Risk 5009
Risk Management Strategies

Course Outline
Semester 2, 2015

Part A: Course-Specific Information

Please consult Part B for key information on Business Faculty policies (including those on plagiarism and special consideration), student responsibilities and student support services.
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PART A: COURSE-SPECIFIC INFORMATION

1 STAFF CONTACT DETAILS

Lecturer-in-charge: A/Prof. Ramaprasad Bhar
Room Business Level 6 649 (East)
Phone No: 9385 4930
Email: r.bhar@unsw.edu.au
Consultation Times – To Be Advised on Moodle (or by appointment)

Email communication is the preferred method. Please use UNSW provided email address.

2 COURSE DETAILS

2.1 Teaching Times and Locations

Lectures will be held at Kensington campus as per the following:

Room: Business 232 Friday 6PM – 9PM.

2.2 Units of Credit

The course is worth 6 units of credit.

2.3 Summary of Course

This course is one of the electives of the Master of Actuarial Studies covering topics in quantitative risk management. On successful completion of the Master of Actuarial Studies, students will have the ability to: (a) demonstrate an understanding of the key concepts in actuarial studies and related fields, (b) apply actuarial techniques to address specific business situations, (c) apply critical thinking and analytical skills to solve actuarial problems and (d) communicate concisely, accurately, and confidently to a range of audiences in written and oral format.

This course is also an elective in the Master of Risk Management program. It includes advanced topics related to risk management issues. They provide a valuable background for postgraduate students who are aiming to enter the risk management area in insurance, banking or funds management.

The course covers innovative risk management strategies using capital and insurance market techniques including those used in the alternative risk transfer (ART) market. Topics include: product types; securitization; pricing risk-linked securities; credit risk; weather and energy risk; modelling individual risks; industry specific case studies and other related matters.
2.4 Course Aims and Relationship to Other Courses

This course is normally undertaken by students who have completed the professional actuarial components in the Master of Actuarial Studies or by students entering the Master of Actuarial Studies who have an undergraduate major in actuarial studies or related disciplines.

Implementation of risk management strategies is discussed with reference to using Excel VBA (Visual Basic for Applications) or other relevant professional software environment. Relevant case studies are also introduced to get an understanding of the issues in the real world situations.

In summary, the aims of this course are to provide students with an understanding of:

- ART products and markets and recent developments.
- Risk management and the use of insurance and reinsurance products including captives.
- Risk management and the use of capital market products, securitization, contingent capital and insurance derivatives.
- Risk management and the use of industry loss warranties, risk swaps, CAT Bonds, life insurance securitization and longevity bonds.
- Pricing and optimisation models for insurance linked securities, deal structuring, pricing and documentation.

2.5 Student Learning Outcomes

At the end of this course students should have increased their ability to:

- Understand the main types of risks faced by financial institutions and banks, and realise that many of the ideas and approaches are equally applicable to non-financial corporations.
- Develop an understanding of the need for quantification and practical issues in quantifying risks relevant for the operating environment of the corporation.
- Locate and evaluate the research literature on current developments in risk management strategies, for example stress testing and liquidity risks are receiving more attention.
- Present and discuss simulation based approaches to analyse risks in complex systems.

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.

The Learning Outcomes in this course also help you to achieve some of the overall Program Learning Goals and Outcomes for all postgraduate coursework students in the Business 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 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.

For more information on the Postgraduate Coursework Program Learning Goals and Outcomes, see Part B of the course outline.
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 tutorials 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>On successful completion of the course, you should be able to:</td>
<td>This learning outcome will be assessed in the following items:</td>
<td></td>
</tr>
<tr>
<td>1 Knowledge</td>
<td>Explain the assumptions of standard models of risk quantification in financial institutions. Use statistical skills to present data relevant to problems in risk management.</td>
<td>Assignment</td>
</tr>
<tr>
<td>2 Critical thinking and problem solving</td>
<td>Use the standard models for correlations and extreme events in risk analysis.</td>
<td>Assignment</td>
</tr>
<tr>
<td>3a Written communication</td>
<td>Construct written work which is logically and professionally presented.</td>
<td>Presentation</td>
</tr>
<tr>
<td>3b Oral communication</td>
<td>Communicate ideas in a succinct and clear manner.</td>
<td>Presentation</td>
</tr>
<tr>
<td>4 Teamwork</td>
<td>Work collaboratively to complete a task.</td>
<td>Not specifically assessed.</td>
</tr>
<tr>
<td>5a Ethical, environmental and sustainability responsibility</td>
<td>Not specifically addressed in this course.</td>
<td></td>
</tr>
<tr>
<td>5b Social and cultural awareness</td>
<td>Not specifically addressed in this course.</td>
<td></td>
</tr>
</tbody>
</table>

3 LEARNING AND TEACHING ACTIVITIES

3.1 Approach to Learning and Teaching in the Course

Before we elaborate on this item, we would like to draw students’ attention to the following statement by Leland Stanford (1891), the founder of Stanford University:

“Students, all that we can do for you is to place the opportunities within your reach; it rests with you to grasp and improve them.”

This statement is true even today. In this course, we attempt to make the topics practically relevant for a fast moving risk management aspect of the financial markets and products. In order to achieve this, the strategy would be:
a). Active class participation and students are encouraged to bring into the class relevant topics to be discussed,

b). Exercises and examples are selected such that these represent typical real problems,

c). Pre-reading the topics: Although the students may not understand all the concepts in the lecture topics for the week, familiarity with the subject matter helps the class to progress faster,

d). Since the focus is on risk management strategies, we will attempt to discuss several realistic cases with an emphasis on compatible computing environment,

e). Individual presentation: This task would require the students to research on a contemporary topic and present it to the class.

3.2 Learning Activities and Teaching Strategies

The course is offered through three-hour blocks of lecture and practice exercises over the whole semester. In short, the class sessions involve:

- Students preparing for a lecture by reading relevant material, and identifying issues they are uncertain of for discussion in the class.
- Lectures consisting of highlighting the main points that need to be understood, accompanied by discussion points where the class is expected to contribute and to provide feedback to the lecturer that the topics have been understood.

Overall the strategy revolves around highlighting the main issues that need to be understood, accompanied by extensive discussion to provide feedback that the issues were understood and to correct misunderstandings.

To benefit most from the class, it is important that the students read-ahead the topics before the class. The students are encouraged to ask questions as the class proceeds. This is a natural way to provide continuous feedback in the learning process.

4 ASSESSMENT

4.1 Formal Requirements

In order to pass this course, you must:

- Achieve a composite mark of at least 50%; and
- Make an attempt at all assessment tasks
- Attend at least 80% of all lectures
4.2 Assessment Details

There are three components of the assessment process in this course. These are aimed at individual and/or group performances. The components have been designed to make the students feel and become confident about solving problems in real life situations in the financial market related industries.

Of course, the students will receive regular feedback during the class as the session progresses.

The summary table below provides an overview of the assessment tasks, due dates and relative weighting:

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Weighting</th>
<th>Learning Goals and Outcomes</th>
<th>Date Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Report Presentation</td>
<td>20%</td>
<td>3a, 3b</td>
<td>See Moodle</td>
</tr>
<tr>
<td>Assignment</td>
<td>25%</td>
<td>1, 2, 3a</td>
<td>Week 12</td>
</tr>
<tr>
<td>Exam</td>
<td>55%</td>
<td>1, 2</td>
<td>UNSW Exam Period</td>
</tr>
</tbody>
</table>

The overall assessment for the course will use the Fail, Pass, Credit, Distinction and High Distinction grading system (see table below).

<table>
<thead>
<tr>
<th>Code</th>
<th>Grade</th>
<th>% Mark</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>High Distinction</td>
<td>85-100</td>
<td>An outstanding performance</td>
</tr>
<tr>
<td>DN</td>
<td>Distinction</td>
<td>75-84</td>
<td>A superior, well above average performance</td>
</tr>
<tr>
<td>CR</td>
<td>Credit</td>
<td>65-74</td>
<td>A good, above average performance</td>
</tr>
<tr>
<td>PS</td>
<td>Pass</td>
<td>50-64</td>
<td>An acceptable level of performance</td>
</tr>
<tr>
<td>FL</td>
<td>Fail</td>
<td>0-49</td>
<td>Unsatisfactory performance</td>
</tr>
</tbody>
</table>

4.3 Assessment Format

4.3.1 Case Report Presentation

You will select a case topic that you need to research and present to your peers. This exercise is aimed at developing your research skill, critical thinking skill and communication skill.

Your individual presentation is due as scheduled on Moodle, but students may agree between themselves to swap presentations provided both students involved notify the Instructor at least 1 week before the first presentation is due. The topics for this individual presentation will be posted on Moodle and will be available from Harvard Business Review website. The relevant URL’s will be posted on Moodle.

Grading will take into account:

- Has the topic been adequately covered? (ie have you addressed the topic?)
- Thought given to how best to answer the topic (i.e. how can I best communicate with other students?)
- Flow of the answer (i.e. do the ideas flow properly?)

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• Originality of ideas (i.e. has the student thought through the issues or just regurgitated the class discussion/notes/textbook?)

Presentations must include power point slides and a copy made available to the Instructor to put onto Moodle in the week following the presentation. Presentations are expected to be of 10 to 15 minutes in duration. You will also need to submit a case report and suggestions for this will be provided on Moodle.

4.3.2 Assignment

There will be an assignment posted to Moodle at the beginning of the semester and this may be done in a group. The size of the group will be determined closer to the start of the session depending on the enrolment.

The assignment will be provided by the guest lecturer from a reputable insurance firm (Aon Benfield) and the students will get access to the professional software (ReMetrica) used by practitioners. The detailed information will be made available via the Moodle course webpage.

4.3.3 Final Exam

This will be held during the formal examination period and will be of two hours in duration and closed book. The questions will cover all the topics discussed during the semester.

4.4 Assignment Submission Procedure

The assignment files may be submitted via a special icon created on the Moodle for this course module. The file names must have standardised naming conventions. The suggested naming convention for the assignment is as follows: zXXXXXXX_Risk5009_Assign. Obviously, replace ‘XXXXXXX’ by the student number.

4.5 Late Submission

Late submission of the assignment in this course will not be accepted. This will help meeting all the results submission deadlines.

**Quality Assurance**

The Business Faculty 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 programs. All material used for such processes will be treated as confidential.
5 COURSE RESOURCES

5.1 Reference Text

These books will be used as text references for the course:

Main textbook:


Reference textbook:


5.2 Moodle

The course related Moodle pages are a very important source of teaching resources for this course. The students enrolled in this course are expected to check these pages regularly as any additional weekly learning topic related materials would be made available here.

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 one of the ways in which student evaluative feedback is gathered. In this course, we will seek your feedback through end of semester CATEI evaluations.
# COURSE SCHEDULE

The topics to be discussed each week, and the references in the text books and other reading that students will be assumed to have read will be:

<table>
<thead>
<tr>
<th>Week Begins</th>
<th>Topic/Learning Outcome(LO)</th>
<th>Reading</th>
<th>Assessment/Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 01 Jul 27</td>
<td>Enterprise Risk Management; Risk Management Motivations</td>
<td>MT 1, 2, 10</td>
<td></td>
</tr>
<tr>
<td>Week 02 Aug 03</td>
<td>Introduction to the assignment using ReMetrica Software Guest Lecturer: Andrew Hulme, Aon Benfield Analytics</td>
<td>Moodle</td>
<td>Guest Presenter</td>
</tr>
<tr>
<td>Week 03 Aug 10</td>
<td>Insurance, Reinsurance, Captives</td>
<td>MT 4, 5</td>
<td></td>
</tr>
<tr>
<td>Week 04 Aug 18</td>
<td>Securitisation, Contingent Capital Structures</td>
<td>MT 7, 8</td>
<td></td>
</tr>
<tr>
<td>Week 05 Aug 24</td>
<td>Insurance Derivatives</td>
<td>MT 9</td>
<td></td>
</tr>
<tr>
<td>Week 06 Aug 31</td>
<td>Essentials of Excel VBA Programming and Empirical Analysis of Financial Time Series: Maximum Likelihood, Volatility Forecasting</td>
<td>Moodle RT4</td>
<td></td>
</tr>
<tr>
<td>Week 07 Sep 07</td>
<td>Copulas and Dependence Modelling</td>
<td>RT 5</td>
<td></td>
</tr>
<tr>
<td>Week 08 Sept 14</td>
<td>Extreme value Theory: Forecasting Market Crisis Impacts; Modelling Earthquake Risk</td>
<td>RT 7 Moodle</td>
<td></td>
</tr>
<tr>
<td>Week 09 Sept 21</td>
<td>Simulation approach to insurance problems; Use of innovative derivatives for price risk management for oil refiners.</td>
<td>Moodle</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Mid-Session Break</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 10 Oct 05</td>
<td>Follow up discussions on ReMetrica assignment; Students present the assignment and clarify any issues. Present Guest Lecturer: Andrew Hulme, Aon Benfield Analytics</td>
<td>Moodle</td>
<td>Guest Presenter</td>
</tr>
<tr>
<td>Week 11 Oct 12</td>
<td>Individual Presentation in Class</td>
<td>Moodle</td>
<td>Presentation</td>
</tr>
<tr>
<td>Week 12 Oct 19</td>
<td>Revision; Submission of case report, assignment.</td>
<td></td>
<td>Assignment</td>
</tr>
</tbody>
</table>

* Reading implies self reading and the ‘MT’ refers to the chapters in the main text book by Banks and ‘RT’ refers to the chapters in the reference text book by McNeil et al, and Moodle indicates materials on Moodle.