

COURSE OUTLINE: BR3213 Valuation and Risk Models

Academic Year	AY2022-23	Semester	1
Course Coordinator	Ciyu Nie		
Course Code	BR3213		
Course Title	Valuation and Risk Models		
Pre-requisites	BR2210 Financial Markets and Products		
No of AUs	3		
Contact Hours	3x 13 weeks = 39 hours		
Proposal Date	2022-03-02		

A) Course Aims

This course introduces several valuation techniques and risk models, including specific measures of financial risk, the definition of economic and regulatory capital, the models on option and fixed income valuation etc. The purpose of the course is to equip students with right mindsets and necessary knowledge and skillsets of completing Valuation and Risk Models in the GARP FRM® Exam Part I.

B) Intended Learning Outcomes (ILO)/Objectives

By the end of this course, you should be able to:

1. Calculate and describe different measures of financial risk;
2. Define different types of risks faced by financial institutions and apply different models to assess these risks;
3. Describe and apply different valuation methods for fixed income assets;
4. Describe and apply different valuation methods for derivatives.

See [Annex F](#) for learning objective taxonomy.

C) Course Content

- Measures of financial risk; measuring and monitoring volatility
- External and internal credit ratings;
- Country risk, credit risk and operational risk
- Stress testing;
- Valuation of fixed income assets and model for interest rates;
- Valuation methods for derivatives including binomial tree and the Black-Scholes-Merton model.

D) Assessment (includes both continuous and summative assessment)

Component	ILO Tested	NBS Learning Goal (Refer to Annex E for list)	Weighting	Team/Individual	Assessment Rubrics (Please insert rubrics as Appendix)
1. Final Examination	ILO1-4	Critical Thinking, Acquisition of knowledge	50%	Individual	n.a.

2. Mid-term Quiz	IOL1-2	Critical Thinking, Acquisition of Knowledge	30%	Individual	n.a.
3. Coursework: Class presentation*	IOL1-4	Oral Communication & Written Communication, Acquisition of Knowledge	10%	Individual/ Group	Communication rubric (oral and written)
4. Coursework: Class participation	IOL1-4	Oral Communication	10%	Individual	Class participation rubric
Total			100%		

* Presentation will take place in group form where every member is required to present.

E) Formative feedback

You will receive verbal feedback from me about your presentations, as well as in-class discussion. You will receive summative group feedback on the exam following the conclusion of the module.

F) Learning and Teaching approach

Approach	How does this approach support you in achieving the learning outcomes?
Seminars	The interactive seminar session where there is ample opportunities for open discussion on the conceptual questions raised in the class allows you to think critical and share their ideas and concept with the class. This also allows me to get the concepts clearly through the entire class by involving you and ensure that the targeted learning outcomes are being achieved
In-Class activities	Some learning outcomes for this course are skills which are practical in nature and cannot be achieved by reading and writing. The achievement of such learning outcomes requires hands-on experience, in-class activities provide such opportunities.

G) Reading and References

Hull, John C. Risk Management and Financial Institutions: Risk Management and Financial Institutions (4th Edition). Fourth Edition. New York: John Wiley & Sons, Incorporated, 2015.

H) Course Policies and Student Responsibilities

(1) General

You are expected to complete all assigned pre-class readings and activities (e.g. tutorial questions provided), attend all seminar classes punctually and take all scheduled assignments and tests by due dates. You are expected to take responsibility to follow up with course notes, assignments and course related announcements for seminar sessions they have missed. You are expected to participate in all seminar discussions and activities.

(2) Absenteeism

Absence from class without a valid reason will affect your overall course grade. Valid reasons include falling sick supported by a medical certificate and participation in NTU's approved activities supported by an excuse letter from the relevant bodies.

If you miss a lecture, you must inform the course instructor via email prior to the start of the class.

I) Academic Integrity

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the [academic integrity website](#) for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

J) Course Instructors

Instructor	Office Location	Phone	Email	Consultation Hours
Ciyu Nie	S3-B1A-33	67906256	cynie@ntu.edu.sg	By prior appointment via email

K) Planned Weekly Schedule

Week	Topic	ILO	Readings/ Activities
1	Measures of financial risk	IOL1	Handouts & Tutorial questions
2	Measuring and monitoring volatility; External and internal credit ratings	IOL1	Handouts & Tutorial questions
3	Country Risk & Credit Risk	IOL2	Handouts & Tutorial questions
4	Operational Risk	IOL2	Handouts & Tutorial questions
5	Stress Testing	IOL2	Handouts & Tutorial questions
6	Pricing, Discounting and Arbitrage	IOL3	Handouts & Tutorial questions
7	Interest Rates, Bond Yields and returns	IOL3	Handouts & Tutorial questions
8	Recess		
9	Duration and Convexity; Hedging	IOL3	Handouts & Tutorial questions

10	Binomial Trees	IOL4	Handouts & Tutorial questions
11	The Black-Scholes-Merton Model	IOL4	Handouts & Tutorial questions
12	The Greeks	IOL4	Handouts & Tutorial questions
13	Review	IOL1-4	Handouts & Tutorial questions

ANNEX A: ASSESSMENT CRITERIA**Class Participation Rubric**

Traits		Performance		
		1	6	10
ENGAGEMENT (50 POINTS)	Engagement and listening	<ul style="list-style-type: none"> • Is routinely unengaged in class/group discussions and comments • Often spends class time doing other work or email • Does not listen to others; regularly talks or does not pay attention while others speak/present the materials 	<ul style="list-style-type: none"> • Is occasionally engaged in class/group discussions and comments • Occasionally spends class time doing other work or email • Occasionally inattentive or talks while others speak/present the materials 	<ul style="list-style-type: none"> • Is always voluntarily engaged in class/group discussions and comments • Does not spend time doing other work or email • Listens attentively when others speak/present materials
	Evaluation: Not Yet <u>1 2 3 4 5 6 7 8 9 10</u> Substantially Developed			
CONTRIBUTION (50 POINTS)	Frequency of class participation (25 points)	<ul style="list-style-type: none"> • Seldom speaks up • Speaks up when called upon by instructor or peers, but rarely volunteers. 	<ul style="list-style-type: none"> • Occasionally speaks up 	<ul style="list-style-type: none"> • Frequently speaks up
		Evaluation: Not Yet <u>1 2 3 4 5 6 7 8 9 10</u> Substantially Developed		
	Quality of class participation (25 points)	<ul style="list-style-type: none"> • Makes comments that are vague and uninformative 	<ul style="list-style-type: none"> • Contributes comments, some of which are relevant and/or constructive 	<ul style="list-style-type: none"> • Always contributes comments or raise questions that are relevant/insightful
		Evaluation: Not Yet <u>1 2 3 4 5 6 7 8 9 10</u> Substantially Developed		
Overall/ Other comments				

Communication Rubric (Oral and Written)**Learning Objective:**

- The ability to communicate well with others verbally so that it clearly expresses the intended message and is understandable and useful to the receiving party.
- The ability to communicate well with others in writing so that it clearly expresses the intended message and is understandable and useful to the receiving party.

Traits		Performance									
		Evaluation: Not Yet 1 2 3 4 5 6 7 8 9 10 Substantially Developed									
		Not Yet									Substantially Developed
<u>Communication Outcome</u>	Has a clear message for audience Maximizes likelihood of audience accepting the message	Central message is not explicitly stated in the presentation. Main points are not clearly identified, audience unsure of the direction of the message.									Central message is precisely stated; main points are clearly identified.
<u>Situational Factors</u>	Addresses audience needs Builds rapport with audience	Topic is irrelevant to audience needs and interest. No attempt made to connect topic to audience.									Connection of topic to audience needs and interest is stated with sophistication. Identifies and expresses a deep understanding of the target audience.
<u>Design Factors</u>	<u>Medium (Written Communication)</u> <ul style="list-style-type: none"> • Uses and appropriate medium to deliver the message • Presents information in a reader-friendly and inviting format 	Lack of visual aids to facilitate reader's understanding. Fonts are too small; important information is not highlighted.									Effective use of visual aids; information is organized to maximize reader's understanding. Fonts are easily to be viewed.
	<u>Structure (Written Communication)</u> <ul style="list-style-type: none"> • Organises content coherently • Signals transitions between points 	Organizational pattern (specific introduction and conclusion, sequenced materials within the body, and transitions) is not observable.									Organizational pattern is clearly and consistently observable and makes the content of the presentation cohesive.
	<u>Verbal</u> <ul style="list-style-type: none"> • Speaks at appropriate speed and volume • Uses correct grammar and pronunciation 	Grammar, pronunciation and word choice are deficient. Vocal delivery is too soft or too fast to understand; gap-fillers interfere with expression.									Free of errors in grammar and pronunciation; good choices of word enhance clarity of expression. Vocal delivery is varied and dynamic. Speech rate, volume, and tone facilitate audience comprehension. Minimal gap fillers.
	<u>Non-Verbal</u> <ul style="list-style-type: none"> • Establishes eye contact • Uses gestures and movement to convey energy and confidence 	Eye contact, posture, gestures, movement and facial expressions are inappropriate and significantly distracting.									Eye contact, posture, gestures, movement and facial expressions make the presentation compelling, and speaker appears polished and confident.

ANNEX B: LIST OF NBS LEARNING GOALS

LEARNING GOAL	LEARNING OBJECTIVE	CHECK
TASK SKILLS		
Acquisition of Knowledge	<ol style="list-style-type: none"> 1. Calculate and describe different measures of financial risk; 2. Define different types of risks faced by financial institutions and apply different models to assess these risks; 3. Describe and apply different valuation methods for fixed income assets; 4. Describe and apply different valuation methods for derivatives. 	<input type="checkbox"/>
Ethical Reasoning	The ability to recognize and understand ethical issues, and apply sound ethical reasoning.	<input type="checkbox"/>
Critical Thinking & Creative Thinking	The ability to define, examine, evaluate, analyze and synthesize various arguments and knowledge to form independent judgment.	<input type="checkbox"/>
	The ability to provide insight in an innovative way characterized by high degree of adaptiveness.	<input type="checkbox"/>
Problem Solving & Decision Making	The ability to identify problem, generate a plan to solve problem, implement and evaluate the plan and make sound business decision.	<input type="checkbox"/>
Planning & Execution	The ability to set clear priorities and plans of action for the task and define task objectives to fulfill goals within a planned schedule for execution.	<input type="checkbox"/>
PEOPLE SKILLS		
Oral Communication & Written Communication	The ability to communicate well with others verbally so that it clearly expresses the intended message and is understandable and useful to the receiving party.	<input type="checkbox"/>
	The ability to communicate well with others in writing so that it clearly expresses the intended message and is understandable and useful to the receiving party.	<input type="checkbox"/>
Negotiation	The ability to systematically plan and prepare for negotiation and apply negotiation skills in personal and professional practice.	<input type="checkbox"/>
Cultural Intelligence	The ability to function effectively in situations characterized by cultural diversity.	<input type="checkbox"/>
Teamwork & Interpersonal Skills	The ability to work effectively with others in a group setting.	<input type="checkbox"/>
Motivation & Development of Self & Others	The ability to develop a better understanding of one's strengths and weaknesses, and learn to view others and mistakes positively as sources of personal and professional development.	<input type="checkbox"/>

Please write to NBS Accreditation office (nbsacro@ntu.edu.sg) for sample rubrics.

CHECKLIST FOR OBTL

To assist you in completing your course outline, please refer to the following checklist.

Items	Description	
<i>Style of Communication</i>	Reflects second person narrative (i.e., “you”) and clear use of language.	<input type="checkbox"/>
<i>Formatting</i>	Is clear and consistent throughout.	<input type="checkbox"/>
<i>Course Aims</i>	Provides a concise overview of the course to target learners.	<input type="checkbox"/>
<i>Intended Learning Outcomes (ILOs)</i>	Are specific, measurable & clear. Higher level courses have higher level cognitive outcomes.	<input type="checkbox"/>
<i>Course Content</i>	Includes topics and keywords.	<input type="checkbox"/>
<i>Assessment Mapping</i>	Maps each assessment to relevant ILOs and either programme level outcomes or the 3Cs.	<input type="checkbox"/>
<i>Assessment Weightage</i>	Reflects the importance of learning outcomes they are mapped to. Final exams cannot be more than 60%.	<input type="checkbox"/>
<i>Assessment Types</i>	Includes varied assessment types appropriate for measuring the learning outcomes.	<input type="checkbox"/>
<i>Assessment - Team</i>	If more than 20%, a plan to evaluate individual contribution is clearly explained, e.g. using peer evaluation or instructor observation. If less than 20%, a general statement to encourage teamwork and discourage freeriding will suffice.	<input type="checkbox"/>
<i>Formative Feedback</i>	Describes a clear plan of distributed and timely feedback over the semester.	<input type="checkbox"/>
<i>Teaching Approaches</i>	Describes the rationale for chosen approaches; mostly student-centred.	<input type="checkbox"/>
<i>Reading List & References</i>	Includes a list of readings and references.	<input type="checkbox"/>
<i>Course Policy & Student Responsibility</i>	Describes your course policy and student responsibility necessary to promote a positive learning experience.	<input type="checkbox"/>
<i>Academic Integrity</i>	States expectations of academic integrity. Describes plans and policies for promoting academic integrity.	<input type="checkbox"/>
<i>Course Instructors</i>	Includes instructors’ names and contact information.	<input type="checkbox"/>
<i>Planned Weekly Schedule</i>	Maps all ILOs to respective lessons. Includes readings or activities for each week.	<input type="checkbox"/>
<i>Rubrics</i>	Identifies assessment criteria aligned to learning outcomes. Describes levels of performance for differentiating quality of student work.	<input type="checkbox"/>

For further clarification, please email facultydevelopment@ntu.edu.sg.