Central Connecticut State University  
Department of Mathematical Sciences

Actl 481: Review for Course P (SOA/CAS)

Fall 2018

Text  
Sample Exam Questions (downloadable at soa.org)  
Online study notes by Marcel Finan (see attachment)  
Supplemental material is available on reserve  
webresouces for exam p: Univeristy of Windsor

Instructor:  
Dr. Frank Bensics
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Office Hours:  
M/T/WTh  2:45 - 4:00

Prerequisites:  Two semesters of calculus and at least one course in mathematical probability.

Students for Whom the Course is Intended:  The course is designed for those who plan to take the first actuarial exam, currently jointly administered by the SOA and CAS

Course Description:  Lectures and problems (with an emphasis on problems) related to the application of probability and calculus to risk management and insurance

Course Objective:  Specific focus is on the material specifically covered on the first actuarial exam

Tentative Schedule  

<table>
<thead>
<tr>
<th>WEEKS 1-3</th>
<th>TOPIC</th>
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<tr>
<td></td>
<td>Elements of Probability</td>
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<td>- Set functions including set notation and basic elements of probability</td>
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<td>- Mutually exclusive events</td>
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<td>- Addition and multiplication rules</td>
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<td>- Independence of events</td>
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<td>- Combinatorial Probability</td>
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<td>- Conditional Probability</td>
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<td>- Law of Total Probability</td>
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<td>- Bayes' Theorem</td>
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WEEKS 4-5  
Probability Distributions  
- Random Variables  
- Probability functions and probability density functions  
- Cumulative distribution functions  
- Mode, median, percentiles and moments  
- Variance and measures of dispersion, coefficients of variation and skewness  
- Moment generating function  

WEEK 6  
Discrete Random Variables  
- Binomial, negative binomial, geometric, hypergeometric, Poisson  

WEEK 7-8  
Continuous Random Variables  
- Uniform, exponential, normal, beta, Pareto, lognormal, gamma, Weibull  

Test 1  

WEEK 9-10  
Multivariate Distributions  
- Joint probability functions and joint probability density functions  
- Joint cumulative distribution functions  
- Central Limit theorem  
- Covariance and correlation coefficients  
- Probabilities and moments for linear combinations of independent random variables  

WEEK 11  
Insurance Applications  

Test 2  

WEEKS 12-14  
Review  

Grading:  
2 take home tests (15% each)  
three in class tests (count higherst two) (20% each)  
final (30%)  
Any student who passes the P during semester will receive an A
University Policies:

1. You must take the final exam at the specified time.

2. If you need course adaptations or accommodations because of a disability (certified by the university), please make an appointment as soon as possible.

3. In the event of a weather emergency which requires curtailment or cancellation of classes, call 860-832-3333 for the "general snow message".

4. Last day to withdraw is Nov. 21. Withdrawal forms are available in the Enrollment Center in Willard Hall. Cessation of attendance, notice to the instructor or telephone calls to the Enrollment Center are not considered official notice of intention to withdraw.