Math 393 Actuarial Mathematics Spring 2013

Class Meeting: Tuesday 12:45 - 2:20, Friday 11:45 - 12:55 (some Thursday 11:40 - 12:35)

Instructor: Nathan Shank

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Office Location: PPHAC 219

Office Hours: Monday 12:00 - 1:00, Tuesday 10:00 - 12:00, Friday 10:30 - 11:30 (other times by appointment)

Text: *Mathematics of Investment and Credit,* Broverman, Fifth Edition, ACTEX Academic Series.

Derivatives Markets, McDonald, Third Edition, Pearson.

Course Goals: After completing the course, successful students will

- learn problem solving techniques related to financial mathematics.
- have an understanding of the mathematical theory of interest.
- learn tools in and become familiar with measurement of interest, accumulated and present value factors, annuities, yield rates, amortization schedules, sinking funds, bonds, depreciation, yield curves, spot rates, and immunization.
- have an understanding of the theory and mathematics behind derivative markets, call and put options, hedging, arbitrage and swaps.
- be prepared for the Actuarial Exam FM.

Course Topics: We will cover the two texts simultaneously. In *Derivatives Markets* we will cover most of chapters 1-5 and 8. This includes an introduction to financial markets, derivatives and risk management. We will also learn about forward contracts, call and put options, spreads and collars, forward contracts, futures contracts, and swaps. In *Mathematics of Investment and Credit* we will cover most of chapters 1 - 8. This includes an introduction to interest, valuation and annuities, loan payments, bond valuation, depreciation, amortization schedules and other topics related to the theory of interest.

Assignments/Assessment:

- Homework: Homework will be collected periodically throughout the semester. A schedule will be given to you as the semester goes on. Your homework grade will consist mostly of problems from the Broverman text.
- Group Lessons: There will be 12 days of "group lessons." These lessons are topics in the text where two students will teach the topic to the entire class. Homework

will be assigned, collected, and graded by the group leaders for that topic. See the attached schedule for a list of material which will be covered in the group lessons. Your grade will be determined by the homework and your lessons.

- Participation: Your participation grade will be determined by the instructor and the students. Students are expected to be actively participating in all discussions as well as being active members of the group lessons.

- Tests and Final Exam: You will have **two** tests and a cumulative final exam. The tests are tentatively scheduled for Friday, February 15 and Friday, April 12. The final exam will be scheduled by the registrar. The in class tests and final exam will most likely contain a portion which is multiple choice, similar to the Actuarial Exam FM.

Grading: You are responsible to keep track of your own grade. Grades will be computed as follows:

Homework	30%
Group Lessons	15%
Participation	5%
Test	15% each
Final Exam	20%

Class Structure: Class time will be mostly discussion based with periodic lectures and presentations.

Attendance: Attendance will be taken everyday. There is a very strong correlation between attendance and grades. In order to understand the material, you need to be present in class. Group work also requires every ones participation. Remember that no late homework is accepted.

Academic Honesty: For graded homework assignments and projects, you may use your class notes and any books or library sources except a solutions manual. Any resources you use must be documented at the top of the homework assignment. As an example if you get help from the Tutor Center for problem 4 only, please write "Help with problem 4 from Tutor Center". No points will be deducted for honestly acknowledging help. However if you do not document any appropriate resource this is considered cheating.

The College academic honesty policy appears in your Student Handbook; you are expected to be familiar with it. The Academic Honesty Policy Guidelines specific to mathematics classes are reiterated at the end of the syllabus. They apply to work done outside of class as well as to in-class quizzes and tests. Please read them carefully. If you are unsure about the propriety of a particular procedure or approach, please consult with your instructor before continuing with the assignment.

Special Accommodations: Students who wish to request accommodations in this class for a disability should contact Elaine Mara, assistant director of learning services

for academic and disability support at 1307 Main Street, or by calling 610-861-1510. Accommodations cannot be provided until authorization is received from the Academic Support Center

Academic Honesty Policy Guidelines
Mathematics Courses

The Department of Mathematics and Computer Science supports and is governed by the Academic Honesty Policy of Moravian College as stated in the Moravian College Students Handbook. The following statements will help clarify the policies of members of the Mathematics faculty.

In all homework assignments which are to be graded, you may use your class notes and any books or library sources. When you use the ideas or thought of others, however, you must acknowledge the source. For graded homework assignments, you may not use a solution manual or the help, orally or in written form, of an individual other than your instructor. If you receive help from anyone other than your instructor or if you fail to reference your sources you will be violating the Academic Honesty Policy of Moravian College. For homework which is not to be graded, if you choose, you may work with your fellow students. You are responsible for understanding and being able to explain the solution of all assigned problems, both graded and ungraded.

All in-class or take home tests and quizzes are to be completed by you alone without the aid of books, study sheets or formula sheets unless specifically allowed by your instructor for a particular test.