of the university community with a problem or concern. The Office of the Ombudsperson offers a safe place to discuss conflicts or concerns. Students are encouraged to reach out for assistance. The office will brainstorm with students to help identify options, answer any questions, and provide referrals to other offices as appropriate. More information about the Office of the Ombudsperson, including how to schedule an appointment, can be found at ombudsperson.org.uiowa.edu.