

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS
DHAHRAN, SAUDI ARABIA

AS481 Lab: Actuarial Contingencies 2 - Term 221 (3-2-4) 3.20pm M

Instructor: Dr. Mohammad H. Omar

Office: Bldg – 5, room – 508. **Phone:** 2471

E-mail: omarmh@kfupm.edu.sa (Not by WebCT/Blackboard email)

Office Hours: U (9.00 - 10.45am) and R (10.00am-10.45am) or by appointment through MS Teams chat.

Lab Objectives:

The lab of AS 481 is designed to help the students in the following ways:

1. To easily understand and appreciate the practicability of the concepts taught in the AS 481 curriculum.
2. To develop their ability to properly analyze and solve long-term actuarial problems, and reasonably interpret their results.
3. To learn how to use EXCEL in solving a wide range of long-term actuarial problems in real world, including life insurance and life annuities contracts.

Assessment

Assessment for this lab will be based on attendance, lab assignments, and quizzes as in the following:

Activity	Weight	Marks
Attendance and Lab Participation	10%	2
Lab Assignments	30%	6
3 Lab Quizzes	60%	12
Total	100%	20

Resources

Students **must bring** the Lab Manual and SoA calculator with them to every lab session.

Lab Manual and Package:

1. Li & Ng (2021). ACTEX Study Manual for SOA Exam LTAM. ACTEX. ISBN: 978-1-63588-929-1
2. Texas BAII Plus Calculator or Texas BAII Professional
3. MS EXCEL

Reference:

1. Camilli, S.J., Duncan, I., & London, R.L. (2014) *Models for Quantifying Risk, 6th edition*. ACTEX Publication: Winsted, USA.
2. Dickson, D.C., Hardy, M. R., & Waters, H. R. (2020) *Actuarial Mathematics for Life Contingent Risks, 3rd edition*. Cambridge University Press: Cambridge, UK.
3. Bowers N., Gerber, H., Hickman, J., Jones, D. & Nesbitt, C. (1997 or later printing) *Actuarial Mathematics*, 2nd edition. Society of Actuaries Publishing.
4. LTAM exam syllabus on SOA site.

Suggested Class work and Tutorial Problems

Students are encouraged to do the problems in the Lab first by hand and then by using EXCEL for the comparison of results, if any.

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

Exams and quizzes:

Exam Questions: The questions of the quizzes are based on the examples, homework problems, and exercises in the Lab manual or textbook.

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

- Looking at the papers of other students,
- Talking to other students,
- Using mobiles or any other electronic devices.

Exam or quizzes Issues:

- No student will be allowed to take the exam if not having his/her KFUPM ID or National/Iqama ID.
- Students are not allowed to carry mobiles, smart watches, or electronic devices to the exam halls/rooms.
- Students must take the exam in the place assigned to them.

Missing an Exam or quizzes:

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

Attendance: Students must adhere to the attendance policy of KFUPM. Students are expected to attend all lecture and recitation classes.

- If a student misses a class, he is responsible for any announcement made in that class.
- A DN grade will be assigned to the eligible student after being warned twice by his/her instructor.
- A DN grade will be awarded to any student who accumulates
 - 9 unexcused absences in lecture and labs. (20%)
 - 15 excused and unexcused absences in lecture and recitation classes. (33%)

Note:

- **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 late (**2 lates= 1 Absence**) and
- **More than 10 minutes late = Absence** (regardless of any excuse).
- Only University Blue paper Official excuses will be accepted as valid excuse.

Absences are counted as follows:

- Missing a lab is counted as 2 absences.
- Missing a lecture is counted as 1 absence.

Syllabus, weekly coverage of material and lab tests schedule

Week	Topic	Section	Problem
Wk01 Aug 28	Multiple Decrement Models: Theory	Ch 8	Q1 to 10
Wk02 Sep 4	Multiple Decrement Models: Applications	Ch 9	Q1 to 10
Wk03 Sep 11	Multiple Decrement Models: Applications (cont.) Numerical calculations by EXCEL	Ch 9	Q11 to 20
Wk04 Sep 18	Multiple State Models	Ch 10	Q1 to 10
Wk05 Sep 25	Multiple State Models (cont.) Numerical calculations by EXCEL Lab Quiz 1 – Material: From the chap 8 to 9	Ch 10 Lab Test 1	Q11 to 16
Wk06 Oct 2	Multiple Life Functions	Ch 11	Q1 to 10
Wk07 Oct 9	Multiple Life Functions (cont.) Numerical calculations by EXCEL	Ch 11	Q11 to 20
Wk08 Oct 16	Pension Plans and Retirement Benefits Lab Quiz 2 – Material: From Chap 10 and 11	Ch 12 Lab Test 2	Q1 to 6
Wk09 Oct 23	Pension Plans and Retirement Benefits (cont.) Numerical calculations by EXCEL	Ch 12	Q7 to 16
Wk10 Oct 30	Profit Testing	Ch 13	Q1 to 6
Wk11 Nov 6	Profit Testing (cont.) Numerical calculations by EXCEL	Ch 13	Q7 to 13
Wk12 Nov 13	Mortality Improvement Modeling Lab Quiz 3 – Material Covered: Ch 12 and 13	Ch 15 Lab Test 3	Q1 to 6
Wk13 Nov 20	Mortality Improvement Modeling (cont.) Numerical calculations by EXCEL	Ch 15	Q7 to 16
Nov 29	MidTerm Break		
Wk14 Dec 4	Health Benefits	Ch 16	Q1 to 6
Wk15 Dec 11	LTAM Oct 2019	S-191	Q1 to 10