Baruch College - Department of Mathematics

Math 4420: Actuarial Mathematics I (Long-Term Insurance)

Actuarial Mathematics for Life Contingent Risks, by Dickson, Hardy, and Waters
2^{nd} edition, Cambridge University Press, 2013
ISBN # 978-1-107-04407-4

Chapter 2: Survival Models

2.2: The Future Lifetime Random Variable
2.3: The Force of Mortality
2.4: Actuarial Notation
2.5: Mean and Standard Deviation of T_x
2.6: Curtate Future Lifetime

Suggested Problems: 2.1 - 2.3, 2.5 - 2.7, 2.10, 2.11, 2.15

Chapter 3: Life Tables and Selection

3.2: Life Tables
3.3: Fractional Age Assumptions
3.4: National Life Tables
3.5: Survival Models for Life Insurance Policyholders
3.6: Life Insurance Underwriting
3.7: Select and Ultimate Survival Models
3.8: Notation and Formulæfor Select Survival Models
3.9: Select Life Tables
3.11: Mortality Trends

Suggested Problems: 3.1 - 3.10

Chapter 4: Insurance Benefits

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4.4: Valuation of Insurance Benefits
4.5: Relating $\overline{A}_x$, A_x, and $A_x^{(m)}$
4.6: Variable Insurance Benefits
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Suggested Problems: 4.1 - 4.4, 4.6 - 4.9, 4.13, 4.15 - 4.17, 4.21, 4.22

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5.4: Annual Life-Annuities
5.5: Annuities Payable Continuously
5.6: Annuities Payable m Times per Year
5.7: Comparison of Annuities by Payment Frequency
5.8: Deferred Annuities
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Suggested Problems: 5.1 - 5.10, 5.14, 5.16 - 5.18

Chapter 6: Premium Calculation

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6.4: The Present Value of a Future Loss Random Variable
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6.8: The Portfolio Percentile Premium Principle
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Suggested Problems: 6.1 - 6.4, 6.6, 6.8, 6.11, 6.12, 6.15 - 6.17, 6.20

Chapter 7: Policy Values (aka Premium Reserve)

7.3: Policies with Annual Cash Flows
7.4: Policy Values with Other Discrete Cash Flows
7.5: Policy Values with Continuous Cash Flows
7.6: Policy Alterations
7.7: Retrospective Policy Value
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Suggested Problems: 7.1 - 7.4, 7.6 - 7.9, 7.11 - 7.16, 7.19, 7.20