

THE DEPARTMENT OF MATHEMATICAL SCIENCES

## MATH 441: Actuarial Mathematics I

### *Fall 2024 Course Syllabus*

**NJIT Academic Integrity Code:** All Students should be aware that the Department of Mathematical Sciences takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

### COURSE INFORMATION

**Course Description:** Topics include the economics of insurance, individual risk models for a short term, survival distributions and life tables, life insurance per year, life annuities, and net premiums.

**Number of Credits:** 3

**Prerequisites:** MATH 346 with a grade of C or better.

**Course-Section and Instructors:**

Course-Section	Instructor
Math 441-001	Professor T. Bui

**Office Hours for All Math Instructors:** [Fall 2024 Office Hours and Emails](#)

**Required Textbook:**

Title	<i>Actuarial Mathematics for Life Contingent Risks</i>
Author	Dickson, Hardy, and Waters
Edition	3rd
Publisher	Cambridge University
ISBN #	978-1108478083

**University-wide Withdrawal Date:** The last day to withdraw with a W is **Monday, November 11, 2024**. It will be strictly enforced.

## POLICIES

**DMS Course Policies:** All DMS students must familiarize themselves with, and adhere to, the **Department of Mathematical Sciences Course Policies**, in addition to official **university-wide policies**. DMS takes these policies very seriously and enforces them strictly.

**Grading Policy:** The final grade in this course will be determined as follows:

Homework	10%
Quizzes	20%
Midterm Exam I	20%
Midterm Exam II	20%
Final Exam	30%

Your final letter grade will be based on the following tentative curve.

A	90 - 100	C	65 - 79
B+	85 - 89	D	55 - 64
B	80 - 84	F	0 - 54
C+	75 - 79		

**Attendance Policy:** Attendance at all classes will be recorded and is **mandatory**. Please make sure you read and fully understand the **Math Department's Attendance Policy**. This policy will be strictly enforced.

**Homework:** Integrity - Your work is expected to be your own. Help from tutors, classmates etc is encouraged but you are responsible for mastering the material. Homework will be assigned every week.

**Quizzes:** Periodic quizzes will be given. There will be no makeup tests or quizzes.

**Exams:** There will be two midterm exams held in class during the semester and one comprehensive final exam. The final exam will be held during the following week:

Midterm Exam I	October 7, 2024
Midterm Exam II	November 11, 2024
Final Exam Period	December 15 - December 21, 2024

The final exam will test your knowledge of all the course material taught in the entire course. Make sure you read and fully understand the **Math Department's Examination Policy**. This policy will be strictly enforced.

**Makeup Exam Policy:** There will be **NO MAKE-UP QUIZZES OR EXAMS** during the semester. In the event an exam is not taken under rare circumstances where the student has a legitimate reason for missing the exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for

missing the exam, e.g., a doctor's note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The student must also notify the Math Department Office/Instructor that the exam will be missed.

**Technological Requirements:** If the course delivery mode changes to converged learning or synchronous online, students will need access to a computer with a webcam. Exams will be proctored using ProctorU. Quizzes will be proctored using Respondus LockDown Browser+Monitor. Students must follow all instructions related to environment checks and camera positioning.

**Cellular Phones:** All cellular phones and other electronic devices must be switched off during all class times.

## ADDITIONAL RESOURCES

**Math Tutoring Center:** Located in the Central King Building, Lower Level, Rm. G11 (See: [Fall 2024 Hours](#))

**Further Assistance:** For further questions, students should contact their instructor. All instructors have regular office hours during the week. These office hours are listed on the Math Department's webpage for [Instructor Office Hours and Emails](#).

**Accommodation of Disabilities:** The Office of Accessibility Resources and Services (OARS) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you need an accommodation due to a disability, please contact the Office of Accessibility Resources and Services at [oars@njit.edu](mailto:oars@njit.edu), or visit Kupfrian Hall 201 to discuss your specific needs. A Letter of Accommodation Eligibility from the office authorizing student accommodations is required.

For further information regarding self identification, the submission of medical documentation and additional support services provided please visit the Office of Accessibility Resources and Services (OARS) website at:

<https://www.njit.edu/accessibility/>

**Important Dates** (See: [Fall 2024 Academic Calendar, Registrar](#))

Date	Day	Event
September 2, 2024	Monday	Labor Day
September 3, 2024	Tuesday	First Day of Classes
September 9, 2024	Monday	Last Day to Add/Drop Classes
November 11, 2024	Monday	Last Day to Withdraw
November 26, 2024	Tuesday	Thursday Classes Meet
November 27, 2024	Wednesday	Friday Classes Meet
November 28 to December 1, 2024	Thursday and Sunday	Thanksgiving Recess - Closed
December 11, 2024	Wednesday	Last Day of Classes
December 12, 2024	Thursday	Reading Day 1

December 13, 2024	Friday	Reading Day 2
December 15 to December 21, 2024	Sunday to Saturday	Final Exam Period

## Course Outline

Week	Chapter	Sections	Topic
1	Chapter 1 - 2	2.1 - 2.3	<i>Introduction and Survival Distributions</i>
2	Chapter 2	2.4 - 2.8	<i>Survival Distributions and Life Tables</i>
3	Chapter 3	3.2, 3.3, 3.5	<i>Life Tables and selection, Quiz 1 for Chapter 2</i>
4	Chapter 3	3.6 - 3.9	<i>Life Tables and selection</i>
5	Chapter 4	4.1 - 4.4	<i>Insurance benefits, Quiz 2 for Chapter 3</i>
5	Chapter 4	4.5 - 4.8	<i>Insurance benefits and Review</i>
6			<i>Exam I and Make-up</i>
7	Chapter 5	5.1 - 5.4	<i>Annuities</i>
8	Chapter 5	5.5 - 5.9	<i>Annuities</i>
9	Chapter 5	5.10 - 5.11	<i>Annuities, Quiz 3 for Chapter 5</i>
10	Chapter 6	5.12 - 5.14	<i>Annuities and Review</i>
11			<i>Exam II and Make-up</i>
12	Chapter 6	6.1 - 6.4.1	<i>Premium Calculation</i>
13	Chapter 6	6.4.2 - 6.5	<i>Premium Calculation, Quiz 4 for Chapter 6</i>
14	Chapter 6	6.6 - 6.8	<i>Premium Calculation and Review</i>
			<i>FINAL EXAM</i>

*Updated by Professor T. Bui - 8/20/2024  
Department of Mathematical Sciences Course Syllabus, Fall 2024*