UNSW Business School

School of Risk and Actuarial Studies

Risk 3009/5009
Risk Management Strategies

Course Outline
Semester 2, 2017

Course-Specific Information

The Business School expects that you are familiar with the contents of this course outline. You must also be familiar with the Course Outlines Policies webpage which contains key information on:
•   Program Learning Goals and Outcomes
•   Academic Integrity and Plagiarism
•   Student Responsibilities and Conduct
•   Special Consideration
•   Student Support and Resources

This webpage can be found on the Business School website:
https://www.business.unsw.edu.au/degrees-courses/course-outlines/policies

Table of Contents

The Table of Contents reads off the headings (Heading 1 and Heading 2 in the Styles menu). When you have finalised your document, simply right click on the Table of Contents, go to '**Update Field'**, then choose '**Update entire table'** (even if you have only updated the page numbers) then press '**OK**'. **If you don't update 'Entire Table', then you may get an Error message.**

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 (Weeks 1 through 12) will be held at Kensington campus as per the following:

Room: Business 220 Thursday 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.

UNSW | AGSM
Business School

2.4 Course Aims and Relationship to Other Courses

This course is normally undertaken by students who have completed some actuarial components in earlier studies as well as by those with quantitative finance background.

Implementation of risk management strategies is discussed with reference to using Excel VBA 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:

Topics of week 1, 3, 4 and 5 cover:

- 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.

Topics of week 6, 7, 8 and 9 cover:
- Risk management and the use of CAT Bonds and the related numerical issues for model implementation e.g. pricing and optimisation issues

Topic of the assignment (AON supported) cover:
- 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').

For more information on Program Learning Goals and Outcomes, see the School's Course Outlines Policies webpage available at https://www.business.unsw.edu.au/degrees-courses/course-outlines/policies

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):

Program Learning Goals and Outcomes		Course Learning Outcomes	Course Assessment Item
This course helps you to achieve the following learning goals for all Business postgraduate coursework students:		*On successful completion of the course, you should be able to:*	*This learning outcome will be assessed in the following items:*
1	Knowledge	Explain the assumptions of standard models of risk quantification in financial institutions. Use statistical skills to present data relevant to problems in risk management.	Assignment Exam
2	Critical thinking and problem solving	Use the standard models for correlations and extreme events in risk analysis.	Assignment Exam
3a	Written communication	Construct written work which is logically and professionally presented.	Presentation
3b	Oral communication	Communicate ideas in a succinct and clear manner.	Presentation
4	Teamwork	Work collaboratively to complete a task	Not specifically assessed.
5a.	Ethical, social and environmental responsibility	Not specifically addressed in this course.	
5b.	Social and cultural awareness	Not specifically addressed in this course.	

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."*

UNSW | AGSM
Business School

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.

The course webpages will provide all the required materials including video links from YouTube and TED.

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:

Assessment Task	Weighting	Length	Due Date
Case Report Presentation	15%	See Moodle	Week 12
Assignment (AON)	25%	See Moodle	Week 10
Exam	60%		UNSW Exam Period

The overall assessment for the course will use the Fail, Pass, Credit, Distinction and High Distinction grading system as applicable for the Faculty.

Details of Each Assessment Task:

- 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.

- Assignment (AON):

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 the practitioners. The detailed information will be made available via the Moodle course webpage.

AON staff will present the topic in Week 2 and the students will work in a group of 2 to present their findings in Week 10.

- 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.

UNSW | AGSM
Business School

4.3   Assessment Format

- Case Report Presentation:

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 (PLG 3a, 3b):

- 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 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.

- Assignment (AON):

The assignment will be posted to Moodle at the beginning of the semester and this may be done in a group of two. The ReMetrica software will be provided at the beginning of the session along with instructions for installation (Windows environment only).

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   Special Consideration, Late Submission and Penalties

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

For information on Special Consideration please refer to the Business School's Course Outlines Policies:

https://www.business.unsw.edu.au/degrees-courses/course-outlines/policies.

4.6 Protocol for viewing final exam scripts

The UNSW Business School has set a protocol under which students may view their final exam script. Please check the protocol <u>here</u>.

<u>https://www.business.unsw.edu.au/students/resources/student-centre/student-resources/policies-and-guidelines/protocol-for-viewing-final-exam-scripts</u>

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

5.1 Reference Text

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

Main textbook:

Banks, E., Alternative Risk Transfer, Wiley Finance, 2004.
ISBN-10: 0470857455 or ISBN-13: 978-0470857458

Reference textbook:

Elements of Financial Risk Management, 2nd Edition, 2011, Peter Christoffersen, Academic Press, ISBN: 9780080922430

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.

The website for this course is on Moodle at: <u>http://moodle.telt.unsw.edu.au</u>

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 myExperience survey is one of the ways in which student evaluative feedback is gathered. In this course, we will seek your feedback through [end of semester myExperience responses].

The feedback from the previous semester indicates that the mathematical content should be tailored for the benefit of the non-actuarial students in this course. Also, there should be more explanation of the assignment.

We will endeavour to achieve these objectives in the current session. The assignment has been designed by the practitioner, AON with a focus to get familiar with the professional software used by the re-insurance industry.

7 COURSE SCHEDULE

Lecture Schedule

Lectures start in Week 1 and finish in Week 12.

LECTURE SCHEDULE		
Week Begins	Topic	References
Week 1 24 July	Enterprise Risk Management; Risk Management Motivations	MT 1, 2, 10
Week 2 31 July	Introduction to the assignment using ReMetrica Software Guest Lecturer: Kate Bible, Aon Benfield Analytics	Moodle (Software, Data, Assignment Details)
Week 3 07 August	Insurance, Reinsurance, Captives	MT 4, 5
Week 4 14 August	Securitisation, Contingent Capital Structures	MT 7, 8
Week 5 21 August	Insurance Derivatives	MT 9
Week 6 28 August	Empirical Analysis of Financial Time Series: Maximum Likelihood, Volatility Forecasting	Moodle; RT 3, 4, 5
Week 7 04 September	Copulas and Dependence Modelling	Moodle; RT 9
Week 8 11 September	Extreme value Theory: Forecasting Market Crisis Impacts; Modelling Earthquake Risk	Moodle; RT 6
Week 9 18 September	Simulation approach to insurance problems; Use of innovative derivatives for price risk management for oil refiners	Moodle
Mid-semester break: Saturday 23 September – Sunday 1 October inclusive Monday 2 October – Labour Day Public Holiday		
Week 10 03 October	Students present the assignment in the class; Present Guest Lecturer: Kate Bible, Aon Benfield Analytics	Moodle
Week 11 09 October	Individual Presentation in Class	Moodle
Week 12 16 October	Revision; Submission of case report;	
Week 13 23 October	NO LECTURES	

Entries in References: 'MT' refers to the chapters in the main text book by Banks. 'RT' refers to the reference text. Moodle indicates materials on Moodle course webpage.

The course schedule is, however, subject to change.

UNSW | AGSM
Business School