

Faculty of Science Course Syllabus
Department of Mathematics and Statistics
ACSC/STAT 4720
Life Contingencies II
Fall 2020

Instructor: Iain Beaton ibeaton@dal.ca

Course Delivery: This course will be delivered asynchronously on a weekly basis. For the duration of the semester the course notes for the entire term will be available for students to access. During the semester videos will be posted online weekly at Monday morning covering the material, as well as a weekly quiz which can be completed at any time during the week. Instead of a final exam, there will be three online tests held Oct. 16th, Nov. 6th, and Dec. 8th.

Office Hours: Thursday 10:00-11:00am (Atlantic time) on Collaborate Ultra (or by appointment).

Course Description

This course extends what was done in ACSC/STAT 3720 to deal with common additional features that affect life insurance policies. We introduce multiple-state models, pensions, interest rate risk and profit testing.

Course Prerequisites

ACSC 3720 / STAT 3720

Course Materials

- Textbook:
 - *Actuarial Mathematics for Life Contingent Risks* (Second Edition) by David C. M. Dickson, Mary R. Hardy and Howard R. Walters, published by Cambridge University Press, 2013
 - *Study Note: Supplementary Note on Long Term Actuarial Mathematics.*
 - *Study Note: Loss Models Chapters 10-12, From Data to Decisions, 5th edition, 2018*
 - ***Both study notes will be provided on Brightspace.***
- Website: Brightspace

Course Topics

Long Term Coverages in Health Insurance, Multiple State Models, Joint Life and Last Survivor Benefits, Mortality Improvement Modelling, Estimation from Empirical Data, Pension Mathematics, Emerging Costs for Traditional Life Insurance.

Course Assessment

Component	Weight (% of final grade)	Date
Quizzes	40%	<i>Weekly (asynchronous)</i>
Test #1	25%	<i>October 16th</i>
Test #2	20%	<i>November 6th</i>
Test #3	15%	<i>December 8th</i>

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale

A+ (90-100)	B+ (77-79)	C+ (65-69)	D	(50-54)
A (85-89)	B (73-76)	C (60-64)	F	(<50)
A- (80-84)	B- (70-72)	C- (55-59)		

Course Policies

- Quizzes will be held online weekly. You will be able to take the quiz any time during the week. Once you begin the quiz you will have 15 minutes to finish. The quiz will be one or two questions chosen from a set of testable problems which will be posted on Brightspace at the beginning of the week.
- There will be three tests throughout the semester (Oct. 16th, Nov. 6th, and Dec. 8th). You may complete them anytime during the day it is administered. Once you begin the quiz you will have 75 minutes to finish.
- There will be no extensions for quizzes not completed within the submission. If you miss a test, a score of 0 will be assigned unless you have informed the instructor before the end of the period which the assessment can be completed. For a missed test, a make-up test will be scheduled.

Course Content

This is a tentative weekly schedule for the semester. Note some periods are longer than 7 days.

Dates	Topics	Sections
Sept. 8-20	Multiple State Models	8.2-8.7, 8.13
Sept. 21-27	Multiple State Models	8.6-8.7
Sept. 28-Oct. 4	Multiple Decrement Models	8.8-8.10
Oct. 5-14	Joint Life and Last Survivor Benefits	9.2-9.6
Oct. 16	Test #1	
Oct. 19-25	Pension Mathematics, Retiree health benefits	LM 12.2-12.5
Oct. 26-Nov. 4	Emerging Costs for Traditional Life Insurance	LM 12.7, 12.9
Nov. 6	Test #2	
Nov. 9-15	Reading Week (No Class)	
Nov. 16-22	Mortality Improvement Modelling	
Nov. 23- Dec. 6	Estimation from Empirical Data	
Dec. 8	Test #3	12.5-12.9

Faculty of Science Course Syllabus (Section B)
Discrete Structures – ACSC/STAT 4720

University Policies and Statements

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

Missed or Late Academic Requirements due to Student Absence

As per Senate decision instructors may not require medical notes of students who must miss an academic requirement, including the final exam, for courses offered during fall or winter 2020-21 (until April 30, 2021).

Information on regular policy, including the use of the Student Declaration of Absence can be found here:

https://www.dal.ca/dept/university_secretariat/policies/academic/missed-or-late-academic-requirements-due-to-student-absence.html.

Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.

Information: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).

Information: https://www.dal.ca/campus_life/academic-support/accessibility.html

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

Code: https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness

Statement: <http://www.dal.ca/cultureofrespect.html>

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support.

Visit or e-mail the Indigenous Student Centre (1321 Edward St) (elders@dal.ca).

Information: https://www.dal.ca/campus_life/communities/indigenous.html

Important Dates in the Academic Year (including add/drop dates)

https://www.dal.ca/academics/important_dates.html

University Grading Practices

https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html

Student Resources and Support

Advising

General Advising https://www.dal.ca/campus_life/academic-support/advising.html

Science Program Advisors: <https://www.dal.ca/faculty/science/current-students/academic-advising.html>

Indigenous Student Centre: https://www.dal.ca/campus_life/communities/indigenous.html

Black Students Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html

International Centre: https://www.dal.ca/campus_life/international-centre/current-students.html

Academic supports

Library: <https://libraries.dal.ca/>

Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html

Studying for Success: https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

Copyright Office: <https://libraries.dal.ca/services/copyright-office.html>

Fair Dealing Guidelines <https://libraries.dal.ca/services/copyright-office/fair-dealing.html>

Other supports and services

Student Health & Wellness Centre: https://www.dal.ca/campus_life/health-and-wellness/services-support/student-health-and-wellness.html

Student Advocacy: <https://dsu.ca/dsas>

Ombudsperson: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html

Safety

Biosafety: <https://www.dal.ca/dept/safety/programs-services/biosafety.html>

Chemical Safety: <https://www.dal.ca/dept/safety/programs-services/chemical-safety.html>

Radiation Safety: <https://www.dal.ca/dept/safety/programs-services/radiation-safety.html>

Scent-Free Program: <https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>