Annexe A: New/Revised Course Content in OBTL+ Format

Course Overview

The sections shown on this interface are based on the templates UG OBTL+ or PG OBTL+
If you are revising/duplicating an existing course and do not see the pre-filled contents you expect in the subsequent sections e.g. Course Aims, Intended Learning Outcomes etc. please refer to Data Transformation Status for more information.

Expected Implementation in Academic Year	
Semester/Trimester/Others (specify approx. Start/End date)	
Course Author * Faculty proposing/revising the course	Byoung-Hyoun Hwang
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Course Title	Equity Investing with Big Data
Course Code	BF3228
Academic Units	0
Contact Hours	39
Research Experience Components	

Course Requisites (if applicable)

Pre-requisites	AB1201 and BF2219
Co-requisites	
Pre-requisite to	
Mutually exclusive to	
Replacement course to	
Remarks (if any)	

Course Aims

Investment firms increasingly draw from big data as they manage their financial assets. The growing relevance of big data in the investment industry requires that students interested in a career in finance be deeply familiar with big data and its use in investments. This course aims to provide interested students with such knowledge and insight.
Students will learn about the different types of big data and apply them to different investment styles. Students will
learn how to program in SAS. Students will utilize their newly acquired programming skills in a series of hands-on projects with actual, real-world data and learn how to incorporate both structured and unstructured big data into their investment decisions. While the course will focus on equity investing, the knowledge and skills acquired are easily transferable to other financial assets, such as fixed-income securities and real estate.

Course's Intended Learning Outcomes (ILOs)

Upon the successful completion of this course, you (student) would be able to:

ILO 1	Describe the main types of trades you can place in financial markets
ILO 2	Differentiate the main types of investment styles and analyze stocks within each style
ILO 3	Describe the main types of big data; recognize the potential as well as challenges associated with big data
ILO 4	Assess what types of big data are most useful for which investment styles
ILO 5	Analyze large datasets with SAS
ILO 6	Assemble structured data from unstructured data with SAS
ILO 7	Write a SAS computer program to evaluate a dataset's historical usefulness in predicting stock returns and develop a program that incorporates the dataset into your investment decision-making process.
ILO 8	Construct an optimal portfolio and evaluate your portfolio's performance
ILO 9	Explain the hedge fund industry and various trading strategies employed by hedge fund

Course Content

1. Trading in Financial Markets 2. Equity Investing – The Discretionary Approach 3. Equity Investing – The Quantitative Approach 4. Main Types of Big Data 5. Using Big Data within the Discretionary- and the Quantitative Approach 6. Optimal Portfolio Construction and Performance Evaluation 7. Hedge Funds 8. Programming in SAS 9. Creating Structured Data from Unstructured Data – Textual Analysis

Reading and References (if applicable)

▪ Required: o Seminar notes, industry reports, analyst reports, news articles (posted on NTU Learn) ▪ Optional: o “A Random Walk Down Wall Street: The Time-Tested Strategy for Successful Investing Hardcover” by Burton G. Malkiel (W. W. Norton & Company; Twelfth edition (January 1, 2019) o “Efficiently Inefficient: How Smart Money Invests and Market Prices Are Determined” by Lasse Heje Pedersen (Princeton University Press; Reprint edition (September 17, 2019)) o “The Book of Alternative Data: A Guide for Investors, Traders and Risk Managers” by Alexander Denev and Saeed Amen (Wiley; 1st edition (July 21, 2020))

Planned Schedule

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
1	Trading in Financial Markets	1	*Seminar Notes in folder “Week 1” on NTU Learn	In-person	#Going over concepts, solving problems
2	The Discretionary Approach	2	*Seminar Notes in folder "Week 2" on NTU Learn	In-person	#Going over concepts, solving problems #Valuing Tesla #Problem Set 1
3	Overview of Main Types of Big Data and their Possible Uses within the Discretionary Approach	2, 3, 4	*Seminar Notes in folder "Week 3" on NTU Learn	In-person	#Going over concepts Google Trend Project Given
4	The Quantitative Approach (Part 1)	2	*Seminar Notes in folder "Week 4" on NTU Learn	In-person	#Going over concepts, solving problems #Problem Set 2
5	The Quantitative Approach (Part 2) and Big Data’s Possible Uses within the Quantitative Approach	2, 3, 4, 8, 9	*Seminar Notes in folder "Week 5" on NTU Learn	In-person	#Going over concepts, solving problems #Problem Set 3

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
6	Google Trend Project Briefs and Consultations	1-4		In-person	#Discussing Google Trend Project Status individually by group; check folder “Week 6” on NTU Learn for schedul
7	Google Trend Project Presentations	1-4	#Google Trend Project Due	In-person	
8	Introduction to SAS (Part 1)	5, 6	*SAS Tutorial on NTU Learn	In-person	#Writing SAS programs using datasets in folder "Week 8" on NTU Learn
9	Introduction to SAS (Part 2)	5, 6, 7		In-person	#Writing SAS programs using datasets in folder "Week 9" on NTU Learn #Problem Set 4 SAS Project Given
10	Hands-on Experience with Sentiment- and Web-Traffic Data	2, 3, 4, 5, 6, 7		In-person	#Writing SAS programs using datasets in folder "Week 10" on NTU Learn

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
11	Hands-on Experience with Financial Market Data	2, 3, 4, 5, 7		In-person	#Writing SAS programs using datasets in folder "Week 11" on NTU Learn
12	SAS Project Briefs and Consultations	1-9		In-person	#Discussing SAS Project Status individually with students; check folder “Week 12” on NTU Learn for schedule
13	SAS Project Briefs and Consultations	1-9		In-person	#Discussing SAS Project Status individually with students; check folder “Week 13” on NTU Learn for schedule # SAS Project Due April 17

Learning and Teaching Approach

Approach	How does this approach support you in achieving the learning outcomes?
Seminars	The seminars will be interactive and there will be ample opportunities for questions and open discussions. I will frequently “flip the classroom” and use our actual class time to alleviate any remaining uncertainties that you may have regarding the material; we will also appraise and deepen our understanding of the material through live problem-solving, ensuring that the targeted learning outcomes will be achieved.
Problem Sets	While the problem sets are obviously meant to evaluate your grasp of the relevant material, I will also design the problem sets to make them educational and grounded in reality so that you may further deepen your understanding of the material and learn how to apply the concepts introduced in this class to the real world.
Projects, In-Class activities	Some learning outcomes for this course are skills which are practical in nature and cannot be achieved by reading and writing alone. The achievement of such learning outcomes requires hands-on experience. The Google Trend Project, the SAS Project, as well as various in-class activities will provide such opportunities.

Assessment Structure

Assessment Components (includes both continuous and summative assessment)

No.	Component	ILO	Related PLO or Accreditation	Weightage	Team/Individual	Rubrics	Level of Understanding
1	Continuous Assessment (CA): Others(Problem Sets)	ILO2-4, ILO6-9	Problem Solving and Decision Making, Motivation and Development of Self & Others	20	Team		
2	Continuous Assessment (CA): Project(Google Trend Project)	ILO1-ILO4	Creative Thinking, Critical Thinking, Planning and Execution, Oral Communication, Teamwork and Interpersonal Skills	35	Team		
3	Continuous Assessment (CA): Project(SAS Project)	ILO5-ILO7	Creative Thinking, Critical Thinking, Planning and Execution, Written Communication, Teamwork and Interpersonal Skills	35	Team		
4	Continuous Assessment (CA): Class Participation()	ILO1-ILO9	Critical Thinking, Oral Communication	10	Individual		

Description of Assessment Components (if applicable)

Formative Feedback

Feedback is central to this course. In addition to your scores to the problem sets and projects, you will receive written feedback on your projects.

NTU Graduate Attributes/Competency Mapping

This course intends to develop the following graduate attributes and competencies (maximum 5 most relevant)

Attributes/Competency	Level

Course Policy

Policy (Academic Integrity)

Policy (General)

▪ My goal is to frequently “flip the classroom,” that is, have you review the material prior to class and then use our actual class time to clarify confusions/uncertainties you may still have regarding the material and work on live problem-solving. To this end, it is absolutely crucial that you complete all assigned readings and activities prior to class.
▪ I expect everyone in class to pay attention and not to distract others.
▪ Unless stated otherwise, kindly refrain from using laptops and other smart devices during the seminars.
▪ Punctuality matters so that we can start and end on time.
▪ In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor’s control

Policy (Absenteeism)

▪ If you cannot attend a seminar for a university approved reason and there is a problem set, inform me via email prior to the corresponding seminar. University approved 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. I will arrange an alternate problem set taking date/time for you. You are responsible to follow up with course notes and course related announcements for seminars you have missed.

Policy (Others, if applicable)

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