INSTRUCTOR:

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Website: http://www.math.uiuc.edu/~pjohnson/
Office Hours: Monday 1:00-2:00pm, Tuesday 2:00 –4:00pm, and by appointment

Please include “MATH 472/567” in the subject line of any e-mail pertaining to the class.

LECTURES: Sections T13, T14: MW 3:00-4:20pm, 66 Library

PREREQUISITES: MATH 471: Actuarial Theory I.
Note: Working knowledge of this material will be assumed.

COURSE WEBSITE: On Illinois Compass 2g: https://compass2g.illinois.edu/webapps/login/. All announcements, handouts, homework assignments and solutions, midterm solutions, useful links, and more will be found here. Make sure you check this website regularly.

REQUIRED TEXTS: (1) Dickson, Hardy, and Waters (2009), Actuarial Mathematics for Life Contingent Risks, Cambridge: Cambridge University Press

(2) Johnson, Paul H. Jr. (2012), SOA Exam MLC and CAS Exam 3L Study Supplement, Midwestern Actuarial Forum’s Exam Preparation Seminars (available for free on Course Website)
COURSE DESCRIPTION: Continuation of MATH 471. Topics considered include the calculation of net premium and gross premium reserves for life insurances and life annuities, and the actuarial application of multi-state models with an emphasis on multiple decrement and multiple life models. Further topics may include pension plan valuation, the valuation of life insurances and life annuities with a non-flat term structure of interest rates, and profit testing for traditional and modern life insurances. We will cover approximately the second half of the material on Exam MLC, the Life Contingencies Segment of Exam M, of the Society of Actuaries:

**Actuarial Mathematics for Life Contingent Risks**
Chapter 7: Policy Values + AMLCR Study Note (section 2)
Chapter 8: Multiple State Models + AMLCR Study Note (section 3)
Chapter 9: Pension Mathematics (9.1 – 9.4)
Chapter 10: Interest Rate Risk (10.1 – 10.4)
Chapter 11: Emerging Costs for Traditional Life Insurance + AMLCR Study Note (section 4)

**SOA Exam MLC and CAS Exam 3L Study Supplement**
Section 9: Reserves I
Section 10: Reserves II
Section 11: Multiple State Models
Section 12: Multiple Decrement I
Section 13: Multiple Decrement II
Section 14: Multiple Lives I
Section 15: Multiple Lives II
Section 16: Other Topics

**CALCULATORS:** Only non-graphing scientific and/or financial calculators are allowed.

**ATTENDANCE:** I encourage you to attend class and to arrive on time. Some of the material covered and many of the examples discussed will only be presented during lecture.

**CHEATING:** Any attempt to cheat in this course is considered a serious violation of University policy. I will investigate any instance of cheating, and anyone who participated in cheating will receive a score of 0 on the assignment, exam, or project.

**IMPORTANT EXAM MLC INFO:** http://www.soa.org/education/exam-req/edu-exam-m-detail.aspx

Exam Date: **Thursday, May 9, 2013** from 8:30-11:45am.
GRADING:

1. MIDTERMS: There will be two midterms:

   Midterm 1: Wednesday, February 27, room TBD, 3:00-4:20pm
   Midterm 2: Wednesday, April 3, room TBD, 3:00-4:20pm

   Midterms are not cumulative per se, but the nature of the material is such that knowledge of concepts from earlier chapters/sections is required to learn and apply concepts in later chapters/sections. I will announce the material to be covered on each midterm one week before the exam date. Both midterms are closed book, no notes. However, you are allowed both sides of one 3in x 5in note card for each midterm.

   MISSED MIDTERM POLICY: If students cannot take either midterm at its scheduled time, they can take a make-up midterm if they have BOTH a valid excuse and appropriate documentation (refer to the UIUC Student Code). Documentation must be presented prior to taking the make-up midterm, otherwise, a student may not be allowed to write the midterm. Students with conflicts should let me know as soon as possible. Students who inform me of a conflict during or after the scheduled midterm may take a more difficult make-up midterm.

2. FINAL EXAM: The final exam is scheduled for:

   Friday, May 3, room TBD, 1:30-4:30pm

   The final exam will be cumulative. You are allowed one “cheat sheet” for the final: both sides of one sheet of standard printer-sized paper (the size of the sheet this syllabus is printed on). If a student has a university-approved reason why they cannot take the final exam at its scheduled time (refer to the UIUC Student Code), they will be allowed to take a conflict final exam.

3. HOMEWORK: Homework will be assigned and collected on most Wednesdays. Late homework will not be accepted, nor will homework slipped under my office door or dropped off in my mailbox (unless previously approved by me). Homework will be considered late if it is received after 3:15pm on the due date, with NO exceptions! There will be a total of 11 homework assignments. The lowest homework score will be dropped and the remaining scores will determine your overall homework grade. For each homework assignment, only some of the problems will actually be graded. I will post solutions to all of the homework problems on the course website shortly after collecting the homework. There will be no homework due during the week of a midterm.

4. CLASS PROJECT: Students will work together in groups to complete a project, using Microsoft Excel, that summarizes and applies the material covered in MATH 471 and MATH 472.

   The class project will be due on Monday, April 29, by 5:00pm.
GRADING DISTRIBUTION:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterms</td>
<td>40 points each</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>50 points</td>
<td>25%</td>
</tr>
<tr>
<td>Homework</td>
<td>5 points each</td>
<td>2%</td>
</tr>
<tr>
<td>Class Project</td>
<td>20 points</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td><strong>200</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
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GRADING SCALE: The following scale, based on course percentages, gives the lowest grade you can earn:

- [98, 100]: A+
- [92, 98): A
- [90, 92): A-
- [88, 90): B+
- [82, 88): B
- [80, 82): B-
- [78, 80): C+
- [72, 78): C
- [70, 72): C-
- [68, 70]: D+
- [62, 68): D
- [60, 62): D-
- [0, 60): F

FOR JAMES SCHOLAR STUDENTS ONLY: Pre-approved James Scholar students who are taking this course for honors credit will be required to complete one additional project. Refer to the course website over the next two weeks for more detailed information about this project.

The James Scholar project will be due on Monday, April 29, at the START OF CLASS.

FOR GRADUATE STUDENTS ONLY: Graduate students taking this class as MATH 567: Topics in Actuarial Theory I will be subject to additional requirements to be provided within the next two weeks.