

**AS 3431B / 9007B COURSE OUTLINE**  
The University of Western Ontario  
Winter 2022

## 1. General Course Information

**Course Name:** Long-Term Actuarial Mathematics III

**Class Schedule:** Mondays, Wednesdays, and Fridays from 8:30 to 9:20am (first class on January 10th, 2022).

### Prerequisite Requirements

A minimum mark of 60% in Actuarial Science 3429A/B and in Statistical Sciences 3657A/B. Restricted to students enrolled in any Actuarial Science module.

**Warning:** Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. 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.

## 2. Instructor Information

<b>Instructor</b>	Xiaoming Liu
<b>Office</b>	WSC 215
<b>Email</b>	xliu@stats.uwo.ca
<b>Phone</b>	Ext. 88233
<b>Office hours</b>	<i>Tuesdays 2:30 – 3:30 pm</i> starting from Jan. 18th, 2022 by TAs via Zoom (may switch to in-person office hour when allowed) <i>Thursdays 10:30-11:30am</i> by instructor via Zoom (may switch to in-person office hour when allowed)
<b>TAs</b>	Cong Nie ( <a href="mailto:cnie4@uwo.ca">cnie4@uwo.ca</a> ) and Dechen Gao ( <a href="mailto:dgao28@uwo.ca">dgao28@uwo.ca</a> )

## 3. Course Description/Syllabus

### Calendar Description

Analysis of probability distributions and present values associated with multiple life models, multiple decrement models and more general multi-state models and applications to other long-term coverages or benefits.

This course is accredited under the Canadian Institute of Actuaries (CIA) University Accreditation Program (UAP) for the 2021-2022 academic year. Achievement of the established exemption grade in this course may qualify a student from exemptions from writing certain preliminary exams: a combination of this course, Actuarial Science 3429A (each with a minimum of 80%) and Actuarial Science 2427B (minimum grade of 75%) is required to achieve an exemption for preliminary exam LTAM. A mapping between the course coverage and SOA syllabus can be found in an attached document.

## 4. Course Materials

*Actuarial Mathematics for Life Contingent Risks* by Dickson, C.M.D., Hardy, M.R., and Waters, H.R., (3rd Edition), 2020, Cambridge: Cambridge University Press (relevant chapters: 8, 9, 10, 11, 13)

### Teaching order:

Before reading week: AMLCR 8-8.7 for fundamentals, and then applications to a variety of models, including the models in section 8.9, Chapter 9 and 10. The topics in these lectures will be covered in Midterm test which is now scheduled on **Feb. 17<sup>th</sup>, 2022**.

After reading week: AMLCR 8.8 and Chapter 13, Specific considerations for the models in Chapter 9 and 10, and finally Chapter 11.

Students should check OWL (<http://owl.uwo.ca>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class.

### Contingency plan for an in-person class pivoting to 100% online learning

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered online at the times indicated in the timetable. The grading scheme will **not** change. Any remaining assessments will also be conducted online (using ProctorTrack) as suggested by the Exam Central at Western.

## 5. Methods of Evaluation

There will be a **two-hour close-book Midterm test, which is scheduled on Feb. 17 tentatively**. There are **two options: 1) in the morning from 9:00 to 11:00am or 2) in the evening from 19:00 to 21:00**. (**Students' availability will be surveyed in the first week of the term.**)

There will be a **three-hour final exam** during the final examination period (to be scheduled by the Registrar's Office).

Your **final course grade** will be based on the following:

8 assignments	8 % (total)
3 Projects	6 % (2% for each)
Participations	5% (presentations for projects)
Midterm Test	32 %
Final Exam*	49 %

Note that there is no **make-up** for the midterm test. Any points from the missed midterm test will be shifted to the final exam.

## 6. Student Absences

### Academic Consideration for Student Absences

Students who experience an extenuating circumstance (illness, injury or other extenuating circumstance) sufficiently significant to temporarily render them unable to meet academic requirements may submit a request for academic consideration through the following routes:

- (i) Submitting a Self-Reported Absence (SRA) form provided that the conditions for submission are met. To be eligible for a Self-Reported Absence:
  - an absence must be no more than 48 hours
  - the assessments must be worth no more than 30% of the student's final grade
  - no more than two SRAs may be submitted during the Winter term
- (ii) For medical absences, submitting a Student Medical Certificate (SMC) signed by a licensed medical or mental health practitioner to the Academic Counselling office of their Faculty of Registration.
- (iii) Submitting appropriate documentation for non-medical absences to the Academic Counselling office in their Faculty of Registration.

Note that in all cases, students are required to contact their instructors within 24 hours of the end of the period covered.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For the policy on Academic Consideration for Student Absences – Undergraduate Students in First Entry Programs, see:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_illness.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf)

and for the Student Medical Certificate (SMC), see:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf).

### **Religious Accommodation**

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

### **Absences from Final Examinations**

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

## **7. Accommodation and Accessibility**

### **Accommodation Policies**

Students with disabilities work with Accessible Education (formerly SSD), which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic Accommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf),

## **8. Academic Policies**

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

In accordance with policy,

[https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf),

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.

**Scholastic offences** are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

[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).

## 9. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

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 Accessible Education at (519) 661-2147 if you have any questions regarding accommodations.

Students who are in emotional/mental distress should refer to Mental Health@Western (<http://www.health.uwo.ca/mentalhealth>) for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC, <http://westernusc.ca/services>.