



# KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

## DEPARTMENT OF MATHEMA

AS 289: Actuarial Science Problem Lab I-Financial Mathematics, Term 252

Instructor: Dr. Kroumi Dhaker  
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Office Hours: UTR 2:00 PM – 2:50 PM or by appointment  
Time: W 2:00 PM – 3:50 PM  
Place: Building 4 – Room 202

Prerequisite: AS201  
Credit Hours: (3-0-3)

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

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

### Additional References

Broverman, S.A., Mathematics of Investment and Credit (Fifth Edition), 2010, ACTEX Publications, ISBN 978-1-56698-767-7.

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### 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.

### Grading Policy:

	Date	Time	Place	Materials	Percentage
<b>Midterm Exam</b>		TBA	TBA	(Chapters 1, 2 & 3)	35%
<b>Final Exam</b>	TBA	TBA	TBA	Comprehensive	35%
<b>Class Work</b>	It is based on quizzes (24%) and attendance (6%)				30%

### Communication:

- For regular announcements, students are advised to check Blackboard 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 a calculator

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

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.

Home Work Problems:

- ✓ Handout problems will be posted on the BLACKBOARD towards the end of each chapter.
- ✓ The **Homework** should be submitted **IN TIME**. No late homework will be accepted

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

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

### **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. Cheating in exams includes (but is not limited to)

- Looking at the papers of other students
- Talking to other students
- Using mobiles or any other electronic devices **including Smart Watch**

**Missing an Exam:** In case a student misses an exam for a legitimate reason (such as medical emergencies), she/he must bring an official excuse from Students Affairs. Otherwise, she/he 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.

**Grading:**

Your course grade will be based on the total of points accumulated on class work two major exams, and Final Exam. The following scale gives the cut-off points for the course grades.

Letter grade	A+	A	B+	B	C+	C	D+	D	F	DN
Cut-off	90%	85%	80%	75%	67%	60%	55%	50%	<50%	≥ 3

**Syllabus – A rough weekly guideline**

Week #	Date	Module	Material	Notes
1	14 January	1	Interest Rate and Time Value of Money	
2	21 January	1+2	Interest Rate and Time Value of Money + Annuities	
3	28 January	2	Annuities	
4	4 February	3	Loan Repayment	
5	11 February	3+4	Loan Repayment +Bonds	
6	18 February	4	Bonds	
7	25 February	5	Yield rates of an Investment	
8	4 March	6	Term Structure of Interest Rates	
9	11 March	7	Asset Liability Management, Duration, and Immunization	
10	1 April	PR1		

11	8 April	PR2		
12	15 April	PR3		
13	22 April	PR4		
14	29 April	PR5		
15	6 May	PR6		
	Final Exam ( <b>Comprehensive</b> ): As posted on the Registrar Website			