

The University of Western Ontario  
Department of Statistical and Actuarial Sciences

**AS2427b Section 001**  
**Life Contingencies I**  
**Course Outline- January 2018**

**Instructor Information**

**Instructor:** Mary Millard

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**Instructor Office Hours** Mondays, 9:30-11:00, Thursdays, 1:30-3:00

**Course Information**

**Course Description**

Models for the time until death, single life annuity and life insurance present values and their probability distributions

**Prerequisites:** AS2553A/B, Stats 2857A/B, and Cal 2402a (or Cal 2502a) with a minimum mark of 60% in each of these courses

**Anti-requisites:** the former Actuarial Science 3427A/B

**Warning:** Unless you have either the pre-requisites for this course or written special permission from your Dean to enrol in it, you may be removed from this course and it will be deleted from your record. You can be deregistered at any time even after writing the final exam. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites

**Lecture Hours and location:** Mon, Wed, and Fri. 12:30 -1:30 TC141  
Tutorial Hour : Tuesdays 2:30-3:30 SEB 1200

**Book Information**

**Text Book:** *Actuarial Mathematics for Life Contingent Risks (AMLCR)* by Dickson, C.M.D., Hardy, M.R., and Waters, H.R., **Second Edition.**

A solutions manual for the Actuarial Mathematics text has been published and this can be purchased online from Amazon.

**Calculators:**

Any non-programmable calculator may be used in this course

## Course Objectives

We will cover Chapters 1 to 5 of the *ALMCR* text. Topics covered will include survival models, Life tables and selection, Life Insurance and Life annuities.

The course material supports the following Learning Objectives/Outcomes from SOA Exam MLC Syllabus

- Describe the common decrements and their application to insurance and annuities
- Models used to model decrements used in insurance and annuities
  - Calculate single and conditional probabilities, as applicable and moments for the time-to-decrement, age-at-decrement and cause-of-decrement random variables based on single decrement on single life models
- Calculate present values and accumulated values using non-stochastic interest rate models
- Models used to model cash flows of traditional life insurance and annuities
  - Calculate single and conditional probabilities, as applicable and moments of the present-value-of-benefits variables based on single decrement on single life models.
  - Calculate present value of cash flows

## Assessment

**Assignments and/or Quizzes:** There will be 5 quizzes to be held during the Tuesday tutorial timeslot on the following dates: **Tuesday January 23, February 27, March 6, March 20, and April 4<sup>th</sup>**. Each 20-25 minute quiz will consist of a few short answer questions on recently covered lecture topics.

**Midterms or Tests:** There will be **two one-hour tests held during the tutorial time. Test1 will be on Friday, February 9<sup>th</sup>. Test2 will be on Tuesday March 13<sup>th</sup>.**

**Final Exam:** A 3-hour cumulative final exam will be scheduled in the final examination period.

**Evaluation:** Your course grade will be determined as follows:

<b>Quizzes</b>	<b>20%</b>
<b>Test1</b>	<b>15%</b>
<b>Test2</b>	<b>15%</b>
<b>Final Exam</b>	<b>50%</b>

## Course Website Information:

Sakai/OWL will be used for this course. Please check this webpage regularly for lecture notes, and announcements. The course outline is also posted.

## **Canadian Institute of Actuaries Actuarial Exam Accreditation**

This course is accredited under the Canadian Institute of Actuaries (CIA) University Accreditation Program (UAP) for the 2017-2018 academic year. Achievement of the established exemption grade in this course may qualify a student for exemptions from writing certain preliminary exams. Please note that a combination of courses may be required to achieve a single exemption. See <http://www.cia-ica.ca/membership/university-accreditation-program---home/information-for-candidates> for full details.

## **Department Policy on Missed Course Requirements and Student Health and Wellness**

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or supporting documentation to the Academic Counselling Office of your home faculty as soon as possible. If you are a Science student, the Academic Counselling Office of the Faculty of Science is located in WSC 140, and can be contacted at [scibmsac@uwo.ca](mailto:scibmsac@uwo.ca). If accommodation is approved by your Dean's office, your instructor will be notified, and it is your responsibility to make alternative arrangements with your instructor.

For further information, please consult the university's medical illness policy at [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf).

If you miss the Final Exam, please contact your faculty's Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (the name given by the university to a makeup Final Exam). For those that are approved by their faculty to write a special exam, a "Recommendation of Special Examination Form" will be provided to the student (by their faculty) and the student must then follow-up on the completion of this form directly with their instructor.

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see [http://www.registrar.uwo.ca/examinations/exam\\_schedule.html](http://www.registrar.uwo.ca/examinations/exam_schedule.html)).

**Missed Midterm or Test:** The policy of the department of Statistical and Actuarial Sciences is that there will be no make-up exams for a missed midterm. For those that do legitimately miss a midterm and provide the required supporting documentation, the standard practice will be that the weight of the midterm will be reassigned to the final exam. If your reason is not deemed valid, then you will receive a mark of 0.

**Student Health and Wellness:** As part of a successful student experience at Western, we encourage students to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western's Campus Recreation Centre. Numerous cultural events are offered throughout the year. Please check out the Faculty of Music web page <http://www.music.uwo.ca/>, and our own McIntosh Gallery <http://www.mcintoshgallery.ca>. Information regarding health- and wellness-related services available to students may be found at <http://www.health.uwo.ca/>.

Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate chair), or other relevant administrators in their unit. Campus mental health resources may be found at

[http://www.health.uwo.ca/mental\\_health/resources.html](http://www.health.uwo.ca/mental_health/resources.html).

To help you learn more about mental health, Western has developed an interactive mental health learning module, found here: [http://www.health.uwo.ca/mental\\_health/module.html](http://www.health.uwo.ca/mental_health/module.html). This module is 30 minutes in length and provides participants with a basic understanding of mental health issues and of available campus and community resources. Topics include stress, anxiety, depression, suicide and eating disorders. After successful completion of the module, participants receive a certificate confirming their participation.

**Accessibility:** Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 ext. 82147 if you have questions regarding accommodation.

**Support Services:** Learning-skills counsellors at the Student Development Centre (SDC) (<http://www.sdc.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling. Additional student-run support services are offered by the USC, <http://westernusc.ca/services>. The website for Registrarial Services is <http://www.registrar.uwo.ca>.

## **Email Communication**

You are welcome to communicate with your instructor by email, but email communication should only be used to provide them with information or to ask a question that requires a *brief* response. For more lengthy discussions and for discussions on lectures/course material please see your instructor during their scheduled office hours or by appointment. Only e-mails sent from your UWO account will be read (as emails sent from other addresses often get spammed).

## **Academic Policies**

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy, <http://www.uwo.ca/its/identity/activatenonstudent.html>, the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Cell phones and all other electronic devices are prohibited during tests, quizzes and exams.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at this website: [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

## **Classroom Environment**

The Department has adopted a "Mutual Expectations" policy governing the classroom environment and all work submitted by students. The full text of the policy can be found at: <http://www.uwo.ca/stats/undergraduate/mutual-expectations.html>. In summary, the policy was developed under the premise that all interactions between students and faculty should be governed by the principles of courtesy, respect and honesty.

Computers and other technical devices are to be used only for note taking purposes during class and cell phones should be turned off/on mute.