

COURSE OUTLINES: BR2210 Financial Risk Management

Academic Year	2022/2023	Semester	2
Course Coordinator	Pengyu Wei		
Course Code	BR2210		
Course Title	Financial Risk Management		
Pre-requisites	Nil		
No of AUs	3		
Contact Hours	39		
Proposal Date	26 June 2022		

Note: This course is mutually exclusive with BF2209 (4AU Derivative Securities), BF2221 (3AU Derivative Securities and Hedging Strategies), BF3202 (4AU Fixed Income Securities), and BF3216 (3AU Fixed Income Securities).

A) Course Aims

This course provides in-depth background knowledge of financial products and the markets in which they trade. It covers the analysis of derivative instruments such as options, forward contracts, futures contracts, and swaps. The course discusses how these contracts work, how they are used, and how they are priced. The course aims at equipping students with necessary knowledge and skills to prepare for Financial Markets and Products in GARP FRM Exam Part I.

B) Intended Learning Outcomes (ILO)/Objectives

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

1. Describe the mechanics of forwards and futures
2. Describe hedging strategies involving forwards and futures
3. Calculate forwards and future prices
4. Describe the mechanics of swaps
5. Describe the mechanics of options
6. Describe trading strategies involving options and calculate their payoffs
7. Analyse properties of option prices
8. Calculate option prices using binomial trees and the Black-Scholes-Merton model
9. Apply Greeks to hedging and risk management
10. Describe the mechanics of credit derivatives

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

C) Course Content

- Forwards and futures markets
- Trading strategies involving forwards and futures
- Interest rates
- Pricing forwards and futures
- Swaps
- Options markets
- Trading strategies involving options
- Properties of options
- Option pricing
- Credit derivatives

D) Assessment (includes both continuous and summative assessment)

Component	ILO Tested	NBS Learning Goal (Refer to Annex D for list)	Weighting	Team/Individual	Assessment Rubrics (Please insert rubrics as Appendix)
1. Final Examination	ILO1-10	Critical thinking & Acquisition of knowledge	50%	Individual	NA
2. Midterm Examination	ILO1-5	Critical thinking & Acquisition of knowledge	30%	Individual	NA
3. Class participation	ILO1-10	Oral Communication & Critical Thinking	10%	Individual	See Annex B
4. Class presentation*	ILO5-9	Oral Communication & Critical Thinking	10%	Individual	See Annex C
Total			100%		

Important Notes:

* 1. Students will complete a project that uses real-world datasets to illustrate certain trading strategies (details TBA) and present the results to the class.

You will receive verbal feedback from me about your presentations. You will receive summative feedback on the exams following the conclusion of the module.

F) Learning and Teaching approach

Approach	How does this approach support you in achieving the learning outcomes?
Lectures	The interactive lecture session explains key concepts in detail, supported with illustrating examples. The lectures provide ample opportunities for open discussion on the conceptual questions raised in the class, which allow you to think critically and share your ideas with the class. The interaction between the instructor and the entire class ensures that the targeted learning outcomes can be achieved.
In-Class activities	Interactions are encouraged in class to enhance critical thinking and class engagement. Instant feedback will be provided to in-class participation to ensure the learning goals can be attained.

G) Reading and References

Basic Text

John C. Hull. Fundamentals of Futures and Options Markets, Global Edition, 8th Edition, 2017.

H) Course Policies and Student Responsibilities**(1) General**

You are expected to complete all assigned pre-class readings and activities, 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
Pengyu Wei	S3 B1A-03	6790 5728	pengyu.wei@ntu.edu.sg	By appointment via email

K) Planned Weekly Schedule

Week	Topic	ILO	Readings/ Activities
1	Introduction to Financial Markets and Derivatives	1,4	Chapter 1
2	Mechanics of Futures Markets Hedging Strategies Using Futures	1,2	Chapters 2 and 3
3	Interest Rates Determination of Forward and Futures Prices	3	Chapters 4 and 5

4	Interest Rate Futures	1-3	Chapter 6
5	Swaps	4	Chapter 7
6	Securitization and the Credit Crisis of 2007 Mechanics of Options Markets	5	Chapters 8 and 9
7	Midterm	1-5	
Recess			
8	Properties of Stock Options Trading Strategies Involving Options	6,7	Chapters 10 and 11
9	Option Pricing: Binomial Tree Models Option Pricing: The Black-Scholes-Merton Model	8	Chapter 12 and 13
10	Option Greeks and Hedging Credit Derivatives	9,10	Chapter 17 and 23
11-12	Presentation		
13	Review		

ANNEX B: ASSESSMENT CRITERIA FOR CLASS PARTICIPATION

Traits	Performance		
	1-2	3-4	5
Engagement (40%)	Student hardly focuses in class (e.g. using mobile phone).	Student occasionally engages in distracting activities (e.g. using mobile phone) in class.	Student engages fully in class.
Behavior (30%)	Student frequently displays disruptive and/or disrespectful behavior during class.	Student rarely displays disruptive or disrespectful behavior during class.	Student never displays disruptive or disrespectful behavior during class.
Contribution (30%)	Student never makes contributions or contributions are irrelevant.	Student occasionally makes contributions that are meaningful and relevant.	Student actively makes contributions that are constructive and insightful.

ANNEX C: ASSESSMENT CRITERIA FOR CLASS PRESENTATION

Criteria			Points
Fail standard	Pass standard	High standard	
(<40 %)	(40%-69%)	(70%-100%)	
Content is attention-getting and provokes thinking, and contains accurate information. References to source of information are provided whenever required.			20
Material included is relevant to the overall message/purpose. Appropriate amount of material is prepared. Length of presentation is within the assigned time limits.			20
Visual aids are well prepared, informative, and effective.			20
Speaker maintains good eye contact with the audience.			20
Speaker handles queries raised by the audience appropriately.			20
Total Points			100

ANNEX D: CURRENT COURSE OUTLINE

Academic Year	2021/2022	Semester	2
Course Coordinator	WEI Pengyu		
Course Code	BR2210		
Course Title	Financial Markets and Products		
Pre-requisites	Nil		
No of AUs	3		
Contact Hours	39		
Proposal Date	8 October 2021		

Note: This course is mutually exclusive with BF2209 (4AU Derivative Securities), BF2221 (3AU Derivative Securities and Hedging Strategies), BF3202 (4AU Fixed Income Securities) , and BF3216 (3AU Fixed Income Securities). BF2221 and BF3216 will be submitted for approval.

A) Course Aims

This course provides in-depth background knowledge of financial products and the markets in which they trade. It covers the analysis of derivative instruments such as options, forward contracts, futures contracts, and swaps. The course discusses how these contracts work, how they are used, and how they are priced. The course aims at equipping students with necessary knowledge and skills to prepare for Financial Markets and Products in GARP FRM Exam Part I.

B) Intended Learning Outcomes (ILO)/Objectives

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

1. Describe the mechanics of forwards and futures
2. Describe hedging strategies involving forwards and futures
3. Calculate forwards and future prices
4. Describe the mechanics of swaps
5. Describe the mechanics of options
6. Describe trading strategies involving options and calculate their payoffs
7. Analyse properties of option prices
8. Describe the mechanics of credit derivatives

C) Course Content

- Forwards and futures markets
- Trading strategies involving forwards and futures
- Interest rates
- Pricing forwards and futures
- Swaps
- Options markets
- Trading strategies involving options
- Properties of options
- Exotic options
- Credit derivatives

D) Assessment (includes both continuous and summative assessment)					
Component	ILO Tested	NBS Learning Goal (Refer to Annex D for list)	Weighting	Team/Individual	Assessment Rubrics (Please insert rubrics as Appendix)
5. <i>Final Examination</i>	ILO1-8	Critical thinking & Acquisition of knowledge	50%	Individual	N.A
6. Midterm Examination	ILO1-5	Critical thinking & Acquisition of knowledge	30%	Individual	NA
7. Class participation	ILO1-8	Oral Communication & Critical Thinking	10%	Individual	See Annex B
8. Class presentation*	ILO1-8	Oral Communication & Critical Thinking	10%	Individual	See Annex C
Total			100%		

Important Notes:

* 1. Students will complete a project that uses real-world datasets to illustrate certain trading strategies (details TBA) and present the results to the class.

E) Formative feedback

Feedback is central to this course. You will receive verbal feedback through in-class discussion. You will also receive both written and verbal feedback about the mid-term test.

F) Learning and Teaching approach

Approach	How does this approach support you in achieving the learning outcomes?
Lectures	The interactive lecture session explains key concepts in detail, supported with illustrating examples. The lectures provide ample opportunities for open discussion on the conceptual questions raised in the class, which allow you to think critically and share your ideas with the class. The interaction between the instructor and the entire class ensures that the targeted learning outcomes can be achieved.

In-Class activities	Interactions are encouraged in class to enhance critical thinking and class engagement. Instant feedback will be provided to in-class participation to ensure the learning goals can be attained.
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G) Reading and References

Basic Text

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(1) General

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I) Academic Integrity

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J) Course Instructors

Instructor	Office Location	Phone	Email	Consultation Hours
WEI Pengyu	S3 B1A-03		pengyu.wei@ntu.edu.sg	2 hours per week TBA

K) Planned Weekly Schedule

Week	Topic	ILO	Readings/ Activities
1	Introduction to Financial Markets and Derivatives	1,4	Chapter 1
2	Mechanics of Futures Markets Hedging Strategies Using Futures	1,2	Chapters 2 and 3
3	Interest Rates Determination of Forward and Futures Prices	3	Chapters 4 and 5
4	Interest Rate Futures	1-3	Chapter 6
5	Swaps	4	Chapter 7
6	Securitization and the Credit Crisis of 2007 Mechanics of Options Markets	5	Chapters 8 and 9
7	Midterm		
8	Recess		
9	Properties of Stock Options Trading Strategies Involving Options	6,7	Chapters 10 and 11
10	Employee Stock Options Options on Stock Indices and Currencies Exotic Options and Other Nonstandard Products	5	Chapter 14, 15 (15.1-15.3), and 22
11	Credit Derivatives Derivatives Mishaps and What We Can Learn from Them	8	Chapter 23 and 25
12	Presentation		
13	Review		

ANNEX E: LIST OF NBS LEARNING GOALS

LEARNING GOAL	LEARNING OBJECTIVE	CHECK
TASK SKILLS		
Acquisition of Knowledge	Students should be able to demonstrate understanding of the various concepts and methods introduced in the module.	<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 (nbsaccro@ntu.edu.sg) for sample rubrics.

ANNEX F: RESOURCES**BLOOM'S TAXONOMY FOR LEARNING OUTCOMES/OBJECTIVES**

Action Words for Bloom's Taxonomy					
Knowledge	Understand	Apply	Analyze	Evaluate	Create
define	explain	solve	analyze	reframe	design
identify	describe	apply	compare	criticize	compose
describe	interpret	illustrate	classify	evaluate	create
label	paraphrase	modify	contrast	order	plan
list	summarize	use	distinguish	appraise	combine
name	classify	calculate	infer	judge	formulate
state	compare	change	separate	support	invent
match	differentiate	choose	explain	compare	hypothesize
recognize	discuss	demonstrate	select	decide	substitute
select	distinguish	discover	categorize	discriminate	write
examine	extend	experiment	connect	recommend	compile
locate	predict	relate	differentiate	summarize	construct
memorize	associate	show	discriminate	assess	develop
quote	contrast	sketch	divide	choose	generalize
recall	convert	complete	order	convince	integrate
reproduce	demonstrate	construct	point out	defend	modify
tabulate	estimate	dramatize	prioritize	estimate	organize
tell	express	interpret	subdivide	find errors	prepare
copy	identify	manipulate	survey	grade	produce
discover	indicate	paint	advertise	measure	rearrange
duplicate	infer	prepare	appraise	predict	rewrite
enumerate	relate	produce	break down	rank	role-play
listen	restate	report	calculate	score	adapt
observe	select	teach	conclude	select	anticipate
omit	translate	act	correlate	test	arrange
read	ask	administer	criticize	argue	assemble
recite	cite	articulate	deduce	conclude	choose
record	discover	chart	devise	consider	collaborate
repeat	generalize	collect	diagram	critique	collect
retell	give examples	compute	dissect	debate	devise
visualize	group	determine	estimate	distinguish	express
	illustrate	develop	evaluate	editorialize	facilitate
	judge	employ	experiment	justify	imagine
	observe	establish	focus	persuade	infer
	order	examine	illustrate	rate	intervene
	report	explain	organize	weigh	justify
	represent	interview	outline		make
	research	judge	plan		manage
	review	list	question		negotiate
	rewrite	operate	test		originate
	show	practice			propose
	trace	predict			reorganize
	transform	record			report
		schedule			revise
		simulate			schematize
		transfer			simulate
		write			solve
					speculate
					structure
					support
					test
					validate

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.	<input type="checkbox"/>
	If less than 20%, a general statement to encourage teamwork and discourage freeriding will suffice.	
<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.

ADDITIONAL OBTL RESOURCES

An online course “[Outcomes-Based Teaching and Learning – A Guide to Course Design](#)” is now available on Workday@NTU. This module aims to introduce learners to the principles of Outcomes-Based Teaching and Learning (OBTL) in course design. It is relevant to those who are interested in teaching in higher education and those who support faculty in teaching and learning.

For additional teaching resources, you may also refer to the Teaching Learning & Pedagogy Division (TLPD) [website](#).

The available resources include:

- [Understanding your students](#)
- [Engaging your students](#)
- [Designing your course](#)
- [Assessing your students](#)
- [Reflecting on your teaching](#)

