

Retirement Design and Pricing Exam Syllabus

Fall 2008

U.S.

Important Information

The examination for this course will be given on Thursday, October 30 from 8:30am to 12:15pm and will consist of three and a half hours of written-answer questions. A read-through time will be given prior to the start of the exam—15 minutes. Information regarding registering for exams is available on the [Exam Registration](#) page.

For Fall 2008, this exam includes a [case study](#) for the examination. The case study will also be distributed in the Study Note package. **Candidates will not be allowed to bring their copy of the case study into the examination room.**

Study notes are part of the required Course of Reading and are not available electronically. The [Introductory Study Note](#) (coming soon) has a complete listing of all study notes. Candidates must order the Complete or Revision study notes from the Society of Actuaries using the [Study Note Order Form](#).

Past exams are available on the Exam Archives page of the SOA web site under [Multiple Choice/Essay Examinations](#).

Candidates should be sure to check the [Updates](#) page of the web site periodically for additional corrections or notices.

The candidate should be very familiar with the Learning Objectives as described in the Basic Education Catalog. 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	Retirement DP
Instructional Objectives	
1. The candidate will be able to analyze different types of registered/qualified defined benefit and defined contribution plans, as well as retiree health plans.	
Learning Outcomes	
The candidate will be able to:	
<ul style="list-style-type: none"> a) Describe the structure of the following plans: <ul style="list-style-type: none"> ▪ Fixed dollar and pay-related defined benefit plans ▪ Hybrid plan designs such as, cash balance, pension equity, and floor offset plans, target benefit plans ▪ Defined contribution plans including 401(k) plans and capital accumulation plans ▪ Retiree Health Plans b) Describe the process and apply the principles of conversions from one plan type to another c) Apply methods of the integration of government-provided benefits with retirement plan designs d) Given a plan type, explain the relevance and range of plan features including the following: <ul style="list-style-type: none"> i) Plan eligibility requirements 	

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- ii) Benefit eligibility requirements, accrual, vesting and phased retirement
- iii) Benefit / contribution formula
- iv) Payment options and associated adjustments to the amount of benefit
- v) Ancillary benefits
- vi) Benefit subsidies and their value, vested or non-vested
- vii) Participant investment options
- viii) Required and optional employee contributions
- ix) Phased retirement and DROP plans

Syllabus Resources

- o Allen, et al., *Retirement Plans: 401(k)s, IRAs, and Other Deferred Compensation Approaches*, 10th Edition, 2008, Ch. 3(pp 49-50 only), Ch. 5 (pp. 83-84 only), Ch. 6 (pp. 91-92 and 102-107 only), Ch.7, Ch. 8 (pp. 125-128 only), Ch. 9, (pp.149-150 only) Ch. 17, Ch. 21
- o McGill, et al., *Fundamentals of Private Pensions*, 8th Edition, 2005, Ch. 13, Ch.15 (pp 378-381 only), Ch. 19, Ch. 20 (pp. 552-553, 571-574)
- o Yamamoto, *Fundamentals of Retiree Group Benefits*, 2006, Ch 4 (pp 57-68;pp 90-112 only), Ch. 5 (with pp. 123-143 as background only)
- o R-D100-07: Multi-Employer Plans
- o R-D101-07: Converting Pension Plans From DB to DC pp. 1-5 only
- o R-D102-07: Integration With Social Security
- o R-D800-07: Laska & Barry, *The New Deferred Compensation Rules: The Sky Is not Falling*
- o R-D801-07: Current Issues w/PERS,” 2005 EA meeting, session 202, pp. 17 (Plan Design) –35 (exclude Q&A)

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Exam
Instructional Objectives
2. The candidate will be understand how the regulatory environment affects plan design and understand how to apply relevant restrictions.
Learning Outcomes
The candidate will be able to, for the designated region: a) Explain and apply the regulatory limits placed on types of plans that can be offered b) Explain and apply restrictions on plan design features to a proposed plan design c) Explain and test for limits on plan designs and features that protect participant rights d) Test for plan design restrictions intended to control the use of tax incentives e) Calculate the limitations on payout options f) Explain and apply rules governing the conversion from one type of plan to another
Syllabus Resources
<ul style="list-style-type: none">○ Allen, et al., <i>Retirement Plans: 401(k)s, IRAs, and Other Deferred Compensation Approaches, 10th Edition, 2008</i><ul style="list-style-type: none">○ Ch. 5, pp. 83-84, “Integration with Social Security”○ Ch. 6, pp. 92-100 (“Qualification Requirements”); pp 105-107 (“Tax Law Provisions”)○ Ch .7, pp. 115-121○ Ch. 8, pp. 129-145○ Ch. 9, pp. 150-165○ Ch. 26, pp. 480-481 “Distribution Rules”○ Ch. 27, pp. 509-514○ Ch. 31, pp 579-592 only○ McGill, et al., <i>Fundamentals of Private Pensions, 8th Edition, 2005</i>, Ch 12, 13, 19, 20 (p. 565-571, 574-579 only)○ Turner & Watanabe, <i>Pensions in Industrialized Countries</i>, Ch. 4, p. 59-63○ R-D100-07: Multi-Employer Plans

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Instructional Objectives
3. The candidate will be able to analyze plans designed for executives or the highly paid
Learning Outcomes
The candidate will be able to: a) Given a specific context, apply principles and features of executive deferred compensation retirement plans. b) Given a specific context, apply principles and features of supplemental retirement plans c) Integrate a plan for executives with the basic benefit plan
Syllabus Resources
<ul style="list-style-type: none">o Allen, et al., <i>Retirement Plans: 401(k)s, IRAs, and Other Deferred Compensation Approaches</i>, 10th Edition, 2008, Ch. 10 and Ch. 14o R-D103-07: Should Variable Pay Count Towards Benefits Calculationso R-D800-07: The New Deferred Compensation Rules: The Sky Is not Fallingo R-D802-07: Executive Compensation and Benefits” 2004 CCA meeting, session 12o R-D803-07: NQDC: Holding Fast to the Past while Facing the Future

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Instructional Objectives
4. The candidate will understand alternative plan types that occur internationally
Learning Outcomes
The candidate will be able to: a) Compare different plan types and features b) Give examples of the structure of different plan types c) Give examples of plans that could work for multinational companies and their employees including third country nationals and expatriates
Syllabus Resources
<ul style="list-style-type: none">o Turner & Watanabe, <i>Private Pensions in Industrialized Countries</i>, 1995, Chapters 2 and 7.o R-D104-07: The Globalization of Employee Benefitso R-D105-07: Labor Market planso R-D106-07: Termination Indemnitieso R-D107-07: The European Pensions and Benefits Environment: A Complex Ecologyo R-D108-07: Pension Challenges and Pension Reforms in OECD Countries

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Instructional Objectives
5. The candidate will be able to apply/synthesize the various methods used to value a pension plan or retiree health plan for the purposes of the valuation.
Learning Outcomes
<p>The candidate will be able to:</p> <p>a) Differentiate between the various purposes for valuing pension plans:</p> <ul style="list-style-type: none"> i) Budgeting ii) Funding iii) Accounting iv) Solvency v) Termination/wind-up vi) Economic value <p>b) Perform periodic valuations of ongoing plans, calculating normal cost and actuarial liability, using the variety of cost methods for budgeting, funding, accounting and measuring economic value.</p> <p>c) Analyze and communicate the pattern of cost recognition that arises under a variety of funding and asset valuation methods.</p> <p>d) Perform valuations for special purposes, including:</p> <ul style="list-style-type: none"> i) Plan termination/windup ii) Solvency valuations iii) Open group valuations <p>e) Assess the impact of using various cost methods in a given context.</p>
Syllabus Resources
<ul style="list-style-type: none"> o Yamamoto, <i>Fundamentals of Retiree Group Benefits</i>, 2006 , Ch 9 pp 287-294 and Appendix F o R-D109-07: Financial Economics and Canadian Pension Valuation, September 2006 paper by CIA Task Force on Financial Economics o R-D110-07: <i>Pensions in the Public Sector</i>, Mitchell & Hustead, Ch. 3 pp 56-61 o CIA Education Note: Guidance on Asset Valuation Methods, November 2007, http://www.actuaries.ca/members/publications/2007/207102e.pdf o 8/2001 Pension Forum, “Dynamic Pension Plan Valuation”, pp.71-82, http://www.soa.org/library/newsletters/pension-forum/2001/august/pfn0108.pdf

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Instructional Objectives
6. The candidate will be able to analyze/synthesize the factors that go into selection of actuarial assumptions.
Learning Outcomes
<p>Given a context and/or data, the candidate will be able to:</p> <ol style="list-style-type: none"> a) Evaluate actual experience, including comparisons to assumptions b) Adjust current assumptions, given past experience and trends c) Explain the differences between setting assumptions for diversifiable versus non-diversifiable risks. d) Evaluate appropriateness of current assumptions given the purpose. e) Describe and explain the differences between a traditional and a financial economics perspective on the selection of assumptions f) Evaluate the appropriateness of actuarial assumptions using both a traditional and a financial economics perspective g) Describe and apply the building of economic assumptions h) Assess and explain the effect that the assumptions selected had on valuation results. i) Recommend appropriate assumptions for a particular type of valuation (e.g., ongoing, termination, etc.) and defend the selection. j) Select demographic and economics assumptions appropriate for a sensitivity analysis k) Select demographic and economic assumptions appropriate for a projection valuation designed for a given goal
Syllabus Resources
<ul style="list-style-type: none"> o Yamamoto, <i>Fundamentals of Retiree Group Benefits</i>, 2006, Ch 9 (pp 256-278 only) and Appendix F o R-D109-07: Financial Economics and Canadian Pension Valuation, CIA Task Force on Financial Economics o R-D111-07: Creating a Corporate Bond Spot Yield Curve for Pension Discounting – U.S. Treasury White Paper o R-D112-07: Selection of Actuarial Assumptions, pp.1-44 only o R-D113-07: Mortality Tables for Pension Plans o R-D114-07: An Introduction to Duration for Pension Actuaries o R-D115-07: Reinventing Pension Actuarial Science with discussion o R-D116-07: Selection of Valuation Interest Rates for Funding Valuations of Pension Plans

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- R-D117-07: Pension Projections
- R-D118-07: Liability Hedging and Portfolio Choice, Scherer, Chapters 1 & 2
- *The Actuary*, 1988 Differences in Actuarial Assumptions by Berin , <http://www.soa.org/library/newsletters/the-actuary/1988/january/act8801.pdf>
- “A Practical Approach to Gains Analysis Revisited” by Andrew Smith, *Pension Section News*, Sept. 93, <http://www.soa.org/library/newsletters/pension-section-news/1993/september/psn9309.pdf>
- “A Practical Approach to Gains Analysis” by Josian Lynch – *TSA Vol 27* pp.423-439, <http://www.soa.org/library/research/transactions-of-society-of-actuaries/1975/january/tsa75v2717.pdf>
- ASOP 35 Selection of Demographic and other Noneconomic Assumptions for Measuring pension Obligations, http://www.actuarialstandardsboard.org/pdf/asops/asop035_093.pdf
- ASOP 27 Selection of Economic Assumptions for Measuring Pension Obligations http://www.actuarialstandardsboard.org/pdf/asops/asop027_053.pdf
- “What’s Wrong with ASOP 27? Bad Measures, Bad Decisions” by Bader & Gold, Jan., 2005 Pension Forum <http://www.soa.org/library/newsletters/the-pension-forum/2005/january/pfn0501.pdf>
- Jan 05 Pension Forum – entire, <http://www.soa.org/library/newsletters/the-pension-forum/2005/january/pfn0501.pdf>
- Current Trends in Demographic Assumptions – Session 63 PD, San Francisco Spring Meeting <http://www.soa.org/library/proceedings/record-of-the-society-of-actuaries/2000-09/2002/january/rsa02v28n263pd.pdf>
- Selection of Economic Assumptions for Funding and Accounting Valuations, *RSA VOI 20 #3a*, 1994 <http://www.soa.org/library/proceedings/record-of-the-society-of-actuaries/1990-99/1994/january/RSA94V20N3A17.PDF>
- 8/2001 Pension Forum, “A Look at Dynamic Pension Plan Valuation, pp. 71-82 <http://www.soa.org/library/newsletters/pension-forum/2001/august/pfn0108.pdf>

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Instructional Objectives
7. The candidate will be able to analyze data for quality and appropriateness.
Learning Outcomes
Given a context, the candidate will be able to: a) Assess data quality b) Identify data needed c) Make appropriate assumptions where data cannot be provided
Syllabus Resources
o ASOP 23 – Data Quality, http://www.actuarialstandardsboard.org/pdf/asops/asop023_097.pdf

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Instructional Objectives
8. The candidate will be able to evaluate the actuarial considerations in plan options and administration.
Learning Outcomes
The candidate will be able to: a) Assess the gain/loss from options offered, including: <ul style="list-style-type: none">▪ Phased retirement▪ Postponed retirement▪ Early retirement▪ Option factors▪ DROPs
b) Assess the impact of applicable regulation
c) Describe the similarities of plan options and financial options and how options pricing theory could be applied to the valuation of pension plan options
Syllabus Resources
<ul style="list-style-type: none">○ R-D801-07: Current Issues w/PERS 2005 EA meeting, session 202, pp. 17 (Plan Design) –35 (exclude Q&A)○ R-D119-07: Actuarial Equivalent Benefits○ Forman and Scahill, Issues for Implementing Phased Retirement in Defined Benefit Plans, <i>North American Actuarial Journal</i>, July 1, 2003. http://www.soa.org/library/journals/north-american-actuarial-journal/2003/july/naaj0307_6.pdf

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Instructional Objectives
9. The candidate will be able to understand principles and rationale behind regulation.
Learning Outcomes
The candidate will be able to: a) Describe the principles and motivations behind tax policy b) Describe the principles and motivations behind legislated restrictions c) Describe sources and framework of government regulation
Syllabus Resources
o Turner and Watanabe, <i>Private Pension Policies in Industrialized Countries</i> , 1995, Chap. 4

Exam
Instructional Objectives
10. The candidate will be able to analyze the relationship of plan investments with plan design and valuations.
Learning Outcomes
In a given context, the candidate will be able to: a) Evaluate the interaction of plan investments and: ▪ Plan design, ▪ Plan funding, ▪ Valuation assumptions, and ▪ Valuation methods. b) Solve for a measure of investment performance relevant to a given benchmark c) Given a context, describe and compare the structure of appropriate investment vehicles
Syllabus Resources
o Allen, et al., <i>Retirement Plans: 401(k)s, IRAs, and Other Deferred Compensation Approaches</i> , 10th Edition, 2008, Ch. 24

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- R-D120-07: Asset/Liability Modeling and Asset Allocation for Pension Plans (Wendt)
- R-D121-07: Relationship between pension assets and liabilities
- R-D122-07: The Successful Use of Benchmark Portfolios: A Case Study
- R-D123-07: Maginn and Tuttle, Managing Investment Portfolios, Third Edition Chapter 12
- R-D124-07: Introduction and Overview of Retirement Plan Investments
- Economic Design of Cash Balance pension Plans, Gold <http://www.soa.org/library/monographs/retirement-systems/cash-balance-symposium/2002/january/m-rs02-3-01.pdf>

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Instructional Objectives
11. The candidate will be able to apply standards of practice and the guides to professional conduct.
Learning Outcomes
In general or in a given context, the candidate will be able to: <ul style="list-style-type: none"> a) Explain and apply the Guides to Professional Conduct b) Explain and apply the relevant qualification standards c) Demonstrate compliance with legal requirements regarding the actuaries responsibilities to the participants, plan sponsors, etc. d) Explain and apply all of the applicable standards of practice related to valuing retirement obligations. e) Recognize situations and actions that violate or compromise Standards or the Guides to Professional Conduct. f) Recommend a course of action to repair a violation of the Standards or the Guides to Professional Conduct
Syllabus Resources
<ul style="list-style-type: none"> ○ Yamamoto, <i>Fundamentals of Retiree Group Benefits</i>, 2006, Appendix F ○ AAA Code of Professional Conduct http://www.actuary.org/pdf/prof/code_of_conduct.pdf ○ SOA Guides to Professional Conduct http://www.soa.org/about/membership/about-code-of-professional-conduct.aspx ○ AAA Qualification Standards http://www.actuary.org/pdf/prof/qualif_stnds.pdf ○ SOA Qualification Standards http://www.soa.org/about/membership/about-req-admission.aspx

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- ASOP 2 http://www.actuarialstandardsboard.org/pdf/asops/asop002_004.pdf
- ASOP 4 http://www.actuarialstandardsboard.org/pdf/asops/asop004_046.pdf
- ASOP 23 http://www.actuarialstandardsboard.org/pdf/asops/asop023_097.pdf
- ASOP 27 http://www.actuarialstandardsboard.org/pdf/asops/asop027_053.pdf
- ASOP 35 http://www.actuarialstandardsboard.org/pdf/asops/asop035_093.pdf
- ASOP 41 http://www.actuarialstandardsboard.org/pdf/asops/asop041_086.pdf