ACTL 5302
RISK AND CAPITAL MANAGEMENT

Course Outline
Semester 2, 2015

Part A: Course-Specific Information

Please consult Part B for key information on Business School policies (including those on plagiarism and special consideration), student responsibilities and student support services.
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1 STAFF CONTACT DETAILS

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Email</th>
<th>Room</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecturer in Charge</td>
<td>Associate Professor</td>
<td><a href="mailto:a.asher@unsw.edu.au">a.asher@unsw.edu.au</a></td>
<td>Business School 650</td>
<td>9385 7619</td>
</tr>
<tr>
<td></td>
<td>Anthony Asher</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Consultation times: By appointment, or before lectures between 17.00 – 18.00, but may be amended by notices on Moodle, which is where all details in respect of the courses can be found. Written queries should be made in the discussion forums on Moodle so that all students can see the responses. There will be no response to subject related questions on private emails.

There will be guest lecturers, with significant experience in financial institutions, to provide background knowledge on the operation of particular markets.

2 COURSE DETAILS

2.1 Teaching Times and Locations

Lectures start in Week 1 and go through to Week 12: The Time and Location are: Thursday, 6-9pm Business School Building 23. There will be shorter tutorial in week 13.

Attendance will be recorded, and counts towards meeting the requirements to pass the course.

2.2 Units of Credit

The course is worth 6 units of credit.

This course is offered as an elective for students enrolled in the Master of Actuarial Studies as well as for students completing Masters, PhD and honours research programs in the actuarial studies program. It is an elective in the Master of Risk Management.

2.3 Summary of Course

This course covers the organisational structure, motivations and techniques for risk and capital management in financial institutions – with an emphasis on holistic enterprise risk management. The course emphasises students’ ability to make professional judgements.

2.4 Course Aims and Relationship to Other Courses

The aims of this course are to provide you with the knowledge and skills to practice as an expert in the field of risk management and – together with ACTL5301 and meeting the Institute’s requirements for using the designation ‘actuary’ – to use the designation in Australia of “Chartered Enterprise Risk Actuary” (CERA).

This course aims develop an in-depth understanding of the key concepts in the following areas:
1. Enterprise Risk Management Concept and Framework,
2. ERM Process - Structure of the ERM Function and Best Practices,
3. Risk Categories and Identification,
4. Economic Capital.

These topics cover the learning objectives of professional CERA qualification – in conjunction with ACTL5301 Models for Risk Management. ACTL5301 covers in greater depth: Risk Modelling and Aggregation of Risks; Risk Measures and Risk Management Tools and Techniques.

Students who obtain an average of 75% or more for these two courses will be recommended for exemption from the CERA examinations. The Actuaries Institute has taken into consideration students obtain exposure to practical problems through the guest lectures. Attendance at these is therefore important.

2.5 Student Learning Outcomes

The Course Learning Outcomes are what you should be able to DO by the end of this course if you participate fully in learning activities and successfully complete the assessment items. These are to:

1. Demonstrate an understanding of the theory and practice of enterprise risk management and the ERM process.
2. Demonstrate knowledge of current developments in risk and capital management.
3. Review and analyse more advanced risk and capital management concepts.
4. Demonstrate presentation and discussion skills for risk and capital management concepts.

The Learning Outcomes in this course also help you to achieve some of the overall Program Learning Goals and Outcomes for all undergraduate or postgraduate coursework students in the Business School. Program Learning Goals are what we want you to BE or HAVE by the time you successfully complete your degree (e.g. ‘be an effective team player’). You demonstrate this by achieving specific Program Learning Outcomes - what you are able to DO by the end of your degree (e.g. ‘participate collaboratively and responsibly in teams’).
Business School Postgraduate Coursework Program Learning Goals and Outcomes

1. Knowledge: Our graduates will have current disciplinary or interdisciplinary knowledge applicable in local and global contexts.

You should be able to identify and apply current knowledge of disciplinary or interdisciplinary theory and professional practice to business in local and global environments.

2. Critical thinking and problem solving: Our graduates will have critical thinking and problem solving skills applicable to business and management practice or issues.

You should be able to identify, research and analyse complex issues and problems in business and/or management, and propose appropriate and well-justified solutions.

3. Communication: Our graduates will be effective communicators in professional contexts.

You should be able to:

   a. Produce written documents that communicate complex disciplinary ideas and information effectively for the intended audience and purpose, and
   b. Produce oral presentations that communicate complex disciplinary ideas and information effectively for the intended audience and purpose.

4. Teamwork: Our graduates will be effective team participants.

You should be able to participate collaboratively and responsibly in teams, and reflect on your own teamwork, and on the team’s processes and ability to achieve outcomes.

5. Ethical, social and environmental responsibility: Our graduates will have a sound awareness of ethical, social, cultural and environmental implications of business issues and practice.

You should be able to:

   a. Identify and assess ethical, environmental and/or sustainability considerations in business decision-making and practice, and
   b. Consider social and cultural implications of business and/or management practice.

6. Leadership: Our graduates will have an understanding of effective leadership. (MBA and MBT programs only).

You should be able to reflect on your personal leadership experience, and on the capabilities necessary for leadership.
The following table shows how your Course Learning Outcomes relate to the overall Program Learning Goals and Outcomes, and indicates where these are assessed (they may also be developed in class discussions and other activities):

<table>
<thead>
<tr>
<th>Program Learning Goals and Outcomes</th>
<th>Course Learning Outcomes</th>
<th>Course Assessment Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>This course helps you to achieve the following learning goals that are set for all Business School postgraduate coursework students:</td>
<td>On successful completion of the course, you should be able to:</td>
<td>This learning outcome will be assessed in the following items:</td>
</tr>
</tbody>
</table>
| 1 Knowledge | Learning Outcomes 1 and 2 | • Mid-Session Test  
• Exam |
| 2 Critical thinking and problem solving | Learning Outcomes 3 and 4 | • Mid-Session Test  
• Exam |
| 3a Written communication | Present written work logically and professionally. | • Mid-Session Test  
• Exam  
• Re-written answers |
| 3b Oral communication | Communicate ideas in a succinct and clear manner. | • Presentation |
| 4 Teamwork | Work collaboratively to complete a task. | • Not specifically assessed in this course. |
| 5a. Ethical, environmental and sustainability responsibility | Identify and assess ethical, environmental and sustainability considerations in an actuarial context. | • Mid-Session Test  
• Exam |
| 5b. Social and cultural awareness | Identify and assess ethical, social and cultural considerations in an actuarial context. | • Mid-Session Test  
• Exam. |

3 LEARNING AND TEACHING ACTIVITIES

3.1 Approach to Learning and Teaching in the Course

Students are encouraged to become deep learners. As a deep learner, you would have taken responsibility for your own learning, and have chosen to become interested in the subject for its own sake rather than merely to pass the exams. You will be developing your own personal opinions on the subject, and will go on learning and thinking throughout life. Students may find it helpful to use the Biggs study process questionnaire on Moodle to understand the extent to which you are a deep learner.

Readings, discussions and guest lectures will expose students to different opinions and you will be expected to develop your own views on the difficult and sometimes controversial questions that you might have to address in practice. In many cases, there are no right answers.
This could be described as a guided self-learning approach, and is expected to provide a greater depth of understanding of the concepts compared to lectures that only involve lecturers talking. The ultimate aim is for you to see yourself as a member of the actuarial (or related) profession and be able to apply your knowledge to new situations encountered in the financial sector and risk management.

### 3.2 Learning Activities and Teaching Strategies

The strategy for the course involves:

- Students prepare for a lecture by reading relevant material, and identifying issues they are uncertain of for discussion in the class. Students will be allocated one or more concepts each week that they will be required to comment upon in class discussions.
- In most weeks, there will be no formal lecture from the lecturer-in-charge. The lecturer will contribute to class discussions to assist in highlighting the implications, and potential misunderstanding, of key concepts. Students are expected to contribute and to provide feedback to the lecturer that the topics have been understood.
- Formal presentations where the student is expected to research a topic and then develop a short presentation for their peers, followed by a response from another student and discussion by the class. This also allows for further feedback, and discussion of the broader context of the issue addressed by the presentation.
- Re-written answers of the midsession examination to give more detailed feedback on critical thinking and written communication.

The course textbooks, lectures and assessment tasks are designed to provide a framework for your learning. Every student has a different approach to learning. How much time you spend on reading in preparation for lectures, completing assessment tasks, reviewing course objectives, deepening your understanding and preparing for final examinations will depend on your learning approach. Lectures and class discussions will cover the main concepts and issues and will not necessarily cover all the details of the course readings or texts.

Your private study is the most important component of this course. Weekly readings, reviewing key concepts, and your own topic summaries should be considered as a basis of a regular private study regime. Keeping up to date is very important and each week builds on the prior week so it is important that you have your study regime organised early.

### 4 ASSESSMENT

#### 4.1 Formal Requirements

In order to pass this course, you must:

- achieve a composite mark of at least 50; and
- make a satisfactory attempt at all assessment tasks (see below).
4.2 Assessment Details

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Weighting</th>
<th>Length</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Session Exam</td>
<td>10%</td>
<td>1 hour</td>
<td>Tuesday 16 September 6.15 – 7.15</td>
</tr>
<tr>
<td>Presentation</td>
<td>7%</td>
<td></td>
<td>As advised in course web site</td>
</tr>
<tr>
<td>Re-written answers</td>
<td>5%</td>
<td>500 words</td>
<td>Weeks 7 to 10</td>
</tr>
<tr>
<td>Class participation</td>
<td>8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Exam</td>
<td>70%</td>
<td>2 hours</td>
<td>University Exam Period</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td></td>
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</tr>
</tbody>
</table>

Feedback will be provided to students after their assessments; students should note that the final assessment can involve scaling of overall marks so that the overall course mark reflects standards that are as consistent as possible from year to year. In addition, in this course, results will be reviewed by an external examiner from the Institute of Actuaries of Australia.

Mid-Session and final examination

The exam content is reviewed by a representative of the Actuaries Institute. The representative also reviews the answer papers of the final examination.

The exams are intended to test your knowledge of the material covered as well as your ability to concisely express yourself. You will be expected to be able to apply material learned to different situations.

Normal examination rules apply to the conduct of mid-term exams. UNSW approved calculators will be allowed in the mid-term and final examination. It is the student’s responsibility to be familiar with the rules governing the conduct of examinations.

Presentation

The presentations are intended primarily to develop your ability to engage with an audience. They will also develop your skills in research and your ability to concisely and coherently communicate your ideas. You are expected to spend 4 or 5 hours preparing, but will only have 10 minutes to present. Some topics will require some research of your own; others refer to specific papers, which you will need to summarise. Wikipedia is often a useful source, but you must check references. Some of the topics can be answered easily, but you are expected to give background and reasoning for your answer. Other topics are more complex, and so the extent and depth of your research will necessarily be limited by the time available.

Suggested presentation topics are as set out in this Course Outline. Students may indicate their preferences for topics to the Lecturer-in-Charge by email before 24 July. A schedule of presenters will then be placed on Moodle soon after. Students may agree between themselves to swap presentations provided both students involved notify the Lecturer-in-Charge at least 1 week before the first presentation is due. You
may also suggest a replacement topic on which you would like to present, but it must be agreed by the Lecturer-in-Charge first.

Grading for presentations and responses in both semesters will take into account:

- **Knowledge and Critical thinking**: are your facts correct and are your arguments valid?
- **Communication**: Have you engaged the audience with your enthusiasm for the topic and your awareness of them and their interests.
- **Keeping to time**.

You are not being evaluated on whether your analysis is comprehensive or not, and will lose marks if you rush through the presentation to finish on time. Much rather say that the slides you cannot cover are for information, and focus on engaging the audience with the critical points you want to make. More detailed rubrics will be placed on Moodle.

Presentations must include no more than 12 PowerPoint slides and a draft copy must be sent to the Lecturer-in-Charge by the Friday before the presentation, and a final version including changes sent by Thursday after the presentation. This will be made available to other students.

Presenters will be stopped when their time is up.

### 4.3 Late Submission

In order to pass the course students must complete and submit all components of assessment at or before the due times. Late assessment submissions may not be marked. It is important that students be punctual and reliable when submitting assessments. This is usually an important workplace requirement and students are encouraged to ensure they meet deadlines.

- **Quality Assurance**

  The UNSW Business School is actively monitoring student learning and quality of the student experience in all its programs. A random selection of completed assessment tasks may be used for quality assurance, such as to determine the extent to which program learning goals are being achieved. The information is required for accreditation purposes, and aggregated findings will be used to inform changes aimed at improving the quality of Business School programs. All material used for such processes will be treated as confidential.

### 5 COURSE RESOURCES

The textbooks for this course are:

• Society of Actuaries (2006), Enterprise Risk Management Specialty Guide
• Society of Actuaries (2006), Specialty Guide on Economic Capital

References and useful texts:


Additional articles will be used to provide practical insights to course topics. Links will be provided on the course website. These include:

• COSO Enterprise Risk Management – Integrated Framework: Executive Summary
• COSO Enterprise Risk Management – Understanding and Communicating Risk Appetite

The Course website site for this course will contain the Course Outline, presentations made by lecturers and students, and any notices relevant to this course. It is important that you visit the site regularly to see any notices posted there by the Lecturer-in-Charge.

6 COURSE EVALUATION AND DEVELOPMENT

Each year feedback is sought from students and other stakeholders about the courses offered in the School and continual improvements are made based on this feedback. UNSW's Course and Teaching Evaluation and Improvement (CATEI) Process is an important way in which student evaluative feedback is gathered. In this course, we will seek your feedback through on-line end of semester CATEI evaluation. It is important that you provide your input. As a result of this feedback from previous years we have structured the coverage of the course topics to more closely align with the CERA requirements.
# 7 COURSE SCHEDULE

## Lecture Schedule

<table>
<thead>
<tr>
<th>Week beginning</th>
<th>Topic</th>
<th>Reference and Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1 27 July</td>
<td>Enterprise Risk Management Concept, Framework, Cases</td>
<td>Sweeting Chapters 19 and 20 Segal Chapters 1 and 2 COSO ERM – Integrated Framework: Executive Summary</td>
</tr>
<tr>
<td>Week 2 3 August</td>
<td>Risk management strategy and motivation</td>
<td>Sweeting Chapter 1 Doherty Chapter 7 and 8</td>
</tr>
<tr>
<td>Week 3 10 August</td>
<td>Risk Management Governance &amp; Environment</td>
<td>Sweeting Chapters 2 to 5 Guest Lecture: Edmund Bosworth</td>
</tr>
<tr>
<td>Week 4 17 August</td>
<td>Risk Categories and Identification</td>
<td>Sweeting Chapters 7 and 8 Segal Chapter 4</td>
</tr>
<tr>
<td>Week 5 24 August</td>
<td>Risk Management Process</td>
<td>Sweeting Chapters 6 Segal Chapter 3 Guest Lecture Noeline Woof</td>
</tr>
<tr>
<td>Week 6 31 August</td>
<td>Quantifying Risks (Brief Review of Risk Models Key Concepts)</td>
<td>Sweeting Chapter 14 Segal Chapter 5 (Review Sweeting Chapters 9 to 13)</td>
</tr>
<tr>
<td>Week 7 7 September</td>
<td>Risk Assessment</td>
<td>Sweeting Chapter 15 Segal Chapter 6 COSO ERM – Understanding and Communicating Risk Appetite Guest lecture: Wayne Brazel</td>
</tr>
<tr>
<td>Week 8 14 September</td>
<td>Mid-Session Exam</td>
<td></td>
</tr>
<tr>
<td>Week 9 21 September</td>
<td>Responses to Risk</td>
<td>Sweeting Chapter 16 and 17 Segal Chapter 7</td>
</tr>
<tr>
<td>Mid-Semester break: 27 September – 4 October</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 10 5 October</td>
<td>Regulation</td>
<td>Segal Chapter 8 and 9 LAGIC and ICAAP Guest lecture: APRA speaker</td>
</tr>
<tr>
<td>Week 11 12 October</td>
<td>Assessing Economic Capital</td>
<td>Sweeting Chapter 18 Segal Chapter 7</td>
</tr>
<tr>
<td>Week 12 19 October</td>
<td>Using Economic Capital</td>
<td>Specialty Guide on Economic Capital</td>
</tr>
<tr>
<td>Week 13 26 October</td>
<td>Revision</td>
<td></td>
</tr>
</tbody>
</table>
8 PRESENTATION TOPICS

Students will be allocated a topic from the list below. Students are free to change topics with another student, but both must advise the Lecturer of the exchange at least 1 week in advance, before Week 4.

Week 4

Topic 1. Explain, using financial theory, how ERM can add value to an organization.

Topic 2. Give an example of an ERM and risk governance structure for an actual organization and discuss its main features.

Topic 3. How would a new CEO go about changing the risk culture of an organization?

Topic 4. How does the Corporations Act affect risk management in an Australian organization?

Topic 5. Outline and comment on the impact of Sarbanes-Oxley on financial companies.

Week 5

Topic 1. Compare the main features of Solvency II for insurers with the Basel II requirements for banks.

Topic 2. Give an example of a risk management failure and identify the main lessons for the organization's risk management framework.

Topic 3. Outline the failings of rating agencies in Global Financial Crisis, and how they have been addressed.

Topic 4. Contrast the risk philosophy of Macquarie Bank and CBA?

Topic 5. Which of the company stakeholders benefits from risk diversification?

Week 6

Topic 1. Describe how a risk filter can improve the profitability of marketing campaigns.

Topic 2. Discuss the difficulties in managing the operational risk capital charge.

Topic 3. Does “Knightian uncertainty” explain the origin of company profits?

Topic 4. Outline, and discuss using APRA data, the major risks that banks have to manage.

Topic 5. Compare the frictional costs likely to be experienced by the different stakeholders in a life insurer.
Week 7

Topic 1. Discuss the role of contagion and systemic risk in the recent Global Financial Crisis.

Topic 2. Which skills are necessary for the management of a company’s risk management function?

Topic 3. Describe the key elements of a company’s corporate strategy and how it should interact with the risk management framework

Topic 4. Discuss the relative importance of operational risks for a bank, general insurer, life insurer and superannuation fund.

Topic 5. Outline the concept of a copula and explain how this would be useful for a nonlife insurer in modelling its enterprise risk.

Week 9

Topic 1. Explain risk appetite and how it is translated into risk tolerances in managing member risk in defined contribution superannuation funds.

Topic 2. Why is it important for risk measures to be coherent?

Topic 3. Explain RAROC and how this relates to other measures of risk adjusted returns.

Topic 4. Discuss the trade-off between return and risk, and how the costs and benefits of risk mitigation would be included.

Topic 5. Explain how the costs of transferring or hedging a risk affect the decision to manage a risk on the balance sheet.

Week 10

Topic 1. Do you think regulators place the right emphasis on supervision process as against detailed regulation?

Topic 2. Explain how a regulator would evaluate the risk of a general insurer and it’s risk management process.

Topic 3. Contrast the risk management objectives of regulators with shareholders who want only the best possible risk adjusted return.

Topic 4. Explain how risk management can add value by optimising economic capital and the cost of capital.
Topic 5. How might Andrew Haldane’s criticism\(^1\) of the complexity of regulation be implemented?

**Week 11**

Topic 1. Outline and compare the main methods of managing interest rate risk.

Topic 2. Outline the main features of credit default swaps and explain how they are used to manage credit risks.

Topic 3. Explain the uses of interest rate immunization and its shortcomings for managing the asset-liability mismatch of a general insurer.

Topic 4. Outline how portfolio theory concepts can be used to aggregate risks and discuss shortcomings.

Topic 5. How should stress testing and scenario analysis supplement a risk management process based on quantitative models?

**Week 12**

Topic 1. Provide some alternative approaches to determining target surplus.

Topic 2. Explain why it is not necessary to allocate economic capital to allow for the benefits of diversification. Under what circumstances a company would do it?

Topic 3. What are the main principles you would use to determine the inputs into a model for economic capital?

Topic 4. Compare and contrast the use of VaR for credit, market and operational risk highlighting the different timeframes and confidence levels.

Topic 5. Discuss how to identify and manage “killer” risks and give an example of a risk failure involving such a risk.

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\(^1\) See “The Dog and the Frisbee” speech
9 CERA TREATY\(^2\) MAPPING

LEARNING OBJECTIVES WITH EXPECTED LEVEL OF LEARNING

Global Enterprise Risk Management Designation Recognition Treaty

Each person awarded the designation must have been examined on a substantial majority of the learning objectives to the level indicated. Over a rolling three year period, all learning objectives should be included in examinations to the level indicated.

The level of learning is Bloom’s Taxonomy. The revised version is set out below:

**BLOOM’S REVISED TAXONOMY**

1. **Remembering.** Recalling information. Recognizing, listing, describing, retrieving, naming, finding
2. **Understanding.** Explaining ideas or concepts. Interpreting, summarising, paraphrasing, classifying.
3. **Applying.** Using information in another familiar situation. Implementing, carrying out, using, executing.
4. **Analysing.** Breaking information into parts to explore understandings and relationships. Comparing, organizing, deconstructing, interrogating, finding
5. **Evaluating** or justifying a decision or course of action. Checking, hypothesising, critiquing, experimenting, judging
6. **Creating** new ideas, products, or ways of viewing things. Designing, constructing, planning, producing, inventing.

<table>
<thead>
<tr>
<th>Section 1: Enterprise Risk Management Concept and Framework</th>
<th>Covered in week:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Describe* the concept of ERM, the drivers behind it and the resulting value to organizations. (2-3)</td>
<td>1</td>
</tr>
<tr>
<td>(b) Explain* the principal terms in ERM. (2-3)</td>
<td></td>
</tr>
<tr>
<td>(c) Analyse* an appropriate framework for an organization’s enterprise risk management and an acceptable governance structure. (4-5)</td>
<td></td>
</tr>
<tr>
<td>(d) Evaluate* an organization’s risk management culture including: risk consciousness, accountabilities, discipline, collaboration, incentive compensation, and communication. (4-5)</td>
<td>3 &amp; 12</td>
</tr>
<tr>
<td>(e) Demonstrate* an understanding of governance issues including market conduct, audit, and legal risk. (3-4)</td>
<td></td>
</tr>
<tr>
<td>(f) Demonstrate* an understanding of risk frameworks in regulatory and other environments (e.g. Basel II, Solvency II, Sarbanes-Oxley, COSO, Aus/NZ 4360, ISO 31000) and their underlying principles. (3-4)</td>
<td>1 &amp; 12</td>
</tr>
<tr>
<td>(g) Demonstrate* an understanding of the perspectives of regulators, rating agencies, stock analysts, and company</td>
<td>2 &amp;12</td>
</tr>
</tbody>
</table>

stakeholders and how they evaluate the risks and the risk management of an organization. (3-4)

(h) Propose how an ERM process can create value for an organization through better assessment of the organization’s risk profile, possible reduction in economic capital, improvement in rating, etc. (5)

(i) Relate* the risk and return trade-offs that result from changes in the organization’s risk profile. (3-4)

Section 2: ERM Process (Structure of the ERM Function and Best Practices)

(j) Demonstrate* how to articulate an organization’s risk appetite, quantified risk tolerances, risk philosophy and risk objectives. (3-4)

(k) Demonstrate* how to articulate a desired risk profile and appropriate risk filters. (3-4)

(l) Assess the overall corporate risk exposure arising from financial and non-financial risks. (6)

(m) Compare the relevance of risk measurement and management to various stakeholders including customers, regulators, government, company directors, professional advisors, shareholders and the general public. (4)

(n) Demonstrate* an understanding of contagion and how it affects different stakeholders. (3-4)

(o) Evaluate* the elements of a successful risk management function and a structure for an organization’s risk management function. (4-5)

(p) Determine* how financial and other risks and opportunities influence the selection of strategy and how ERM can be appropriately embedded in an entity’s strategic planning. (4-5)

(q) Demonstrate the application of a risk control process such as the Risk Management Control Cycle or other similar approach. (3)

(r) Propose* ERM solutions or strategies to address real (case study) and hypothetical situations. (5-6)

Section 3: Risk Categories and Identification

(s) Explain what is meant by risk and uncertainty. (2)

(t) Describe different definitions and concepts of risk. (2)

(u) Discuss* risk taxonomy. (2-3)

(v) Investigate and interpret* financial and non-financial risks faced by an entity, including but not limited to: currency risk, credit risk, spread risk, liquidity risk, interest rate risk, equity risk, hazard/insurance risk, pricing risk, reserving risk, other product risk, operational risk, project risk and strategic risk. (3-4)

Section 4: Risk Modelling and Aggregation of Risks

(w) Demonstrate* how each of the financial and non-financial risks faced by an entity can be amenable to quantitative analysis. (3-4)

(x) Demonstrate* enterprise-wide risk aggregation techniques incorporating the use of correlation. (3-4)
(y) Evaluate and select appropriate copulas as part of the process of modelling multivariate risks. (4-5)

(2) Demonstrate the use of scenario analysis and stress testing in the risk measurement process. (3-4)

(aa) Examine the use of extreme value theory to help model risks. (4)

(bb) Demonstrate the importance of the tails of distributions, tail correlations, and low frequency / high severity events. (3-4)

(cc) Demonstrate an understanding of model and parameter risk. (3-4)

(dd) Evaluate and select appropriate models to handle diverse risks, including the stochastic approach. (4-5)

Section 5: Risk Measures

(ee) Apply risk metrics to quantify major types of risk exposure and tolerances in the context of an integrated risk management process. (3-4)

(ff) Demonstrate the properties of risk measures (e.g. VaR and TVaR) and their limitations. (3-4)

(gg) Analyse quantitative financial and insurance data using modern statistical methods (including asset prices, credit spreads and defaults, interest rates, incidents, causes and losses). (4-5)

(hh) Evaluate best practices in risk measurement, modelling, and management of various financial and non-financial risks faced by an entity. (4-5)

(ii) Analyse credit risk as related to fixed income securities. (4-5)

Section 6: Risk Management Tools and Techniques

(jj) Relate the rationale for managing risk and the selection of the appropriate degree of hedging of risk. (3-4)

(kk) Demonstrate risk optimization and the impact on an organization’s value of an ERM strategy. (3-4)

(ll) Demonstrate means for transferring risk to a third party, and estimate the costs and benefits of doing so. (3)

(mm) Demonstrate means for reducing risk without transferring it. (3-4)

(nn) Demonstrate how derivatives, synthetic securities, and financial contracting may be used to reduce risk or to assign it to the party most able to bear it. (3-4)

(oo) Determine an appropriate choice of hedging strategy for a given situation (e.g., reinsurance, derivatives, financial contracting), which balances benefits with inherent costs, including exposure to credit risk, basis risk, moral hazard, and other risks. (4-5)

(pp) Demonstrate an understanding of the practicalities of market risk hedging, including dynamic hedging. (3-4)

(qq) Define credit risk as related to derivatives; define credit risk as related to reinsurance ceded; define counter-party risk and demonstrate the use of comprehensive due diligence and aggregate counter-party exposure limits. (3-4)
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<tr>
<td>(rr) Apply* funding and portfolio management strategies to control equity and interest rate risk, including key rate risks. Explain the concepts of immunization including modern refinements and practical limitations. (3-4)</td>
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<td>(ss) Analyse* application of ALM principles to the establishment of investment policy and strategy including asset allocation. (4-5)</td>
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<tr>
<td>(tt) Identify and interpret* other key risks (e.g. operational, strategic, legal, and insurance risks) and uncertainty and demonstrate possible mitigation strategies. (3-4)</td>
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<td><strong>Section 7: Economic Capital</strong></td>
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<td>(uu) Interpret* the concept of economic measures of value (e.g., EVA, embedded value, economic capital) and demonstrate their uses in corporate decision-making processes. (3-4)</td>
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<tr>
<td>(vv) Apply* risk measures and demonstrate* how to use them in economic capital assessment. (3-4)</td>
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<td>(ww) Propose* techniques of allocating/appropriating the “cost” of risk/capital/hedge strategy to business units in order to gauge performance (e.g. returns on marginal capital). (5-6)</td>
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<td>(xx) Develop* an economic capital model for a representative financial firm. (5-6)</td>
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