

Ma 388 ~ Applications of Finance
Spring Semester 2020 – 2021

Instructor: Dr. Melissa Gardenghi Email: mgardeng@bju.edu
Office: Al 38 Office Hours: by appointment

Catalog Description:

A study of the applications of the theory of interest and financial derivatives consistent with the SOA/CAS Exam FM/2 syllabus.

Prerequisites: At least a grade of C in Ma 308, Theory of Interest

Course Context: This course supports the following goals of the actuarial program:

- AS1: Solve problems using standard mathematical techniques.
- AS2: Progress logically from premises to valid conclusions in a variety of mathematical and applied contexts, including analysis, statistics (both theoretical and applied), probability and finance.
- AS3: Apply mathematics to actuarial problems (such as financial math and probability modeling) in exercising the biblical mandate to have dominion over the earth.

Course Goals:

- CG1: Introduce the student to the content and style of questions presented on the Financial Mathematics Exam (Exam FM/2). AS1-3
- CG2: Prepare the student, including their speed and accuracy, to pass the Financial Mathematics Exam (Exam FM/2). AS1-3

Course Objectives: The student will be able to

1. Compile necessary study notes to be able to thoroughly prepare for a SOA exam. CG2
2. Determine the appropriate approach for solving problems similar to those given on the Financial Mathematics Exam (Exam FM/2). CG1
3. Complete a practice exam during a three-hour period with an acceptable percentage of correct answers. CG2

Attendance Policy: You are expected to attend class Thursdays from 9 to 10:50 am in accordance with University policy. See the student handbook for attendance requirements. Note that you are still required to meet your weekly study requirements even if you miss class.

Office Hour Appointments:

Office hour appointments can be made using the Calendly site.

Instructions for using the site: <https://math.bju.edu/media/bju-math-division/bju-math-department/melissa-gardenghi/Office-Hours-Procedure.pdf>

A direct link to Calendly for making appointments with Dr. Gardenghi: <https://calendly.com/mgardeng/20min>

General Policies:

1. We will meet together from 9 to 10:50 am each Thursday (the 1.75 hours in class can be counted towards your weekly totals).
2. You will maintain the study log (see the provided Excel spreadsheet) to document your study efforts. You will post the Excel file (and keep it updated) in your personal Exam Prep MS Teams channel, so that I can keep tabs on your progress.
3. You are expected to come to class each week with questions and/or problems with which you struggled.
4. You may find it beneficial to study together. This can be very valuable and is highly recommended.

Course Requirements and Evaluation:

1. The grade in this course will be based on the following (and can be estimated using the Study Log Excel file):
 - a. completion of your concept map and study notes – 10%, (due no later than 2nd class)
 - i. one-page map including all Exam FM content
 - ii. more detailed notes per large topic (preferably boiled down to the biggest ideas on one page)
 - iii. your grade on this portion will be dependent on how thorough as well as how easy to use your study notes are (note that these are conflicting criteria – find the sweet spot)
 - b. completion of a study plan/budget – 5% (draft due end of class, first day)
 - i. when will the study happen during the week
 - ii. what will happen in each hour (review, new content, and which content, practice problems)
 - iii. when in the semester will you start taking practice exams
 - iv. how do you plan to be efficient in your study – be specific (time limits, goals, start-up costs, self-imposed pressure, etc.)
 - v. your grade on this portion will be dependent on how well your plan meet your study goals
 - c. quality time spent in preparation for the exam (computed as quality time = time in # of hrs * quality rating/4; where quality rating is given on a scale of 1 to 4) – 30%,
 - d. time spent reviewing previous material – 5%
 - e. number and accuracy of practice problems completed – 25% and 15% respectively,
 - f. scores on practice exams – 10%.
2. Passing the Financial Mathematics Exam (Exam FM/2) at any point during the semester will immediately result in an A in the course (no additional work will be required).

General Guidelines for Actuarial Exams:

Excerpt from <http://www.soa.org/library/newsletters/the-future-actuary/2007/summer/how-to-prepare.aspx> (retrieved August 17, 2011)

“There is no substitute for starting early. No matter how well you have done in your math classes, it is best to start at least eight weeks prior to the P/1 exam. Keep in mind that everyone taking this exam has excelled in mathematics. The exams are very rigorous and are designed to test knowledge of the material at a very high level. That is why the pass rate on this exam typically ranges only in the 30 to 40 percent range.”

Note that in 2014 (from February to October) the SOA exam FM passing score was 70% correct for the computer based testing and approximately 44 to 46% of the students taking Exam FM passed it.

See *Hints on Study and Exam Techniques* from the CAS (Casualty Actuarial Society) from <http://www.casact.org/admissions/syllabus/index.cfm?fa=hints> (retrieved January 2, 2013)

Textbook: There is no required text for this course. However, you may find it beneficial to acquire any of the texts recommended for the exam or one of the study guides available, which include:

- *Mathematics of Interest Rates and Finance* by Guthrie and Lemon.
- *Mathematics of Investment and Credit* by Broverman. (I have a copy of this.)
- *The Theory of Interest* by Kellison. (I have a copy of this.)
- *ACTEX FM/2 Study Manual*, by Matthew J. Hassett, Ph.D., Michael I. Ratliff, Ph.D., ASA, Amy C. Steeby, MBA, Toni Coombs Garcia
- *ASM Study Manual Exam FM/Exam 2*, by Harold Cherry, FSA, MAAA, Rick Gorvett, FCAS, MAAA, ARM, FRM, Ph.D.

Students in the past have found the Adapt exams at Coaching Actuaries a very helpful resource. (see <https://www.coachingactuaries.com/FM>)