

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS

AS289: Actuarial Science Problem Lab I-Financial Mathematics

Prerequisite: AS201

Instructor: **Esam Al-Sawi**
Phone: 1887

Office: 5-310
E-mail: **BlackBoard**

Textbook

Hasset, M. J., Ratliff, M.I., Garcia, T. C., and Steeby, A. C. (2014) ACTEX FM/2 Study Manual, 2011th edition. ACTEX Madriver.

Additional References

Broverman, S.A., Mathematics of Investment and Credit (Fifth Edition), 2010, ACTEX Publications, ISBN 978-156698-767-7.

Calculator: Texas BA II Plus Calculator or Texas BA II Professional

Course Description:

This problem lab is designed to prepare Actuarial majors for the second Society of Actuaries and Casualty Actuarial Society Examinations, FM (Financial Mathematics). Participation in this course does not guarantee a student will pass the FM exam but this course provides a good start in preparing students towards that goal.

Student Learning Outcomes: (Consistent with SOA professional exam FM objectives).

See <https://www.soa.org/education/exam-req/edu-exam-fm-detail.aspx>

Course Activities and Grading Policy:

	Date	Time	Place	Materials	Percentage
Mid term Exam	TBA	TBA	TBA	(Chapters 1, 2, 3 & 4)	30%
Final Exam	TBA	TBA	TBA	Comprehensive	35%
Class Work	It is based on quizzes, attendance, class tests or other activities determined by the instructor.				35%
Total					100%

Academic Integrity: All KFUPM policies regarding ethics and academic honesty apply to this course.

Communication:

- For regular announcements, students are advised to check Blackboard and MS teams regularly.
- Students are required to carry **pens, note-taking equipment and a calculator to EVERY lecture, quizzes, and exams**. It is strongly recommended to keep a **binder** for class-notes.
- Students are also expected to take class notes and organize their learning material in a binder for easy retrieval to help them in study and review for class, exams, etc.
- It is to the student's advantage to keep a binder for storing class notes, homework, and other graded assignments.
 - ➔ *Students who are organized will find it easier to find important materials when studying for exams.*
- To successfully learn financial mathematics, students MUST **solve problems** and **analyze data**. The selected assigned problems are specifically designed to prepare you for class quizzes, lab, majors and final exam. So, it is expected that you complete these problems **step-by-step** and **with comprehension**.
- If you happen to stumble upon a solution manual somewhere, remember 2 important points:
 1. these solutions are brief and may have mistakes and
 2. you are expected in your career as an actuary and your exams and quizzes in this class to know every step to a problem and to know when a solution is incorrect.
 - ➔ **Thus, the best way to solve problem is without these brief solutions.**
- Never round your intermediate results to problems when doing your calculations. This will cause you to lose calculation accuracy. Round only your final answers and you should not round less than 4 decimal places unless required otherwise.
- For every exam, so you need to bring with you pens, pencils, a sharpener, an eraser, and calculator(s)

Instructional Methods

Students will experience different teaching strategies as follow (brief description is provided):

- **Flipped Classroom Approach:**

Students review materials before class and will be engaged in active learning activities during lectures.

- **Think-Pair-Share:**

Students share and compare possible answers to a question with a partner before addressing the larger class.

- **Student Learning Communities:**

Focus on sharing and joint discovery.

- **Group Instructional Feedback Technique:**

What works, what doesn't, and how to fix it, then reports them to the instructor.

Important Attendance Notes:

- In accordance with University rules, **3 (Three) unexcused absences** or **5 (FIVE) excused-unexcused absences** will automatically result in a grade of **DN**.
- Attendance on time is very important. Mostly, attendance will be checked within the first five minutes of the class. Entering the class after that, is considered as one late, and every two times late equals to one absence. The student has to be available until the end of the class.

Exam rules and regulations

I. Exam Rules

- Student is not allowed to enter the exam hall without either KFUPM ID cards or Saudi ID/ Iqama ID cards.
- Students are not allowed to carry mobile phones and smart watches to the exam halls.
- Students need to strictly adhere to the attendance policy of the university.
- DN-Grade will be assigned to the eligible students after their instructors have warned them twice.

II. Cheating in Exams

Cheating or any attempt of cheating by use of illegal activities, techniques and forms of fraud will result in a grade of DN in the course along with reporting the incident to the higher university administration for further action. **Cheating in exams includes (but is not restricted to):**

- looking at the papers of other students
- talking to other students
- using mobiles or any other electronic devices.

III. Missing an Exam

In case a student misses an exam (Exam I, Exam II, or the Final Exam) for a legitimate reason (such as medical emergencies), he/she must bring an official excuse from Students Affairs. Otherwise, he/she will get zero in the missed exam.

The Usage of Mobiles in Class:

Students are not allowed to use mobiles for any purpose during class time. Students who want to use electronic devices to take notes must take permission from their instructor. Violations of these rules will result in a penalty decided by the instructor.

Tentative Weekly Schedule

Week #	Module	Material	Notes		
1	1	Interest Rate and Time Value of Money			
2	1	Interest Rate and Time Value of Money			
3	2	Annuities			
4	3	Loan Repayment			
5	4	Bonds			
6	5	Yield rates of an Investment			
7	6	Term Structure of Interest Rates			
8	7	Asset Liability Management, Duration, and Immunization			
9	14	Swaps			
10	SoA Handout	SoA interest Determinants			
11	PR1				
12	PR2				
13	PR3				
14	PR4				
15	PR5				
16					
	Final Exam (Comprehensive): As posted on the Registrar Website				