Term Information

Effective Term	
Previous Value	

Autumn 2020 Autumn 2013

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)

Add DL designation.

What is the rationale for the proposed change(s)?

An online version of this course has been developed and piloted. Formal DL designation is being sought.

What are the programmatic implications of the proposed change(s)?

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)? None.

Is approval of the requrest contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area	Mathematics
Fiscal Unit/Academic Org	Mathematics - D0671
College/Academic Group	Arts and Sciences
Level/Career	Graduate, Undergraduate
Course Number/Catalog	5630
Course Title	Life Contingencies I
Transcript Abbreviation	Life Continge 1
Course Description	Introduction to the mathematical theory of contingencies. Includes material from examinations by the Society of Actuaries and the Casualty Actuarial Society.
Semester Credit Hours/Units	Fixed: 3

Offering Information

Length Of Course	14 Week, 12 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	Yes
Is any section of the course offered	100% at a distance
Previous Value	No
Grading Basis	Letter Grade
Repeatable	No
Course Components	Lecture
Grade Roster Component	Lecture
Credit Available by Exam	No
Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	Prereq: A grade of C- or above in 3618, or credit for 618; and a grade of C- or above in 4530, 5530H, or Stat 4201, or credit for 530, 531H, or Stat 420; and enrollment in Actuarial Science major or the MMS program in Financial Math; or permission of department.
Exclusions	Not open to students with credit for 631.
Electronically Enforced	Νο
Cross-Listings	
Cross-Listings	
Subject/CIP Code	

Subject/CIP Code Subsidy Level Intended Rank Previous Value 27.0101 Doctoral Course Junior, Senior, Masters, Doctoral *Junior, Senior, Masters*

Requirement/Elective Designation

Required for this unit's degrees, majors, and/or minors The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- Students understand survival distributions
- Students understand individual risk models

Previous Value

Content Topic List

- Survival distributions
- Individual risk models
- Life tables
- Topics from life insurance
- Life annuities
- Benefit premiums

No

Sought Concurrence

Attachments

• au20_5630_syllabus_inclass.pdf: In person syllabus

(Syllabus. Owner: Husen, William J)

• au20_5630_syllabus_online.pdf: Online syllabus

(Syllabus. Owner: Husen, William J)

DL-review-checklist.pdf: Distance learning checklist

(Other Supporting Documentation. Owner: Husen, William J)

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Husen,William J	01/24/2020 02:24 PM	Submitted for Approval
Approved	Husen,William J	01/24/2020 02:28 PM	Unit Approval
Approved	Haddad, Deborah Moore	01/24/2020 05:09 PM	College Approval
Pending Approval	Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Oldroyd,Shelby Quinn Vankeerbergen,Bernadet te Chantal	01/24/2020 05:09 PM	ASCCAO Approval

MATH 5630 LIFE CONTINGENCIES 1

General Information.

Instructor:	Dan Poole
Email:	poole@math.osu.edu
Office:	Math Tower 529
Class Webpage:	http://www.carmen.osu.edu
Lecture Room:	Cockins Hall 240
Lecture Time:	Monday/Wednesday 12:45pm-2:05pm
Textbook:	Actuarial Mathematics for Life Contingent Risks
	by Dickson, Hardy & Waters. Second Edition.
	ISBN: 9781107044074

Course Description: This course gives an introduction to the mathematical theory of contingencies. Specific topics include survival distributions, individual risk models, life tables, life annuities and benefit premiums.

Prerequisites: C- or better in Math 3618, or credit for 618; and a grade of C- or better in Math 4530, 5530H, or Stat 4201, or credit for 530, 531H, or Stat 420; and enrollment in Actuarial Science major or the MMS program in Financial Math; or permission of department.

Office Hours: Monday 10:20am-11:15am, Tuesday 1:00pm-2:00pm, Wednesday 10:20am-11:15am

Assessment: Your grade is based on your performance on group work, 7 quizzes, 2 miniexams, 2 midterms, and a final exam.

Component	Points	Percentage
Mini-exams (2)	90	17.3%
Midterms (2)	200	38.5%
Final Exam – Wednesday Dec 9	140	26.9%
Quizzes	50	9.6%
Group Work	40	7.7%
Total	520	100%

Grade Policy: The letter grades are determined by a simple adjustment from the OSU Standard Scheme; namely,

90%-100% (A)	87%-89.9% (A-)	84%-86.9% (B+)	80%-83.9% (B)	77%-79.9% (B-)
74%-76.9% (C+)	70%-73.9% (C)	67%-69.9% (C-)	64%- $66.9%$ (D+)	57%-63.9% (D).

Homework: Homework exercises can be found in Carmen. Homework is a vital part of learning. Completing homework deepens your understanding of the concepts, tools and

techniques from the course. Homework will not be turned in or graded, but it is expected that you complete the homework. Solutions to the homework are posted within Carmen.

Group Work: You will be divided into groups of about 5 people to write & solve exercises and write material to prepare for exams. You will submit all work on carmen.

Quizzes: There will be seven quizzes over the course of the semester. Each quiz will be worth 10 points and the lowest two quiz scores will be dropped. The quizzes will occur at the beginning of class and the possible material for the quiz will be announced in class on the previous lecture day.

Exams: There will be two mini-exams, two midterm exams and a final exam. Each exam will be held in the lecture room and will start at the beginning of class. If you are going to miss an exam due to an $excused^1$ absence, email me as soon as possible to discuss arrangements. The final exam will be cumulative.

Email Etiquette: Outside of class time, the primary means of communication between us will be email. Please treat any emails you send me as a professional correspondence. Your email should have a subject, a greeting, and some sort of signature. During weekdays, you can expect email replies from me within 24 hours of your message.

Copyright Disclaimer: "The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course."

Statement on Title IX: "Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g. race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at http://titleix.osu.edu or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu.

Academic Honesty: It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-48.7). For additional information, see the Code of Student Conduct at http://studentlife.osu.edu/csc/

Disability Statement: The University strives to make all learning experiences as accessible as possible. If you anticipate or experience

¹Excused absences include illness (with doctor's note), participation in official OSU events, jury duty, etc. Email me as soon as possible if you are to miss an assignment.

academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Your Mental Health: "As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student?s ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available via the Office of Student Life?s Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th floor of the Younkin Success Center and the 10th floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org."

Tentative Schedule

Monday	Wednesday	Monday	Wednesday
August 24	August 26	Oct 19	Oct 21
	Introduction	Review	Exam 2
August 31	Sept 2	Oct 26	Oct 28
	Probability Quiz 1		Annuity Quiz 5
Sept 7	Sept 9	Nov 2	Nov 4
Labor Day No Class			Quiz 6
		Nov 9	Nov 11
Sept 14	Sept 16		Veteran's Day
λ.ζ			No Class
wim-exam 1		Nov 16	Nov 18
Sept 21	Sept 23		
			Mini-exam 2
Quiz 2	Review	Nov 23	Nov 25
Sept 28	Sept 30	1100 25	100 25
	Sept 50		Thanksgiving
Exam 1			Break
		N. 20	
Oct 5	Oct 7	Nov 30	Dec 2
	Quiz 3	Quiz 7	
Oct 12	Oct 14	Dec 7	Dec 9
	Quiz 4	Review	Final Exam

Over the course of this semester, we will cover the first six chapters of the textbook. The first chapter is background material and we will cover it on the first day. Mini-exam 1 will cover material from chapter 2; exam 1 will cover material from chapters 2 and 3; exam 2 will cover material from chapter 4; mini-exam 2 will cover material from chapter 5, and we will cover chapter 6 material after the second mini-exam. The final exam is cumulative with a slight emphasis on the material after the second midterm.

MATH 5630 LIFE CONTINGENCIES 1 AUTUMN SEMESTER 2020

General Information.

Instructor:	Dan Poole
Email:	poole.89@osu.edu
Office:	Math Tower 529
Office Hours:	Thursday 1-2pm in a Zoom meeting or by appointment
Class Webpage:	http://www.carmen.osu.edu
Textbook:	Actuarial Mathematics for Life Contingent Risks
	by Dickson, Hardy & Waters. Second Edition.
	ISBN: 9781107044074

Course Description and Purpose: This course gives an introduction to the mathematical theory of contingencies. Specific topics include survival distributions, individual risk models, life tables, life insurance, life annuities and premium calculation. Students will learn ways to understand and price future potential payments under various models. This course will help actuarial candidates prepare for the Society of Actuaries' (SOA) exam LTAM as well as the Casualty Actuarial Society's (CAS) exam MAS-1.

Prerequisites: C- or better in Math 3618, or credit for 618; and a grade of C- or better in Math 4530, 5530H, or Stat 4201, or credit for 530, 531H, or Stat 420; and enrollment in Actuarial Science major or the MMS program in Financial Math; or permission of department.

Assessment: Your grade is based on your performance on group work, 5 quizzes, 2 midterm exams, 3 mini-exams and a final exam.

Component	Points	Percentage
Mini-Exams (3)	100	19.2%
Midterm Exams (2)	200	38.5%
Final Exam	140	26.9%
Quizzes (5)	40	7.7%
Group Work	40	7.7%
Total	520	100%

There will be no make up exams given without documentation of a medical emergency or university-excused absence, unless we have made arrangements in advance.

Grade Policy: The letter grades are determined by a simple adjustment from the OSU Standard Scheme; namely,

90%-100% (A)	87%-89.9% (A-)	84%-86.9% (B+)	80%-83.9% (B)	77%-79.9% (B-)
74%-76.9% (C+)	70%-73.9% (C)	67%-69.9% (C-)	64%-66.9% (D+)	57%-63.9% (D).

Content Delivery: Since this course is online, there will be a large burden of learning on the individual. Under each part of the modules sections of Carmen, you will find lectures and multimedia. These contain lecture slides for the part you are working on, and there are video examples with documents containing the work written out. In addition, there is a selection of homework problems that you should complete on these sections along with their solutions. Further, reading from *Actuarial Mathematics for Life Contingent Risks* is prescribed. There you will find another perspective on the course content. In addition to the slides, videos and textbook, you can always visit me during my office hours.

Homework: Homework exercises can be found in Carmen. Homework is a vital part of learning. Completing homework deepens your understanding of the concepts, tools and techniques from the course. Homework will not be turned in or graded, but it is expected that you complete the homework. Solutions to the homework are posted within Carmen.

Group Work: You will be divided into groups of about 5 people. Each Unit (other than the first unit), a group will have a questions author. The author will write questions regarding the reading from *Actuarial Mathematics for Life Contingent Risk* in the discussion section. Each question will be in response to the lecturer's discussion assigning the authorship and reading for the week. The remaining group members will each answer one of the questions posed by the author. The author will check the answers given, state whether or not the questions are correct, and provide correct answers within 72 hours of the deadline for the respondents. You will be expected to author questions once this semester.

Quizzes: There will be five quizzes over the course of the semester. Each quiz will be worth 10 points. Each quiz is a mixture of multiple choice, numerical answer, and file upload questions. You will have only one opportunity to take these online quizzes. These quizzes are open book and open notes. In addition, you will need to submit the written work to your problems. You can do this using either your phone to take a picture or a scanner. Just make sure that you allot the requisite time to complete this task.

Mini-Exams: There will be three mini-exams over the course of the semester. Each miniexam is a mixture of multiple choice, numerical answer, and file upload questions. Just like the quizzes, you will have only one opportunity to take these online mini-exams and these are open book and open notes. Once again, you will need to submit the written work to your problems. Make sure that you allot the requisite time to complete this task. The main differences between the quizzes and mini-exams is that you will have more time for the mini-exams and the mini-exams are worth more points.

Exams: There will be two midterm exams and one final exam over the course of the semester. The final exam is cumulative. Midterm exams will be worth 100 points each and the final exam is worth 140 points. Each exam is a mixture of multiple choice, numerical answer, and file upload questions. Just like the quizzes and mini-exams, you will have only one opportunity to take these online exams and these are open book and open notes. Once again, you will need to submit the written work to your problems. Make sure that you allot

the requisite time to complete this task. You will have more time to complete the midterm exams and final exam than for the mini-exams.

Exam Integrity: Due to the nature of this course, it is likely that you will take your miniexams and exams at different times than other students. Please refrain from discussing your assignment until after the assignment closes to the course. Failure to do so will be considered academic misconduct.

Course Updates: Every now and then announcements to the entire course need to be made. These announcements will be made using the announcements feature on Carmen. It is your responsibility to check the news for this course. You can sign up for announcement notifications so that you are aware of any such updates. Additionally, questions that would benefit the whole class should be posted to the discussion titled "Course Q&A" on the discussion tab.

Course Technology: You will need a document camera or scanner for the quizzes, miniexams, and exams. You may use any calculator you desire on any assignment.

For office hours, you will need to be able to communicate with me using Zoom. This means you will need access to a good internet connection. In addition, it would be advantageous if you also have access to a microphone on your computer. That way, you can ask me questions regarding course content. The alternative is to try to use the chat feature on Zoom; however, this is less efficient.

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at https://ocio.osu.edu/help/hours, and support for urgent issues is available all hours.

- Self-Service and Chat support: http://ocio.osu.edu/selfservice
- **Phone:** 614-688-HELP (4357)
- Email: 8help@osu.edu
- **TDD:** 614-688-8743

Email Etiquette: Outside of class time, the primary means of communication between us will be email. Please treat any emails you send me as a professional correspondence. Your email should have a subject, a greeting, and some sort of signature. During weekdays, you can expect email replies from me within 24 hours of your message.

Advising: For help navigating this large university, you will find that you need advising. In addition, advisors can help you get information regarding accessing course materials to meet the needs of diverse learners. For more information, visit the university's advising website https://advising.osu.edu/. In addition to advising services, OSU main campus students may find assistance at student academic services.

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Disability Statement: The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Accessibility of Course Technology: "This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- Carmen (Canvas) accessbility
- Streaming audio and video
- Synchronous course tools."

Your Mental Health: "As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th floor of the Younkin Success Center and the 10th floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org."

Schedule of Units

August 25-31	Unit 1: Introduction. This unit will cover the prelim- inaries for our course as well as a review of probability theory. Further, we will cover the first chapter of the book which introduces different types of life insurances.
September 1-14	Unit 2: Survival Models. This unit introduces various survival models for representing the future lifetime of an individual as a random variable. Important concepts like force of mortality, expected future lifetime and curtate future lifetime are discussed.
September 15-28	Unit 3: Life Tables and Selection. This unit introduces life tables, a basic feature in life contingencies. We discuss common life tables. We cover fractional age assumptions and select survival models.
September 29-October 2	Exam Week: Exam 1 can be accessed in the modules under Unit 3.
October 3-21	Unit 4: Life Insurance Benefits. This unit introduces valuation of traditional life insurance policies. We develop formulae for describing the distribution of the present value of the benefit of a policy.
October 22-25	Exam Week: Exam 2 can be accessed in the modules under Unit 4.
October 26-November 18	Unit 5: Life Annuities. This unit introduces valuation of life contingent annuities. We develop formulae for describing the distribution of the present value of such annuities.
November 19-December 9	Unit 6: Premium Calculation. This unit introduces the principles of premium calculation. Important concepts like net versus gross premium and future loss random variables are discussed.

Important Time Windows: Note that all times below are Eastern Standard Time.

- August 25-31: Mini-exam 1 is available **online**. Take it and earn the maximum score before you can access the second module. Take it as many times as you need to so that you achieve the maximum score.
- September 15-18: Mini-exam 2 is available **online** from September 15 12:01am to September 18 11:59pm.
- September 29-October 2: Exam 1 is available **online** from September 29 12:01am to October 2 11:59pm.
- October 22-25: Exam 2 is available **online** from October 22 12:01am to October 25 11:59pm.
- November 19-22: Mini-exam 3 is available **online** from November 19 12:01am to November 22 11:59pm.
- December 10-13: Final Exam is available **online** from December 10 12:01am to December 13 11:59pm.

Arts and Sciences Distance Learning Course Component Technical Review Checklist

Course: Math 5360 Instructor: Dan Poole Summary: Life Contingencies 1

Standard - Course Technology	Yes	Yes with Revisions	No	Feedback/ Recomm.
6.1 The tools used in the course support the learning objectives and competencies.	X			Carmen
6.2 Course tools promote learner engagement and active learning.	Х			 Carmen Quizzes Multimedia Videos and presentations
6.3 Technologies required in the course are readily obtainable.	X			A Document scanner is the only thing that students may not have readily available. Perhaps an option to use phone or iPad to take pictures?
6.4 The course technologies are current.	X			Carmen is updated regularly
6.5 Links are provided to privacy policies for all external tools required in the course.	X			No external tools are used
Standard - Learner Support				
7.1 The course instructions articulate or link to a clear description of the technical support offered and how to access it.	x			Links to 8Help are present
7.2 Course instructions articulate or link to the institution's accessibility policies and services.	X			а
7.3 Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help learners succeed in the course and how learners can obtain them.	X			b
7.4 Course instructions articulate or link to an explanation of how the institution's student services and resources can help learners succeed and how learners can obtain them.	X			c
Standard – Accessibility and Usability				
8.1 Course navigation facilitates ease of use.	X			Recommend using the Carmen Distance Learning "Master Course" template developed by ODEE and available in the Canvas Commons to provide student-users with a consistent user experience in terms of navigation and access to course content.
8.2 Information is provided about the accessibility of all technologies required in the course.	X			Accessibility links are provided for all tools.
8.3 The course provides alternative means of access to course materials in formats that meet the needs of diverse learners.	X			All requests for accommodations are made by the instructor.
8.4 The course design facilitates readability	X			
8.5 Course multimedia facilitate ease of use.	X			All assignments and activities that use the Carmen LMS with embedded multimedia facilitates ease of use. All other multimedia resources facilitate ease of use by being available through a standard web browser

Reviewer Information

- Date reviewed: 12/19/19
- Reviewed by: Ian Anderson

Notes:

This is well done and should be ready for submission.

^aThe following statement about disability services (recommended 16 point font): Students with disabilities (including mental health, chronic or temporary medical conditions) that have been certified by the Office of Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office of Student Life Disability Services is located in 098 Baker Hall, 113 W. 12th Avenue; telephone 614- 292-3307, <u>slds@osu.edu</u>; <u>slds.osu.edu</u>.

^bAdd to the syllabus this link with an overview and contact information for the student academic services offered on the OSU main campus. http://advising.osu.edu/welcome.shtml

^cAdd to the syllabus this link with an overview and contact information for student services offered on the OSU main campus. <u>http://ssc.osu.edu</u>. Also, consider including this link in the "Other Course Policies" section of the syllabus.