King Fahd University of Petroleum & Minerals  
Mathematics & Statistics Department

Syllabus
AS388 Actuarial Science Prob Lab II  
Term 151

Course Name: (AS 388) Actuarial Science Prob Lab II.
Prerequisites: (STAT301) Introduction to Probability Theory
Class Schedule: UTR 11:00-11:50, Bld 4 Room 237.
Instructor:
Name: Monjed H. Samuh
E-mail: monjedsamuh@kfupm.edu.sa
Website: http://faculty.kfupm.edu.sa/math/monjedsamuh/
Office: Bld 5 Room 410.
Office Hours: UTR 09:00-10:50, and M 10:00-10:50, or by appointment (via email).

Textbook  

Recommended Texts

Course Objectives  
This problem lab is designed to prepare Actuarial majors for the first Society of Actuaries (SOA) and Casualty Actuarial Society (CSA) Examinations, Exam P (Probability). Students are assumed to have taken the appropriate prerequisite courses (STAT301 or equivalent) prior to registering for this society exam preparation lab.

Course Contents
1. General Probability (15-30% of SOA-P Exam)
   • Set functions including set notation and basic elements of probability
   • Mutually exclusive events
   • Addition and multiplication rules
• Independence of events
• Combinatorial probability
• Conditional probability
• Bayes Theorem/Law of total probability

2. Univariate probability distributions (including binomial, negative binomial, geometric, hypergeometric, Poisson, uniform, exponential, chi-square, beta, Pareto, lognormal, gamma, Weibull, and normal) (30-50% of SOA-P Exam)
   • Probability functions and probability density functions
   • Cumulative distribution functions
   • Mode, median, percentiles, and moments
   • Variance and measures of dispersion
   • Moment generating functions
   • Transformations

3. Multivariate probability distributions (including the bivariate normal) (30-45% of SOA-P Exam)
   • Joint probability functions and joint probability density functions
   • Joint cumulative distribution functions
   • Central Limit Theorem
   • Conditional and marginal probability distributions
   • Moments for joint, conditional, and marginal probability distributions
   • Joint moment generating functions
   • Variance and measures of dispersion for conditional and marginal probability distributions
   • Covariance and correlation coefficients
   • Transformations and order statistics
   • Probabilities and moments for linear combinations of independent random variables

Course Policies

• Please do the reading and solve the problems from the sections to be covered before coming to class each day. Your instructor will be planning class activities assuming you have solved the problems. **If you find it difficult to solve a specific problem, you should send me an email about that problem at least one day before the class day.**

• You may collaborate on homework, but you must write your submitted work in your own words. All steps are required, this includes showing calculations, derivations, and proofs.
• You have to devote to this class several hours per week of concentrated attention to understand the subject enough so that standard problems become routine. If you think that coming to class and reading the examples while also doing something else is enough, you’re in for an unpleasant surprise on the exams.

• Attending classes is compulsory; according to the University regulations, 3 or more unexcused absences will earn you a grade of DN.

• In the event that a student has to miss a class, he is responsible to get caught up with the materials covered and homework assigned.

• All students are expected to be in the classroom on time. Every two times late equals to one absence.

• It is the student’s responsibility to observe the academic calendar for important dates.

• It is the student’s responsibility to be knowledgeable about the rules and regulations that govern your study at the university.

• No make-up tests will be hold in any circumstance, any student with accepted excuse will be given the grade of the final transferred to appropriate weight. Make-up of the final test will follow the university regulations.

• I assume, the students come to class to learn, I come to class to teach.

  – We will be respectful of everyone in class.
  – Mobiles should be turned off before the beginning of each class, no exceptions.
  – There will be no talking in class, except to ask instructor questions or share comments with the entire class. Talking is disruptive to the class and disrespectful to the Instructor.
  – There will be no texting, reading, eating, etc., while in class.

• Cheating will be dealt with according to the University rules.

Grade Distribution

• Your final grade will depend on the following components with these proportions:

  – Presentation (10%).
  – Attendance (15%): One point will be deducted for each absence.
  – Quizzes (20%): Quizzes will be given every 2 or 3 weeks.
  – Midterm exam (25%): Nov. 4, 2015 (Wednesday).
  – Final Exam (30%): Dec. 27, 2015 (Sunday) – As per the official schedule.

• You need to achieve at least 50% in order to pass the course.
- Grading Scale

<table>
<thead>
<tr>
<th>Score</th>
<th>93-100</th>
<th>87-92</th>
<th>80-86</th>
<th>73-79</th>
<th>67-72</th>
<th>60-66</th>
<th>55-59</th>
<th>50-54</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>A+</td>
<td>A</td>
<td>B+</td>
<td>B</td>
<td>C+</td>
<td>C</td>
<td>D+</td>
<td>D</td>
</tr>
</tbody>
</table>