

Individual Life and Annuities Design and Pricing
U.S.
Fall 2009

Important Exam Information:

- [Exam Date and Time](#) A read-through time will be given prior to the start of the exam—15 minutes in the morning session and 15 minutes in the afternoon session.
- [Exam Registration](#) Candidates may register online or with an application.
- [Study Note Order Form](#) Study notes are part of the required syllabus and are not available electronically.
- [Introductory Study Note](#) The Introductory Study Note has a complete listing of all study notes as well as errata and other important information.
- [Case Study](#) This case study will also be provided with the examination. Candidates will not be allowed to bring their copy of the case study into the examination room.
- [Past Exams](#) Past Exams from 2000-present are available on SOA web site.
- [Updates](#) Candidates should be sure to check the Updates page on the exam home page periodically for additional corrections or notices.

Individual Life and Annuities Design and Pricing U.S. Fall 2009

Syllabus for Individual Life and Annuities U.S Design and Pricing Exam:

The candidate should be very familiar with the Learning Objectives as described in the syllabus. These Learning Objectives are the first ingredient in developing the syllabus and also guide the examination committee when writing questions. The Learning Objectives set out the cognitive level needed to pass this exam. You will notice that the candidates are expected to “analyze,” “explain,” “calculate,” “describe,” “apply,” etc. While studying the syllabus material, candidates may want to refer back to the Learning Objectives to remain focused on the goals of the exam.

Exam: ILA - DP	
Learning Objectives	
1. Describe the product development process.	
Learning Outcomes	Syllabus Resources
<p>The candidate will be able to:</p> <p>A. Describe the steps in the control cycle process within the context of product development;</p> <p style="margin-left: 20px;">i) Idea Generation</p> <p style="margin-left: 20px;">ii) Feasibility</p> <p style="margin-left: 20px;">iii) Planning the Design</p> <p style="margin-left: 20px;">iv) Actuarial Development</p> <p style="margin-left: 40px;">▪ Assumptions</p> <p style="margin-left: 40px;">▪ Profit Measures</p> <p style="margin-left: 40px;">▪ Regulatory Issues</p> <p style="margin-left: 40px;">▪ Choice of Model</p> <p style="margin-left: 20px;">v) Launch and Monitor the Product</p> <p>B. Describe the iterative processes in the planning, and actuarial development steps</p>	
Syllabus Resources	
<ul style="list-style-type: none"> • <i>Life Insurance Products and Finance</i>, Atkinson, D., Dallas, J., 2000, <ul style="list-style-type: none"> ○ Chapters 1 and 2 • ILA-D101-07: Product Development Trends • ILA-D104-07: Easton and Harris <i>Actuarial Aspects of Individual Life Insurance and Annuity Contracts</i>, chapter 3, The Product Development Process • ILA-D111-07: LOMA, <i>Product Design for Life Insurance & Annuities</i>, Chapter 1 • 2006 Marketing and Distribution Section Product Implementation Survey , Product Development and Implementation Survey, Product Matters! June 2007 http://www.soa.org/library/newsletters/newsdirect/2007/june/2002007june.aspx • The Process of Premium Formulation, 50th Anniversary Monograph http://www.soa.org/library/research/transactions-of-society-of-actuaries/1982/january/tsa82v3418.pdf 	

Individual Life and Annuities Design and Pricing
U.S.
Fall 2009

Exam: ILA - DP	
Learning Objectives	
2. Understand the drivers of product design (the idea step).	
Learning Outcomes	
For a given context or product, the candidate will be able to:	
A. Identify customers – internal and/or external	
B. Analyze:	
• the advantage/disadvantages of different internal drivers	
• how the forces of the economy and demographics, impact product design	
• consumer behavior impact product design.	
• how the forces of the marketplace and competition impact product design.	
C. Describe the questions to ask the sales and marketing (incl. Agents, brokers and direct marketing)	
Syllabus Resources	
• <i>Life and Health Insurance Marketing</i> , LOMA, Third Edition, 2003	
○ Chapters 5-9, 12-17	
• <i>Marketing for Actuaries</i> , LIMRA, 2000 Edition	
○ All Chapters	

Individual Life and Annuities Design and Pricing

U.S.

Fall 2009

Exam: ILA – DP	
Learning Objectives	
3. Understand the feasibility step of new product and how it drives design.	
Learning Outcomes	
For a given context or product, the candidate will be able to:	
<ul style="list-style-type: none"> A. Describe considerations for prudent and practical decision making B. Assess the risks underlying the design of certain products and features within those products as well as suggestions as to the management of such risks. C. Describe how tax regulation can drive (not just constrain) product design D. Describe how non-forfeiture regulation can drive (not just constrain) product design E. Describe how investment policy can impact design F. Identify gaps between the product design and the operations of the company and procedures and systems G. Recommend ways to close the gaps between design and the internal/external constraints. 	
Syllabus Resources	
<ul style="list-style-type: none"> • <i>Life Insurance Products and Finance</i>, Atkinson, D., Dallas, J., 2000 <ul style="list-style-type: none"> ○ Chapters 2 and 3 • <i>Life Insurance and Modified Endowments Under IRC §7702 and §7702A</i>, DesRochers, C.J., Adney, J.T., Hertz, D.N., King B.G., 2004 <ul style="list-style-type: none"> ○ Chapters 1, 2, 3, 4, 6 and 9 • <i>2008 Supplement to Life Insurance and Modified Endowments Under IRC §7702 and §7702A</i> http://www.soa.org/files/pdf/2008-life-ins-mod-end-supplement.pdf • ILA-D111-07: LOMA, Product Design for Life Insurance & Annuities, Chapter 1 • ILA-D800-07: Life Insurance and Annuity Non-forfeiture Practices • ILA-D801-07: NAIC Standard Non-forfeiture Law for Life Insurances: Sections 1-4, 5c, 6-9 • ILA-D802-07: NAIC Standard Non-forfeiture Law for Individual Deferred Annuities • Hidden Costs of Administering Complex Products, Nov. 2003 Issue of <i>Product Matters</i> http://www.soa.org/library/newsletters/product-development-news/2003/november/pdn0311.pdf • Hidden Costs of Product Complexity in Nov. 2003 Issue of <i>Product Matters</i> http://www.soa.org/library/newsletters/product-development-news/2003/november/pdn0311.pdf 	

Individual Life and Annuities Design and Pricing

U.S.

Fall 2009

Exam: ILA – DP	
Learning Objectives	
4. Understand the design and purpose of various product benefits and features.	
Learning Outcomes	
The candidate will be able to:	
<ul style="list-style-type: none"> A. Describe in detail the basic benefit/product types and their uses, B. Recommend designs for products and features to reach particular goals C. Demonstrate the integration of the results of the idea and feasibility steps into a recommended design 	
Syllabus Resources	
<ul style="list-style-type: none"> • <i>Investment Guarantees – Modeling and risk Management for Equity-Linked life Insurance</i>, Hardy, M, 2003 <ul style="list-style-type: none"> ◦ Chapter 1 • <i>Life Insurance Products and Finance</i>, Atkinson, D., Dallas, J., 2000 <ul style="list-style-type: none"> ◦ Chapter 13 • ILA-D102-07: Equity Indexed Annuities: Product Design and Pricing Consideration • ILA-D105-07: Life and Annuity Products and Features • ILA-D112-08: Valuation of Living and Death Benefit Guarantees for Variable Annuities, Hauser, pp. Sections 1 through 4.1.4 (pp. 3-15) • Pitfalls in EI Products Product Development News, March 1998, http://www.soa.org/library/newsletters/product-development-news/1998/march/pdn9803.pdf • EIUL: The Devil's in the Details, <i>Product Matters</i>, August (62)2005, http://www.soa.org/library/newsletters/product-development-news/2005/august/pdn0508.pdf • Inflation-Indexed Income Annuities: Pricing Considerations and Investment Strategies, Simpa Baiye, <i>Product Matters</i>, September, 2006 http://www.soa.org/library/newsletters/product-development-news/2006/September/PDN0609.pdf • Variable Annuity Risk and Seeking the Perfect Hedge, <i>Product Matters</i>, July (56)2003 http://www.soa.org/library/newsletters/product-development-news/2003/july/pdn0307.pdf • Incorporating Dynamic Policyholder Behavior Assumptions into Pricing of Variable Annuities, <i>Product Matters</i>, September 2006 http://www.soa.org/library/newsletters/product-development-news/2006/September/PDN0609.pdf • What's Backing Your Life Insurance Guarantee?, <i>The Actuary</i>, February 2005 http://www.soa.org/library/newsletters/the-actuary-magazine/2005/february/wha2005february.aspx • VUL Secondary Guar: Catalyst for Sales Rebound, <i>Product Matters</i>, July (56)2003, http://www.soa.org/library/newsletters/product-development-news/2003/july/pdn0307.pdf • Managing Variable Policyholder Behavior Risk, <i>Product Matters</i>, March (61)2005 http://www.soa.org/library/newsletters/product-development-news/2005/march/pdn0503.pdf • Return of Premium Term, <i>Product Matters</i>, July 2004 http://www.soa.org/library/newsletters/product-development-news/2004/july/pdn0407.pdf • Term Mortality and Lapses, <i>Product Matters</i>, August (62) 2005, http://www.soa.org/library/newsletters/product-development-news/2005/august/pdn0508.pdf • Lapse Experience Under Lapse Supported Products, <i>Product Development News</i>, December 2005 http://www.soa.org/library/newsletters/product-development-news/2005/december/pdn-2005-iss63-lebel.pdf • Designing & Pricing LTCI Combination Insurance Products, Long Term Care News, December (13) 2004 http://www.soa.org/library/newsletters/long-term-care/2004/december/ltc0412.pdf • ASOP #1 Non-guaranteed Charges or Benefits for Life Insurance Policies and Annuity Contracts, March 2004 http://www.actuarialstandardsboard.org/pdf/asops/asop001_092.pdf 	

Individual Life and Annuities Design and Pricing

U.S.

Fall 2009

Exam: ILA - DP	
Learning Objectives	
5. Understand the relationship between the product features and the selection of appropriate pricing assumptions, profit measures and modeling approaches.	
Learning Outcomes	Syllabus Resources
<p>The candidate will be able to:</p> <p>A. Identify the assumptions needed for a particular product design, including any embedded options, expenses, and reinsurance.</p> <p>B. Select appropriate assumptions for a given product design, reflecting</p> <ol style="list-style-type: none"> i) product characteristics ii) available experience data iii) the marketplace iv) underwriting v) distribution channel characteristics <p>C. Explain the effect of each assumption on product pricing.</p> <p>D. Incorporate expenses (fixed, variable, marginal) and taxes (income and premium) into product pricing</p> <p>E. Explain how assumption setting reflects investment strategy e.g., hedging</p> <p>F. Identify the most influential assumptions and price products for the particular feature including:</p> <ol style="list-style-type: none"> i) Riders ii) Policyholder Dividends iii) Equity linked iv) Embedded Options v) ROP vi) Secondary Guarantees vii) Payout Annuity Benefits viii) Reinsurance ix) Crediting methodology x) Other non-guaranteed elements <p>G. Explain Data Quality (experience studies)</p> <p>H. Analyze array of profit measures</p> <p>I. Determine statutory vs. GAAP profit measures</p> <p>J. Describe the capital requirements for the product</p> <p>K. Recommend appropriate measure for particular problem solving</p> <p>L. Explain how a stochastic model would be used for pricing</p> <p>M. Describe the advantages and disadvantages of stochastic and deterministic modeling approached</p> <p>N. Interpret results of a stochastic model.</p> <p>O. Describe financing through life insurance securitization</p>	
Syllabus Resources	
<ul style="list-style-type: none"> • <i>Life Insurance Products and Finance</i>, Atkinson, D., Dallas, J., 2000 <ul style="list-style-type: none"> ◦ Chapter 3, 4, 5, 7, 9, 10, 11, 13, 14 • <i>Investment Guarantees</i>, Hardy, M., 2003 <ul style="list-style-type: none"> ◦ Chapter 1 p. 14 only, Chapters 2, 6, 8, 9, 12, 13 • ILA-D102-07: Equity Indexed Annuities: Product Design and Pricing Consideration • ILA-D103-07: Price WaterHouse Coopers, Innovative Financing: Life Insurance Securitization • ILA-D106-07: Gross Premiums for Disability Waiver Benefits • ILA-D107-07: Experience Assumptions for Individual Life Insurance and Annuities • ILA-D109-09: Moody's Investors Service Corporate Default and Recovery Rates 	

Individual Life and Annuities Design and Pricing U.S. Fall 2009

- ILA-D110-07: Policyholder Dividends
- ILA-D113-09: Swiss Re, Economics of Insurance: How Insurers Create Value for Shareholders
- ILA-D114-09: CIA Research Paper, Life Insurance Costing and Risk Analysis, June 2008
- ILA-D115-09: IAA Measurement of Liabilities for Life Insurance Contracts: Current Estimates and Risk Margins, April 15, 2009, Chapter 6 and Appendices C and D
- Ending the Mortality Table
<http://www.soa.org/library/monographs/retirement-systems/living-to-100-and-beyond/2005/january/m-li05-1-ix.pdf>
- The Response of Life Insurance Pricing to Life Settlements, Product Matters!, September 2006
<http://www.soa.org/library/newsletters/product-development-news/2006/september/PDN0609.pdf>
- “Mortality Table Slope – the Discussion Goes On”, Product Matters July 2004
<http://www.soa.org/library/newsletters/product-development-news/2004/july/pdn0407.pdf>
- “Does Preferred Wear Off?” Product Matters, July 2004
<http://www.soa.org/library/newsletters/product-development-news/2004/july/pdn0407.pdf>
- Product Development Challenges in a Principles-Based World, Product Matters!, October 2007
<http://www.soa.org/library/newsletters/product-development-news/2007/october/pm-0710.pdf>
- Across America, Valuation Actuaries Are Being Warmly Welcomed to Product Development Project Teams, Product Matters! February 2007
<http://www.soa.org/library/newsletters/product-development-news/2007/February/PDN0702.pdf>
- ASOP #1 Nonguaranteed Charges or Benefits for Life Insurance Policies and Annuity Contracts
http://www.actuarialstandardsboard.org/pdf/asops/asop001_092.pdf
- ASOP #23 Data Quality
- “Pricing in a Return-on-Equity Environment”, TSA XXXIX, 1987
<http://www.soa.org/library/research/transactions-of-society-of-actuaries/1987/january/tsa87v3911.pdf>
- Stochastic Pricing, Session 62 TS from November 2005 SOA Annual Meeting
<http://www.soa.org/files/pdf/062bk-annual05.pdf>
- Stochastic Pricing, RSA Vol 27, No 2 Session 86PD
<http://www.soa.org/library/proceedings/record-of-the-society-of-actuaries/2000-09/2001/january/rsa01v27n286pd.pdf>
- Stochastic Pricing for Embedded options in Life Insurance and Annuity Products, Milliman (**exclude appendices**)
<http://www.soa.org/files/pdf/research-2009-stochastic-pricing.pdf>

**Individual Life and Annuities Design and Pricing
U.S.
Fall 2009**

Exam: ILA - DP	
Learning Objectives	
<p>6. Understand the relationship between the product design, assumptions and the monitoring of products that have been issued (mortality, investment returns, expenses and policyholder behavior such as policy and premium persistency).</p>	
Learning Outcomes	
<p>The candidate will be able to:</p> <ul style="list-style-type: none"> A. Manage a product once it is on the books given its pricing. B. Describe reasons why actual varies from expected given a situation. C. Recommend changes to non-guaranteed elements for deviations from expected 	
Syllabus Resources	
<ul style="list-style-type: none"> • <i>Life and Health Ins. Marketing</i>, LOMA, Third Edition, 2003 <ul style="list-style-type: none"> ○ pp.242-243 • ILA-D110-07: Policyholder Dividends • ILA-D111-07: LOMA, <i>Product Design for Life Insurance & Annuities</i>, Chapter 2 pages 31-33 • ILA-D803-07: Role of the Actuary in Product Roll-out • ILA-D804-09: NAIC Life Insurance Illustrations Model Regulation • ASOP #1: Nonguaranteed Charges or Benefits for Life Insurance Policies and Annuity Contracts http://www.actuarialstandardsboard.org/pdf/asops/asop001_092.pdf • ASOP #41, Actuarial Communications http://www.actuarialstandardsboard.org/pdf/asops/asop041_086.pdf 	