

# CP 312 – Model Development and Governance

Nov 2025/Mar 2026/Jul 2026

## Important Course Information:

### [Exam Registration](#)

Candidates may register online or with an application.

### [Order Study Notes](#)

Study notes are part of the required syllabus and are not available electronically but may be purchased through the online store.

### Syllabus Resources

Resources listed in this syllabus may include study notes, online readings, textbooks, videos and module content. Candidates are responsible for all materials in their entirety, including sections such as Appendices, unless it is stated otherwise in the syllabus.

### Topic Weight Ranges

These have been provided to indicate the relative emphasis on each topic. The ranges of weights shown are intended to apply broadly over multiple sittings; however, the weights of topics on any individual exam could fall outside the published range. Candidates should also recognize that some questions will cover multiple learning objectives.

### Learning Outcomes

Each resource listed indicates the specific learning outcome(s) it aligns with under that particular topic. Resources are listed in the recommended order of study to best master the overall topic and learning objective. For additional guidance, please see the course strategy guide.

### [Introductory Study Note](#)

The Introductory Study Note has a complete listing of all study notes as well as errata and other important information.

### [Online Content Registration](#)

This syllabus contains content in module or video format that can be accessed through the SOA online portal registration linked here. This includes only content and materials that can be made available online; please consult this syllabus for the full curriculum.

### [Case Study](#)

The case study will 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 Fall 2020-present are available on SOA website.

### [Updates](#)

Candidates should be sure to check for updates on the course homepage periodically for additional corrections or notices to the current syllabus.

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| <b>1. Topic: Cash Flow Models for Long-Term Insurance Business (34% - 57%)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
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| <b>Learning Objectives</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |
| The candidate will understand, develop, and evaluate cash flow models for various types of long-term insurance business. The candidate will demonstrate an understanding of underlying modeling methodologies: their strengths, limitations, and applications.                                                                                                                                                                                                                                                                                                                                                  |                          |
| <b>Learning Outcomes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |
| <p>The Candidate will be able to:</p> <ul style="list-style-type: none"> <li>a) Describe, develop, and evaluate models for insurance products including those with complex components such as: <ul style="list-style-type: none"> <li>• dynamic policyholder assumptions</li> <li>• multi-states</li> <li>• equity-linked guarantees</li> <li>• index-linked credits</li> </ul> </li> <li>b) Describe, develop, and evaluate nested models</li> <li>c) Describe, apply, and evaluate model <i>validation</i> techniques</li> <li>d) Describe, apply, and evaluate model <i>efficiency</i> techniques</li> </ul> |                          |
| <b>Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Learning Outcomes</b> |
| Video: Model Risk, SOA, 2024 <ul style="list-style-type: none"> <li>• <a href="#">Model Risk Companion Notes</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <i>1a</i>                |
| CP312-100-25: Chapter 3 of Modelling in Life Insurance - A Management Perspective, Laurent, Jean-Paul, Norberg, Ragnar, Planchet, Frederic, 2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <i>1a</i>                |
| <i>Long-Term Actuarial Models Part II</i> , Cardinal, Timothy, Cardinalis 1 LLC, 2024 <ul style="list-style-type: none"> <li>• Ch. 1: Introduction to Modeling (excluding section 1.5)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                               | <i>1a</i>                |
| CP312-101-25: Stochastic Modeling, Theory and Reality from an Actuarial Perspective, sections I.A, I.B-1.B.3.a, I.B.4, and III                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <i>1a-1d</i>             |
| <i>Long-Term Actuarial Models Part II</i> , Cardinal, Timothy, Cardinalis 1 LLC, 2024 <ul style="list-style-type: none"> <li>• Ch. 3: Principle-Based Projections and Nested Methods: (Sections 3.1 to 3.2), including workbooks</li> </ul>                                                                                                                                                                                                                                                                                                                                                                     | <i>1a, 1b</i>            |
| <a href="#">Predictive Analytics and Machine Learning - Practical Applications for Actuarial Modeling (Nested Stochastic)</a> , SOA Research Institute, May 2023, Sections 1.2-1.3, 3-6                                                                                                                                                                                                                                                                                                                                                                                                                         | <i>1a-1d</i>             |
| <a href="#">Considerations Regarding Dynamic Lapses in Actuarial Modeling</a> , American Academy of Actuaries, Dec 2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <i>1a, 1b</i>            |

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| <p><i>Long-Term Actuarial Models Part II</i>, Cardinal, Timothy, Cardinalis 1 LLC, 2024</p> <ul style="list-style-type: none"> <li>Ch. 6: Secondary Guarantee Universal Life, including workbooks</li> <li>Ch. 9 Fixed and Fixed Indexed Annuities, including workbooks</li> <li>Ch. 11: Long Term Health Products (Sections 11.1 - 11.5), including IDI workbooks</li> </ul> | 1a, 1b |
| CP312-102-25: Heavy Models, Light Models and Proxy Models, Chapters 1-5                                                                                                                                                                                                                                                                                                       | 1d     |
| <p><i>Metamodeling for Variable Annuities</i>, Valdez, Emiliano and Gan, Guojun</p> <ul style="list-style-type: none"> <li>Chapters 1-3, 6</li> </ul>                                                                                                                                                                                                                         | 1d     |

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| <b>2. Topic: Non-Cash Flow and Supplementary Models for Financial Business (28% - 46%)</b>                                                                                                                                                                                                                                                                                                                                                                                   |                          |
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| <b>Learning Objectives</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |
| The candidate will understand, apply, and evaluate non-cash flow and supplementary models for various types of financial business. The candidate will demonstrate an understanding of underlying methodologies: their strengths, limitations, and applications.                                                                                                                                                                                                              |                          |
| <b>Learning Outcomes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                          |
| <p>The Candidate will be able to:</p> <p>a) Describe, apply, and assess types of models such as the following and evaluate the appropriateness of their usage:</p> <ul style="list-style-type: none"> <li>Economic Scenario Generators (ESGs)</li> <li>Market Risk Models</li> <li>Other statistical models</li> </ul> <p>b) Describe, apply, and evaluate model <i>validation</i> techniques</p> <p>c) Describe, apply, and evaluate model <i>efficiency</i> techniques</p> |                          |
| <b>Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Learning Outcomes</b> |
| <p>Video: Model Risk, SOA, 2024</p> <ul style="list-style-type: none"> <li><a href="#">Model Risk Companion Notes</a></li> </ul>                                                                                                                                                                                                                                                                                                                                             | 2a                       |
| <a href="#">Economic Scenario Generators: A Practical Guide</a> , SOA, Jul 2016, Ch. 1, 2, 4.1-4.3, 5, 6, 7.1-7.3, 8                                                                                                                                                                                                                                                                                                                                                         | 2a, 2b                   |
| <p>Economic Scenario Generators – three-part series, SOA:</p> <ul style="list-style-type: none"> <li><a href="#">Part I – Motivation for Stochastic Modeling</a>, The Modeling Platform, Nov 2019</li> <li><a href="#">Part II – Understanding Economic Scenario Generators</a>, The Modeling Platform, Aug 2020</li> <li><a href="#">Part III – In-depth ESG Case Study – Academy Interest Rate Generator</a>, The Modeling Platform, Jul 2021</li> </ul>                   | 2a<br>2a<br>2a           |
| <a href="#">Academy Interest Rate Generator</a> , Jun 2024                                                                                                                                                                                                                                                                                                                                                                                                                   | 2a                       |
| CP312-103-25: Chapter 8 of Quantitative Enterprise Risk Management, Hardy, Mary and Saunders, David, 2022 (8.1-8.6)                                                                                                                                                                                                                                                                                                                                                          | 2a                       |
| CP312-104-25: Chapter 7 of Derivatives Theory and Practice by Jiri Witzany, Springer 2020                                                                                                                                                                                                                                                                                                                                                                                    | 2a                       |
| CP312-105-25: Chapter 9 of Asset/Liability Management of Financial Institutions, Tilman, 2003                                                                                                                                                                                                                                                                                                                                                                                | 2a                       |
| CP312-101-25: Stochastic Modeling, Theory and Reality from an Actuarial Perspective, sections I.A, I.B-B.2, I.B.3.a, II.B-B.1.d                                                                                                                                                                                                                                                                                                                                              | 2a, 2c                   |
| CP312-106-25: Catastrophe Modelling: Guidance for Non-Catastrophe Modelers                                                                                                                                                                                                                                                                                                                                                                                                   | 2a                       |

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| CP312-107-25: A Financially Justifiable and Practically Implementable Approach to Coherent Stress Testing                                       | 2a |
| CP312-108-25: Chapter 15 of Measuring Market Risk, Dowd, Kevin, 2nd Edition, 2005                                                               | 2b |
| CP312-109-25: Chapter 7 (Sec. 7.2 only) of Modelling in Life Insurance - A Management Perspective, Laurent, Norbert, Planchet editors           | 2b |
| CP312-102-25: Heavy Models, Light Models and Proxy Models Ch. 1-5                                                                               | 2c |
| <i>Metamodeling for Variable Annuities</i> , Valdez, Emiliano and Gan, Guojun <ul style="list-style-type: none"><li>• Chapters 1-3, 6</li></ul> | 2c |

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| <b>3. Topic: Model Governance (13% - 22%)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |
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| <b>Learning Objectives</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
| The candidate will understand and be able to apply appropriate model governance to assess and address issues common to the development and management of models.                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
| <b>Learning Outcomes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                          |
| <p>The Candidate will be able to:</p> <p>a) Describe and apply model governance best practices such as:</p> <ul style="list-style-type: none"> <li>• Determining fit for purpose</li> <li>• Model design and development</li> <li>• Model risk management</li> <li>• Model validation</li> <li>• Model maintenance and change management</li> <li>• Model and model governance documentation and disclosures</li> </ul> <p>b) Describe, compare and evaluate organizational structures for model governance, including controls, roles, and responsibilities</p> |                          |
| <b>Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Learning Outcomes</b> |
| <a href="#">ASOP 56: Modeling</a> , Dec 2019, pp. 1-9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3a                       |
| <a href="#">CIA Educational Note: Use of Models</a> , Jan 2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3a, 3b                   |
| <a href="#">Public Policy Practice Note: Model Risk Management</a> , American Academy of Actuaries, May 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3a, 3b                   |
| CP312-110-25: Model Governance in the Insurance Industry: A Comprehensive Guide                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3a, 3b                   |
| <a href="#">Model Validation for Insurance Enterprise Risk and Capital Models</a> , CAS/CIA/SOA, 2014 (excluding Appendices)                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3a                       |
| <a href="#">Adding Value with Model Validation</a> , The Modeling Platform, Nov 2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3a, 3b                   |
| CP312-111-25: Machine Decisions: Governance of AI and Big Data Analytics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3a                       |
| <a href="#">The Importance of Centralization of Actuarial Modeling Functions, Part 1: Focus on Modularization and Reuse</a> , The Modeling Platform, Nov 2019                                                                                                                                                                                                                                                                                                                                                                                                    | 3a, 3b                   |
| <a href="#">The Importance of Centralization of Actuarial Modeling Functions, Part 2: DevOps – The Path to Actuarial Modernization and Consolidation</a> , The Modeling Platform, Apr 2020, pp. 6-9                                                                                                                                                                                                                                                                                                                                                              | 3a, 3b                   |