

# Individual Life and Annuity Life Risk Management Exam

Fall 2016/Spring 2017

## Important Exam Information:

<a href="#">Exam Registration</a>	Candidates may register online or with an application.
<a href="#">Order Study Notes</a>	Study notes are part of the required syllabus and are not available electronically but may be purchased through the online store.
<a href="#">Introductory Study Note</a>	The Introductory Study Note has a complete listing of all study notes as well as errata and other important information.
<a href="#">Case Study</a>	A copy of the case study will be provided with the examinations. Candidates will not be allowed to bring their copy of the case study into the examination room.
<a href="#">Past Exams</a>	Past Exams from 2000-present are available on SOA website.
<a href="#">Updates</a>	Candidates should be sure to check the Updates page on the exam home page periodically for additional corrections or notices.

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Fall 2016 & Spring 2017**

Exam: ILA - LRM	TOPIC: <b>Understanding Risk Management</b>
Learning Objectives	
<b>1. The candidate will demonstrate an understanding of the principles of Risk Management.</b>	
Learning Outcomes	
The candidate will be able to:	
<ul style="list-style-type: none"> <li>A. Define and evaluate risk.</li> <li>B. Evaluate the role of risk management within an insurance company</li> <li>C. Articulate the economic incentives for applying risk management</li> <li>D. Describe how risk management techniques may be used to manage capital deployed by insurers and how they impact strategic decision making</li> </ul>	
Syllabus Resources	
<ul style="list-style-type: none"> <li>• LRM-100-14: The Theory of Risk Capital in Financial Firms</li> <li>• LRM-104-14: Rethinking Risk Management</li> <li>• LRM-123-15: Enterprise Risk Management, S&amp;P, May 2013, pp. 3 – 28</li> <li>• LRM-124-15: All on the Same Train, But Heading in Different Directions, Underwood, Thompson &amp; Ingram</li> <li>• LRM-125-15: Ch. 1 of <i>Financial Enterprise Risk Management</i>, Sweeting</li> <li>• <a href="#">CIA: Dynamic Capital Adequacy Testing (DCAT) Revised Education Note</a>, November 2013 (pages 4-33)</li> <li>• <a href="#">ERM Specialty Guide, May 2006– Chapters 1-6</a></li> <li>• <a href="#">Risk Appetite: Linkage with Strategic Planning</a></li> <li>• <a href="#">Describing Risk Culture</a>, The Actuary, August 2012</li> </ul>	

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Exam: ILA – LRM	TOPIC: <u>Understanding the Various Sources of Risks</u>
Learning Objectives	
<b>2. The candidate will demonstrate an understanding of the various sources of risks faced by an insurer.</b>	
Learning Outcomes	
The candidate will be able to:	
<ul style="list-style-type: none"><li>A. Identify, categorize and evaluate potential sources of risk in products including but not limited to mortality, morbidity and lapse.</li><li>B. Identify, categorize and evaluate potential sources of risk in investments including but not limited to credit risk, liquidity, equity-based exposure and asset-liability matching.</li><li>C. Describe and evaluate the other risks an insurance company faces including operational, marketplace and expense risks.</li></ul>	
Syllabus Resources	
<ul style="list-style-type: none"><li>• <i>Counterparty Credit Risk and Credit Value Adjustment</i>, Gregory, 2<sup>nd</sup> Edition, 2012,<ul style="list-style-type: none"><li>Ch. 8, Credit Exposure</li><li>Ch. 9, Quantifying Credit Exposure, Sections 9.4-9.5</li><li>Ch. 15, Wrong-Way Risk</li></ul></li><li>• LRM-105-14: Mapping of Life Insurance Risks, AAA Report to NAIC</li><li>• LRM-106-14: Moody's Looks at RM &amp; the New Life Insurance Risks – 2000</li><li>• LRM-126-15: Liquidity Risk, Saunders &amp; Cornett, Ch. 17, pp. 493 – 514</li><li>• <a href="#">A New Approach for Managing Operational Risk</a> - SOA Research 2008</li></ul>	

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Exam: ILA – LRM	TOPIC: <b>Measuring &amp; Estimating Risk</b>
Learning Objectives	
<p><b>3. The candidate will demonstrate an understanding of important risk measurement techniques along with their uses and limitations, and be able to perform risk measurement calculations.</b></p>	
Learning Outcomes	
<p>The candidate will be able to:</p> <ul style="list-style-type: none"> <li>A. Analyze and evaluate risk measures &amp; estimators (e.g., Value-At-Risk, Conditional Tail Expectations, etc.)</li> <li>B. Apply and analyze scenario and stress testing in managing risk including the calibration and setting of assumptions</li> <li>C. Analyze and evaluate parameter risk</li> </ul>	
Syllabus Resources	
<ul style="list-style-type: none"> <li>• LRM-108-14: Study Note on Parameter Risk</li> <li>• LRM-111-14: Value-At-Risk: Evolution, Deficiencies and Alternatives</li> <li>• LRM-112-14: Stress Testing OSFI E-18</li> <li>• LRM-121-14: Value at Risk - Uses and Abuses</li> <li>• LRM-127-15: Measures of Financial Risk, Dowd, Ch. 2, pp. 19 – 32</li> <li>• LRM-128-15: A Short, Comprehensive, Practical Guide to Copulas, GARP, Oct 2011</li> <li>• LRM-129-15: Stress Testing: A Robust End-To-End Approach, GARP, Dec 2011</li> <li>• LRM-130-15: Diversification: Consideration on Modelling Aspects &amp; Related Fungibility and Transferability, CRO, Oct 2013, pp. 4 – 14, 19 – 30</li> <li>• <a href="#">How Fair Value Measurement Changes Risk Management Behavior in the Insurance Industry</a> SOA- Rosner 2013</li> <li>• <a href="#">Economic Scenario Work Group Report, Dec 2008</a></li> <li>• <a href="#">Academy Interest Rate Generator: Frequently Asked Questions (FAQ), June 2014</a></li> <li>• <a href="#">Summary of "Variance of the CTE Estimator"</a>, <i>Risk Management Newsletter</i>, August 2008, Issue No. 13</li> <li>• <a href="#">Getting to Know CTE</a> , Ingram, <i>Risk Management Newsletter</i>, July 2004, Issue No. 2</li> </ul>	

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Exam: ILA - LRM	TOPIC: <b><u>Asset Liability Management</u></b>
Learning Objectives	
<p><b>4. ALM: The candidate will demonstrate an understanding of the principles of modeling, cash flow testing and asset-liability matching, and perform related calculations.</b></p>	
Learning Outcomes	
<p>The candidate will be able to:</p> <p>A. For an ALM model:</p> <ol style="list-style-type: none"> <li>i) Select appropriate assumptions and scenarios</li> <li>ii) Model dynamic behavior of both assets and liabilities</li> <li>iii) Model and explain various strategies, including hedging</li> <li>iv) Analyze and evaluate results (including actual v. projected differences)</li> <li>v) Recommend appropriate strategies</li> </ol> <p>B. Define and calculate duration, convexity and key rate durations including the rationale for matching as a means to manage risk</p> <p>C. Evaluate the principles of Cash Flow Testing to help in understanding the underlying risks and to assess their impact on capital and surplus</p>	
Syllabus Resources	
<ul style="list-style-type: none"> <li>• <i>Asset Liability Integration</i>, SOA – Society of Actuaries, 2002             <ul style="list-style-type: none"> <li>Ch. 2 - <a href="#">Defining Asset-Liability Management</a></li> <li>Ch. 3 – <a href="#">Why Did ALM Become Important?</a></li> </ul> </li> <li>• LRM-114-14: ALM for Insurers</li> <li>• LRM-116-14: Life Insurance Forecasting and Liability Models, exclude appendices.</li> <li>• LRM-117-14: Key Rate Durations: Measures of Interest Rate Risk</li> <li>• LRM-118-14: Revisiting the Role of Insurance Company ALM w/in a RM Framework</li> <li>• LRM-119-14: Chapter 13 of <i>Valuation of Life Insurance Liabilities</i>, Lombardi</li> <li>• LRM-120-14: Chapter 14 of <i>Life Insurance Products and Finance</i>, Atkinson/Dallas Section 14.4 only on ALM Matching</li> </ul>	