



COURSE OUTLINE

1. **Course:** ACSC 327, Life Contingencies I - Winter 2024

Lecture 01 : MWF 09:00 - 09:50 in SB 142

Instructor	Email	Phone	Office	Hours
Dr. Sang Kang	sangjin.kang@ucalgary.ca	403 210-8697	MS 364/VIA ZOOM	TBA

This course is accredited under the Canadian Institute of Actuaries (CIA) University Accreditation Program (UAP). Achievement of the minimum required grades in accredited courses may provide credit for preliminary exams. Please note that a combination of courses may be required to achieve exam credit.

To account for any necessary transition to remote learning for the current semester, courses with in-person lectures, labs, or tutorials may be shifted to remote delivery for a certain period of time. In addition, adjustments may be made to the modality and format of assessments and deadlines, as well as to other course components and/or requirements, so that all coursework tasks are in line with the necessary and evolving health precautions for all involved (students and staff).

In Person Delivery Details:

- In-person lectures are held on the regular class time. (Mon, Wed, Fri 9 am~9:50 am)
- Students are free to join either in the classroom or in Zoom.
- The recording through Zoom is at work simultaneously.
- TopHat participation is for enhancing the problem-solving skills. For every week, the TopHat questions are assigned asynchronously. For the review of last week material, one or two questions are assigned for the live assessment on Monday lecture.
- The Excel assignment demonstrations are provided as the series of the asynchronous pre-recorded videos.
- Tutorial session is designed for problem-solving based on the Exercise questions in the textbook or on the sample FAM-L exam questions.

Course Site:

D2L: ACSC 327 L01-(Winter 2024)-Life Contingencies I

Note: Students must use their U of C account for all course correspondence.

Equity Diversity & Inclusion:

The University of Calgary is committed to creating an equitable, diverse and inclusive campus, and condemns harm and discrimination of any form. We value all persons regardless of their race, gender, ethnicity, age, LGBTQIA2S+ identity and expression, disability, religion, spirituality, and socioeconomic status. The Faculty of Science strives to extend these values in every aspect of our courses, research, and teachings to better promote academic excellence and foster belonging for all.

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

Prerequisite(s):

Statistics 321.

Although ACSC 325 is not an official prerequisite, at least students are required to understand the following concepts before we cover Chapter 4 materials in this course: the present value, the force of interest, equivalent interest rate and discount rate, and the present value of the annuity due.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Course Component	Weight	Due Date (duration for exams)	Modality for exams	Location for exams
TopHat participation ¹	3%	Ongoing		
Excel Assignments ²	3%	Ongoing		
Flexible grading ³	9%	Ongoing		
Quiz 1 ⁴	3%	Jan 23 2024		
Mid-term exam 1	18%	Feb 08 2024 at 06:00 pm (75 Minutes)	in-person	TBD
Quiz 2 ⁵	3%	Feb 27 2024		
Mid-term exam 2	18%	Mar 14 2024 at 06:00 pm (75 Minutes)	in-person	TBD
Quiz 3 ⁶	3%	Mar 26 2024		
Registrar Scheduled Final Exam	40%	Will be available when the final exam schedule is released by the Registrar	in person	Will be available when the final exam schedule is released by the Registrar

¹ Weekly asynchronous series of questions are assigned through TopHat application and are due by 11:59 pm on every Sunday. Also one or two lively TopHat assessment questions as the review of the last week material will be given during Monday class.

² Three spreadsheet assignments based on the provincial lifetable and the associated actuarial applications. (The following tentative deadlines for each assignment are scheduled: Feb 4, Mar 10, and Apr 9)

³ Out of three term exams (2 mid-term exams and one final exam), 6% is assigned for the highest-scoring term exam with the proportion of the actual grade. And 3% is assigned for the second highest-scoring term exam with the proportion of the actual grade.

⁴ Held during the assigned tutorial session for each student

⁵ Held during the assigned tutorial session for each student

⁶ Held during the assigned tutorial session for each student

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	95 %	90 %	85 %	80%	75%	70 %	65 %	60%	55%	50 %	45 %

This course will have a Registrar Scheduled Final exam that will be delivered in-person and on campus. [The Final Examination Schedule](#) will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 2 hours.

The University of Calgary offers a [flexible grade option](#), Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

4. Missed Components Of Term Work:

In the event that a student legitimately fails to submit any online or in-person assessment on time (e.g. due to illness, domestic affliction, etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date, or possible exemption and reweighing of components. Absences not reported within 48 hours will not be accommodated. Students may be asked to provide supporting documentation ([Section M.1](#)) for an excused absence, See [FAQ](#).

If an excused absence is approved, options for how the missed assessment is dealt with is at the discretion of the coordinator or course instructor. Some options such as an exemption and pro-rating among the components of the course may not be a viable option based on the design of this course.

5. Scheduled Out-of-Class Activities:

The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
Mid-term exam 1	TBD	Thursday, February 8, 2024 at 6:00 pm	75 Minutes
Mid-term exam 2	TBD	Thursday, March 14, 2024 at 6:00 pm	75 Minutes

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

6. Course Materials:

Required Textbook(s):

David C. M. Dickson, Mary R. Hardy, and Howard R. Waters, *Actuarial Mathematics for Life Contingent Risks (3rd edition)*: Cambridge University Press.

FAM exam homepage: <https://www.soa.org/education/exam-req/edu-exam-fam/study/>

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- o A computer with a supported operating system, as well as the latest security, and malware updates;
- o A current and updated web browser;
- o Webcam/Camera (built-in or external);
- o Microphone and speaker (built-in or external), or headset with microphone;
- o Current antivirus and/or firewall software enabled;
- o Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

7. Examination Policy:

No aids are allowed on tests or examinations.

Students should also read the Calendar, [Section G](#), on Examinations.

As this course is a CIA accredited course, we need to follow two of the preferred practices given in the [CIA UAP](#).

1. If this course is being offered online, exams will be published online at the same time for all candidates, with a total publication and completion time limit corresponding to the exam duration plus a limited period of about 15 minutes for upload if paper answers are to be uploaded. Exceptions will be made only to students who have SAS accommodations and/or students who are living in different time zones; these will be handled on a case by case basis.
2. You will be required to sign the following statement based on honor on each assessment:
"I understand that this assessment is part of an accredited course under the University Accreditation Program of the Canadian Institute of Actuaries (CIA). In addition to the University rules governing academic integrity, I understand that I am subject to the Code of Conduct and Ethics for Candidates in the CIA Education System and related policy. I swear on my honor to have completed the work on my own and in accordance with the assessment's rules and instructions."

8. Approved Mandatory And Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course.

9. Writing Across The Curriculum Statement:

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section [E.2](#) of the University Calendar.

10. Human Studies Statement:

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are

not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work [form](#) to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar
- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Services:** For more information, see their [website](#) or call [403-210-9355](#).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (svsa@ucalgary.ca) or phone at [403-220-2208](#). The complete University of Calgary policy on sexual violence can be viewed [here](#).
- d. **Student Ombuds Office:** A safe place for all students of the University of Calgary to discuss student related issues, interpersonal conflict, academic and non-academic concerns, and many other problems.
- e. **Student Union Information:** [SU contact](#), Email your SU Science Reps: science1@su.ucalgary.ca, science2@su.ucalgary.ca, science3@su.ucalgary.ca.
- f. **Academic Accommodation Policy:**

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>.

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the [Request for Academic Accommodation Form](#) and sending it to Jerrod Smith by email jerrod.smith@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

- g. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)
[Student Academic Misconduct Policy](#) and [Procedure](#)
[Faculty of Science Academic Misconduct Process](#)
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

- h. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or

used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

- i. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.

- j. **Canadian Institute of Actuaries Ethics:** In addition to the university's internal policies on conduct, including academic misconduct ([Section K of the online calendar](#)), candidates pursuing credits for writing professional examinations shall also be subject to the Code of Conduct and Ethics for Candidates in the CIA Education System and the associated Policy on Conduct and Ethics for Candidates in the CIA Education System. For more information, please visit [Obtaining UAP Credits and the CIA FAQ](#).

Course Outcomes:

- o Calculate and interpret standard probability functions including survival and mortality probabilities, force of mortality, and complete and curtate expectation of life. Compute higherorder moments and percentiles associated to the future lifetime and the curtate future lifetime random variables
- o Compute and interpret standard probability functions based on general life tables. Use fractional age assumptions to compute these quantities for all ages and durations. Construct and interpret survival models for cohorts consisting of non-homogeneous populations, for example, smokers and nonsmokers or ultimate-and-select groups
- o Derive formulae for the valuation of traditional insurance benefits. Compute and interpret probabilities, means, percentiles and higher-order moments associated to the random variables representing the present values of these benefits.
- o Derive formulae for the valuation of life contingent annuities. Compute and interpret probabilities, means, percentiles and higher-order moments associated to the random variables representing the present values of these annuities.
- o Compute net and gross premiums for insurance policies and annuities using various premium principles. Calculate and interpret probabilities, means, percentiles and higher-order moments of random variables associated with these premiums, including loss-at-issue random variables

Electronically Approved - Jan 02 2024 14:40

Department Approval

Electronically Approved - Jan 03 2024 09:44

Associate Dean's Approval