Risk 5002
Risk Tools

Course Outline
Semester 1, 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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PART A: COURSE-SPECIFIC INFORMATION

1  STAFF CONTACT DETAILS

Lecturer-in-charge: A/Prof. Ramaprasad Bhar  
Room: Business Building East Wing 659  
Phone No: 9385 4930  
Email: r.bhar@unsw.edu.au  
Consultation Times – To be announced on course webpage (or by appointment)

2  COURSE DETAILS

2.1  Teaching Times and Locations

Lectures start in Week 1 (to Week 12): The Time and Location are:

MechEngG02 Monday 6 - 9PM

2.2  Units of Credit

The course is worth 6 units of credit.

There is no parallel teaching in this course.

2.3  Summary of Course

This is the second in a series of five required courses in the Master of Risk Management program. It can be broadly considered to belong to the area of risk analytics with an emphasis on its application to the risk management process.

This course deals with the ways in which risks are quantified and managed by financial institutions. Specifically, among the topics covered are the nature of financial institutions and their regulation, market risk, credit risk, and some exposure to operational risk, liquidity risk, and the credit crisis of 2007.

2.4  Course Aims and Relationship to Other Courses

The course covers key concepts of statistics and looks at a number of data sources used to analyse risks in various disciplines. Applications such as forecasting, modelling extreme events and dependencies are illustrated through their implementation in a number of practical problems. These are aimed at making students aware of the power of statistics in quantitative risk analysis, and its areas of applicability.

Simulation is discussed as a tool to analyse risks in complex systems, where data are not available or are impossible to obtain. This may include assignments using a suitable computing environment or case studies. The students are assumed to have good knowledge and skill of Excel. The spreadsheet based examples in the class will
further enhance this skill and introduce possible computing platform as a problem solving tool.

Although the primary focus for the application of risk tools is financial services industry, these are also applicable to other industries

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.[LO1]
- Develop an understanding of the need for quantification and practical issues in quantifying risks relevant for the operating environment of the corporation.[LO2]
- Locate and evaluate the research literature on current developments in risk management strategies, for example stress testing and liquidity risks are receiving more attention. [LO3a]
- Present and discuss simulation based approaches to analyse risks in complex systems.[LO3b]

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 UNSW 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’).

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**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.

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>This course helps you to achieve the following learning goals for all Business 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>
<tr>
<td>1 Knowledge</td>
<td>Explain the assumptions of standard risk measurement models</td>
<td>• Class Problems&lt;br&gt;• Case Studies&lt;br&gt;• Class Test&lt;br&gt;• Exam</td>
</tr>
<tr>
<td>2 Critical thinking and problem solving</td>
<td>Use the standard models of risk analysis to interpret and analyse real problems in financial institution management</td>
<td>• Class Problems&lt;br&gt;• Case Studies&lt;br&gt;• Class Test&lt;br&gt;• Exam</td>
</tr>
<tr>
<td>3a Written communication</td>
<td>Construct written work which is logically and professionally presented.</td>
<td>• Case studies</td>
</tr>
<tr>
<td>3b Oral communication</td>
<td>Communicate ideas in a succinct and clear manner.</td>
<td>• Part of class participation but not separately assessed.</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, social and environmental 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 to 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 tools employed in financial institutions, we will attempt to solve several risk measuring and managing problems within a compatible computing environment,

e). Group assignments: The assignment would require the students to deal with HBR Case Studies on risk assessment problem that require the use of experience, skills, and knowledge developed during the classes as the semester progresses.

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 a satisfactory attempt at all assessment tasks (see below).

4.2 Assessment Details

There are three components of the assessment process in this course. These are aimed at individual as well as 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.

As part of the formal feedback, the quiz solutions will be discussed in the class in the week following the quiz. 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>Length</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment</td>
<td>20%</td>
<td>See 4.3 below</td>
<td>Week 12</td>
</tr>
<tr>
<td>Quiz</td>
<td>15%</td>
<td>See 4.3 below</td>
<td>Week 07</td>
</tr>
<tr>
<td>Final Exam</td>
<td>65%</td>
<td>2 hours</td>
<td>University Exam Period</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.3 Assessment Format

Quiz:

This will mainly be in the form a class exercise where the questions will cover the topics up to the week before and there will be mix of numerical and concept questions. This is likely to be less than 90 minutes duration.

Assignment:

There will be a selection of case studies (HBR) to choose from and this may be done in a group. The case studies will be made available via Moodle at the beginning of the semester. The LIC will help form groups, if needed.

This exercise is aimed at developing your research skill, critical thinking skill and communication skill.
Your group case study presentation is due as scheduled on Moodle, but the groups may agree between themselves to swap presentations provided the Instructor is notified at least 1 week before the first presentation is due.

Grading will take into account:

- Has the topic been adequately covered? (i.e. 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?)
- Originality of approach (i.e. has the student thought through the issues or just repeated 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 must not exceed 15 minutes duration.

Each group must submit a written report on the case study analysed by the group via a special icon created on the Moodle for this course module. The report document should preferably be in the PDF format.

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

This will be via special icon created on the course webpage on Moodle.

4.5 Late Submission

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

Quality Assurance

The 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 main textbook used in this course is:


Presentation slides (Power Point) are available from the author's website. (Check the Preface section in the textbook).

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 about the courses offered in the School and continual improvements are made based on this feedback. In this course, we will seek your feedback through the CATEI assessment of the course at the end of the Session, and individual comments at anytime during the Session to the Course Coordinator are welcome.

Due to the feedback received, the group assignment structure has been changed in 2013. It has more emphasis on addressing matters of risk management raised in several case studies sourced from Harvard Business Review. This should help understanding of risk quantification issues in a practical context.
# 7 COURSE SCHEDULE

The topics to be discussed each week, and the references in the textbook 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</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 01 Mar 02</td>
<td>Introductions and Overview of the Course Special Characteristics of Banks</td>
<td>Ch 1, 2</td>
<td></td>
</tr>
<tr>
<td>Week 02 Mar 09</td>
<td>Insurance companies, Pension Plans, Mutual funds and Hedge Funds</td>
<td>Ch 3, 4</td>
<td></td>
</tr>
<tr>
<td>Week 03 Mar 16</td>
<td>Financial Instruments and How Individual Risks are Managed</td>
<td>Ch 5, 6, 7</td>
<td></td>
</tr>
<tr>
<td>Week 04 Mar 23</td>
<td>Week 03 Topics Continued Value at Risk</td>
<td>Ch 8, 9</td>
<td></td>
</tr>
<tr>
<td>Week 05 Mar 30</td>
<td>Volatility, GARCH Models</td>
<td>Ch 10, MD</td>
<td></td>
</tr>
</tbody>
</table>

**Session Break 3 April - 12 April**

<table>
<thead>
<tr>
<th>Week Begins</th>
<th>Topic/Learning Outcome(LO)</th>
<th>Reading</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 06 Apr 13</td>
<td>Correlation, Copulas Excel VBA Implementation</td>
<td>Ch 11 MD</td>
<td></td>
</tr>
<tr>
<td>Week 07 Apr 20</td>
<td>Quiz plus Recap Depending on Available Time</td>
<td></td>
<td>Quiz</td>
</tr>
<tr>
<td>Week 08 Apr 27</td>
<td>Basel: Solvency Rules</td>
<td>Ch 12, 13</td>
<td></td>
</tr>
<tr>
<td>Week 09 May 04</td>
<td>Market Risk: Simulation Approach</td>
<td>Ch 14 MD</td>
<td></td>
</tr>
<tr>
<td>Week 10 May 11</td>
<td>Credit Risk: Default Probabilities</td>
<td>Ch 16 MD</td>
<td></td>
</tr>
<tr>
<td>Week 11 May 18</td>
<td>Model Building Approach - Introduction</td>
<td>Ch 15</td>
<td></td>
</tr>
<tr>
<td>Week 12 May 25</td>
<td>Case Study Presentation Revision</td>
<td></td>
<td>Assignment</td>
</tr>
<tr>
<td>Week 13 Jun 01</td>
<td>No Lectures</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Reading implies self reading and the ‘Ch’ refers to the chapters in the text book, and MD indicates materials on Moodle.