

COURSE OUTLINES: BF3204/BF3218Financial Modeling

Academic Year	2022-23	Semester	2 (Jan 2023)
Course Coordinator	Kong Yoon Kee		
Course Code	BF3204 or BF3218		
Course Title	Financial Modeling		
Pre-requisites	AB1201 or BU8201 with B+ (Minor in Finance Students) and BF2201/BF2219 (Investments)		
No of AUs	4 or 3		
Contact Hours	3 hours per week		
A) Course Aims/Description			
<p>This course review and apply the principles taught in prior introductory finance courses including capital structure, corporate finance, asset pricing and investment analysis, plus additional topics like fixed income analysis and construction of efficient portfolios. It takes a very hands-on approach and provide students with ample opportunities to apply numerical and statistical analysis, table and graphical presentations and database analysis. It exclusively uses MS Excel as a computing tool for pricing and analysis. Topics covered include cost of capital estimation, valuation using financial statement models, construction of efficient portfolios, pricing and valuation of options and fixed income analytics.</p> <p>As the coverage of finance topics for this course is very broad and the focus is on Excel application, this course will not cover the derivation of formulas (which students should have learnt from another finance course or will learn in the future) but will emphasize Excel implementation of given formulas</p> <p>After the completion of the course, you should be equipped with a strong foundation of finance and quantitative skills. The course benefits students who wish to become a quantitative financial analyst.</p>			
B) Intended Learning Outcomes (ILO)/Objectives			
<p>By the end of this course, you should be able to:</p> <ol style="list-style-type: none"> 1. Understand the principles of finance, 2. Acquire working knowledge of statistics relevant to finance, 3. Know how to use Excel functions, commands and tools, 4. Create formulas, perform analytical analysis, and design Excel templates for applications in finance, 5. Engage actively and contributing meaningfully during class 6. Appreciate the value of working as a team. 			
C) Course Content			
<ol style="list-style-type: none"> 1. Time value of money with Excel functions and tools 2. Dynamic models of financial statement with Excel 3. Valuation of firms and investment projects with Excel What-If analysis 4. Stand-alone risk assessment with Excel What-If analysis and simulation 5. Cost of capital estimation with Excel Data analysis 6. Efficient portfolio construction with Excel Matrix functions and Solver 7. Pricing and applying options in portfolio construction 8. Fixed income analytics 			

D) Assessment (includes both continuous and summative assessment)

Component	ILO Tested	NBS Learning Goal	Weightage	Team/ Individual	Assessment Rubrics
1. Class Participation	ILO1 – ILO5	Oral Communication	10%	Individual	Rubric 1
2. Group Project	ILO1 – ILO4 ILO6	Teamwork & Interpersonal Skills	20%	Group	Rubric 2
3. Quiz	ILO1 – ILO4	Problem Solving & Decision Making	20%	Individual	Quiz marks
4. Final Exam	ILO1 – ILO4	Problem Solving & Decision Making	50%	Individual	Exam marks
Total			100%		

Detail for Assessments*1) Class Participation*

Students are expected to demonstrate their abilities in contributing relevant ideas and communicating them effectively to others. They are expected to attend and participate in class regularly. Class participation will be assessed on the basis of involvement in class discussion, as well as the quality and consistency of effort through the semester. Active pre-reading is also considered as part of class participation

2) Group Project

Students work on an assigned topic and make a presentation on the findings. All members in a group must participate in the presentation with their name indicated at the bottom of the PowerPoint slides they are presenting.

3) Quiz

It is a **closed book** quiz held in **computer labs**. Students use Excel to attempt on questions in provided Excel templates There will be **no make-up quiz**. Unless a valid reason is given, zero marks will be awarded. If valid reasons are given, the prevailing examination policy will apply.

4) Final Exam

It is a **closed book** exam held in **computer labs**. Students use Excel to attempt on questions in provided Excel templates.

E) Formative feedback

There is various feedback given to you throughout this module. You will receive verbal feedback on your class participation. For group project, there will be verbal feedback on your project and anonymous peer feedback on your Teamwork and Interpersonal Skills.

F) Learning and Teaching approach

Approach	How does this approach support you in achieving the learning outcomes?
Blended Lectures and Tutorials	All sessions are conducted in a computer lab. Each session comprises mini lectures alternate with hands-on exercises on provided Excel templates. The interactive session provides ample opportunities for open discussion on the conceptual and technical questions raised in the class. It lets you immediately put theory into practice to build applications of finance. This approach 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.
Group Assignment	The group assignment will provide you opportunity to work together and learn from one another and to share your knowledge to others. It helps students a host of skills such as breaking complex tasks into parts steps, planning and managing time, refining understanding, learning how to deal with open ended questions, and developing strong communication skills. These skills developed through the group-based work are increasing valued in the professional world.
In-Class activities	The learning outcomes related to Excel 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 you gain through in-class activities. Do not miss any class.

G) Reading and References**Textbook:**

Financial Modeling, 4th Edition, by Simon Benninga (Acronym S4) MIT Press, 2014, ISBN: 978-0-262-02728-1. (Call No: HG173.B472 2014)

References:

Corporate Finance: A Valuation Approach, by, Simon Benninga and Oded H. Sarig. McGraw-Hill, 1997. ISBN: 978-0-070-05099-0. (Call No: HG4028.V3B472)

Financial Management: Theory and Practice, 14th Edition by Eugene F Brigham, and Michael C. Ehrhardt. South-Western. ISBN: 978-1-111-97220-2. (Call No: HG4026.B855 2014)

Options, Futures, and Other Derivatives, 9th Edition by John C. Hull. Prentice-Hall. ISBN: 978-1-292-21289-0. (Call No: HG6024.H913 2018)

Bond Markets, Analysis and Strategies, 9th Edition by Frank Fabozzi. Prentice-Hall. ISBN: 978-0-133-79677-3. (Call No: HG4651.F121 2016)

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 stay till the end, and submit all project/presentations by due date and take quiz on assigned dates. You are expected to take responsibility to follow up with course notes, assignments and course related announcements for seminar sessions you have missed. You are expected to participate in all seminar discussions and activities.

During seminar class, you should focus on class activities. If you are sleeping, chatting with others (not related to course materials), surfing internet on private matters, or engaging in activities not related to the course, especially use of handphone, it will affect your Class Participation grade negatively and you may be asked to leave the class.

2. Absenteeism

Absence from class without a valid reason will affect your overall course grade. If you are absent for the **quiz** without a valid reason, zero mark will be awarded for the quiz. Valid reasons for absence include falling sick (must be supported by a medical certificate by recognized medical professional for the specific date of absence) and participation in NTU's approved activities supported by an official letter from the relevant authorities (only for university-level and higher activities and should be submitted to instructor **before** the quiz).

If you are absent from or late for project presentation, you are expected to inform your group mates and instructor in advance. Those who are late or absent are expected to contact the instructor **automatically** and those who are unable to provide satisfactory reason for lateness/absence may be awarded lesser marks up to zero mark.

3. Academic Expectations

Each and every student is expected to **do the necessary reading** of the relevant chapters **before each seminar** and the needed review after the class. There is very limited time to cover both the

review of the principles and theories for each seminar, and the learning and application of the needed Excel functions to implement them, so pre-reading is necessary to help you better follow the seminar proceedings. You are expected to spend about 6 to 8 hours a week in pre- and post-seminar readings, review and reflection.

Taking ownership of your own learning journey will help you maximize your benefit from this course. The lecture notes provide a good overview of the topics covered but they have to be supplemented with the very detailed explanations and further examples provided in the recommended textbook. The Benninga textbook provides many additional exercises at the end of each chapter, and you should try to work through a number of them to reinforce the concepts learnt and to more effectively apply the skills you acquired. Do discuss and compare solutions with your classmates.

Please feel free to ask questions in class, see me during the class breaks or after the class, or make an appointment for an online consultation.

I) Academic Integrity

Good academic work depends on honesty and ethical behavior. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honor 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
Kong Yoon Kee	S3-B2b-49	6790 6139	aykkong@ntu.edu.sg	to be advised

K) Planned Weekly Schedule

Weekly seminars will be conducted in-person in an IT Lab. However, the location may be shifted to a seminar room (with social distancing) or online if the covid situation necessitates it.

Teaching Week	Week starting	Lecture Topics	ILO	Readings/ Activities
1 & 2	9 Jan	Course Introduction Time Value of Money and Basic Valuation Principles Excel Functions Data Tables Arrays and Matrices	ILO1,3	S4 Ch 1, 31 - 34
2	16 Jan	Continued	ILO1,3	S4 Ch 3
3	23 Jan	Calculating the Weighted Average Cost of Capital	ILO1-3	S4 Ch 4
4	30 Jan	Pro-forma Financial Statement Modeling	ILO1,3,4	S4 Ch 5
5	6 Feb	Introduction to Portfolio Models Finding Efficient Portfolios	ILO1,3,4	S4 Ch 8, 9
6	13 Feb	Calculating the Variance-Covariance Matrix	ILO2,3,4	S4 Ch 10
7	20 Feb	Estimating Betas and the Security Market Line (SML) Efficient Portfolios without Short Sales	ILO1,3,4	S4 Ch 11, 12
8	6 Mar	Introduction to Options Binomial Option Pricing Model	ILO1,3,4	S4 Ch 15, 16
9	13 Mar	The Black-Scholes Model (for Options Pricing)	ILO1,3,4	S4 Ch 17
10	20 Mar	Group Project Presentation	ILO1,2,3,4	
11	27 Mar	Quiz	ILO1,2,3,4 ,6	
12	3 Apr	Fixed Income: Duration and Convexity	ILO1,3,4	S4 Ch 20
13	10 Apr	Fixed Income: Immunization Strategies, Course Wrap-up and Exam Briefing	ILO1,3,4	S4 Ch 21
Final Examination: To be announced				

The above is a rough guide on the timing of a Lecture Topic. As deemed appropriate by the instructor, a Lecture Topic may flow over into the following week or start earlier in the preceding week indicated here.

Rubric 1: Class Participation Rubric*

Traits	Performance		
	Not Yet	Reasonably Developed	Substantially Developed
Engagement	Hardly focuses in class (e.g., using mobile phone, unnecessary chatting)	Displays focus and concentrate during class. Engages moderately in class.	Engages fully in class
Contribution frequency	Does not speak up/contribute in class	Occasionally speaks up/contributes in class	Speaks up/contributes in most or all classes
Contribution quality	No contributions/Contributions lack substance	Contributions demonstrate knowledge of subject matter	Contributions are constructive and insightful
	Evaluation: Not Yet <u>1</u> <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u> Substantially Developed		

* A student who is found doing the following **often** will be awarded low Class Participation marks up to zero mark: (sleeping, chatting with others (not related to course materials), using handphone, surfing internet on private matters, or engaging in activities not related to the course, or distracting instructor and/or fellow students).

Rubric 2: Teamwork & Interpersonal Skills Rubric

Traits	Performance	
<p><u>Roles and Responsibility</u></p> <p>Behaves professionally by upholding responsibility and assuming accountability for self and others in progressing towards the team's goal.</p>	<p>Not Yet</p> <p>Unclear about his/her own role; refuses to take a role in the group; insists to work individually and has limited coordination or communication with others.</p>	<p>Substantially Developed</p> <p>Always fulfills responsibilities; performs his/her role within the group with enthusiasm and demonstrates willingness to work collaboratively.</p>
<p>Evaluation: Not Yet <u>1 2 3 4 5 6 7 8 9 10</u> Substantially Developed</p>		
<p><u>Communication</u></p> <p>Identifies appropriate mechanisms to coordinate and correspond with team members.</p>	<p>Not Yet</p> <p>Modes of communication are not appropriate, causing confusion and miscommunication among team members.</p>	<p>Substantially Developed</p> <p>Modes of communication are appropriate, and maintains timely communication and correspondence with team members.</p>
<p>Evaluation: Not Yet <u>1 2 3 4 5 6 7 8 9 10</u> Substantially Developed</p>		
<p><u>Conflict Resolution</u></p> <p>Resolves conflicts using a variety of approaches.</p>	<p>Not Yet</p> <p>Does not recognize conflicts or is unwilling to resolve conflicts.</p>	<p>Substantially Developed</p> <p>Consistently resolves conflicts through facilitating open discussion and compromise.</p>
<p>Evaluation: Not Yet <u>1 2 3 4 5 6 7 8 9 10</u> Substantially Developed</p>		
<p><u>Contributions</u></p> <p>Contributes positive input for the team; effectively utilizes one's knowledge and expertise.</p>	<p>Not Yet</p> <p>Largely disinterested in working in a group and refuses to participate; observes passively or is unwilling to share information with other team members.</p>	<p>Substantially Developed</p> <p>Actively attends and participates in all activities and provides meaningful contribution in articulating ideas and opinions.</p>
<p>Evaluation: Not Yet <u>1 2 3 4 5 6 7 8 9 10</u> Substantially Developed</p>		
<p><u>Relationship</u></p> <p>Maintains cooperative interaction with other team members regardless of individual /cultural differences and respects diverse perspectives.</p>	<p>Not Yet</p> <p>Rarely listens to others and does not acknowledge the opinions that differ from his/her own.</p>	<p>Substantially Developed</p> <p>Engages in respectful relationships with all other members in the team. Embraces and accepts diverse points of view without prejudice.</p>
<p>Evaluation: Not Yet <u>1 2 3 4 5 6 7 8 9 10</u> Substantially Developed</p>		

References: *Teamwork Value Rubric - Association of American Colleges and Universities.* Retrieved from <http://www.aacu.org/value/rubrics/pdf/teamwork.pdf>