

MATH 4270/5270 Actuarial Mathematics II

Description:

Prerequisite: MATH 4260 or MATH 5260 or consent of instructor.

MATH 4260-4270 (5260-5270) is a two-semester sequence that covers survival models, life insurance, life annuities, reserves, multiple life, multiple decrements, multistate models, and other topics that comprise the content of the Society of Actuaries Exam MLC.

Textbook: [Models for Quantifying Risk, Sixth Edition](#), by Stephen J. Camilli, Ian Duncan, and Richard L. London, Actex Publications, Inc.

The textbook can be purchased online from the publisher at actexmadriver.com or actuarialbookstore.com. Due to significant changes in the MLC syllabus in 2014, the content of the book "Models for Quantifying Risk" has changed considerably from 5th to 6th edition (including a change of authors). For this reason, it will be necessary to use the 6th edition.

Alternate textbook: *Actuarial Mathematics for Life Contingent Risks*, 2nd Edition, 2013, Dickson, D., Hardy, M., Waters, H., Cambridge University Press. (Chapters 1-13).

Notation and formulas: This subject introduces in a standard system of notation used by actuaries. Many formulas are introduced and must be memorized in order to become expert at problem solving. Just as in calculus, it is important to learn a substantial set of formulas in order to be skilled and efficient in problem solving.

Homework: Homework is beneficial only if one reads the text rather than use it as a "look up" reference for formulas. After careful reading and understanding examples in the textbook, resist the habit of constantly looking up formulas in the book. It is a better strategy to collect essential formulas in a dedicated section of your notebook, where you can work towards seeing patterns and become comfortable with the notation.

Grading:

Homework: 30%

Quizzes: 10%

Midterm Exam: 25%

Final Exam: 35%

The course grade will be determined by the percentage of total points earned:
90%-100% A, 80%-89% B, 70%-79% C, 60%-69% D, <60% F.

Chapters and Topics Covered

- Review of Benefit and Expense Augmented Premiums
- Introduction to Reserves
- Reserves as Financial Liabilities
- Multiple life survival models, insurance, and annuities
- Multiple decrements and competing risk models
- Multistate models (with some supplementary materials)

- Multiple Decrement model applications
- Use of Excel spreadsheet and R for some topics

Refer to the most recent “Syllabus and Learning Objectives” for Exam MLC at <https://www.soa.org/education/exam-req/edu-exam-m-detail.aspx> for detailed information about topics and learning objectives.

External resources:

<http://web2.uwindsor.ca/math/hlynka/actuarialMLCwebsites.html>

General Information and Resources for Students

The Learning Commons

The **Learning Commons** provides “one-stop-shop” academic support within the Jerome Library in the areas of Academic Coaching, Supplemental Instruction, Writing Consultations, Math/Stats Tutoring, subject groups and individual assistance.

The Learning Commons is a collaborative environment designed to foster independent learning to meet the needs of any student in any course at any time in the learning process. For more information, or to make an appointment: tlc@bgsu.edu ; 419-372-2823; www.bgsu.edu/learning-commons.html .

University Libraries

The University Libraries supports the teaching, learning and research mission of BGSU by advancing scholarship and creativity through collections and user-centered services that connect faculty and students to high quality information resources. For more information, to reserve a study space or to make an appointment: <http://www.bgsu.edu/library.html> ; <http://www.bgsu.edu/library/ask-us.html> ; 419-372-6943; libhelp@bgsu.edu.

Academic Honesty Policy/Codes of Conduct

The instructor and students in this course will adhere to the University’s general Codes of Conduct defined in the BGSU Student Handbook. The Code of Academic Conduct (Academic Honesty Policy) requires that students do not engage in academic dishonesty. For details, refer to the BGSU Codes of Conduct site at <https://www.bgsu.edu/student-handbook/code-of-conduct.html>.

The instructor and students will adhere to the general Code of Academic Conduct as outlined of the [BGSU Student Handbook](#). Specifically, students will not cheat, fabricate, plagiarize or facilitate academic dishonesty. Students who passively engage in cheating (i.e. allowing others to cheat off of them) may receive the same consequences as the person copying. In group work, if your partner or teammates do all the work on an assignment, you should not be listed as a contributor and should receive no credit for that work. If you allow an assignment to be submitted listing you as a contributor, but you did not contribute, this is equivalent to plagiarism.

Classroom Expectations/Inclusion

Students are expected to display tolerance and respect in all communication. Comments and language should be respectful and appropriate for a college community. All comments should also follow acceptable grammar and spelling.

Disability Services

If you have a disability that I should be aware of, please notify me so that I can make arrangements to accommodate your learning needs. To get more information about your rights, contact the Office of Disability Services for Students located in 38 College Park, 419-372-8495.

(<http://www.bgsu.edu/disability-services.html>)

Religious Holidays

It is the policy of the University to make every reasonable effort to allow students to observe their religious holidays without academic penalty. In such cases, it is the obligation of the student to provide the instructor with reasonable notice of the dates of religious holidays on which he or she will be absent. Absence from classes or examinations for religious reasons does not relieve the student of responsibility for completing required work missed. Following the necessary notification, the student should consult with the instructor to determine what appropriate alternative opportunity will be provided, allowing the student to fully complete his or her academic responsibilities. (As stated in The Academic Charter, B-II.G-4.b at:<http://www.bgsu.edu/downloads/file919.pdf>.)

Technology Support

Provides a central point of contact for faculty, staff and students for questions, problem reports, service requests and inquiries for University computer systems and communications technologies at BGSU. Email: tsc@bgsu.edu Phone: (419) 372-0999.

Veterans

BGSU educators recognize student veterans' rights when entering and exiting the university system. If you are a student veteran, please communicate with your instructor so reasonable accommodations can be made for absence when drilling or being called to active duty. See (<http://www.bgsu.edu/veteran/>) for more information.