Module Outline

Module Title : Digital Assets and Blockchain in Finance
Class Date : From 12/6/2023 To 16/6/2023
Semester : Special Term 1 Academic Year 2022/2023
Faculty : Emir Hrnjic, PhD
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Overview

This course introduces students to non-technical fundamentals and economics of digital assets and blockchain. After learning the basics, we will discuss blockchain applications in finance. Industry experts will give guest lectures on the real-world applications and answer questions from students.

Module Objectives

This course empowers students with the understanding of digital assets, blockchain, and their applications in the finance industry. Through lectures, discussions, and case studies, students will gain insights into various real-world applications of digital assets and blockchain. The course is focused on non-technical understanding of how blockchain and digital assets can help improve business as well as the most recent ideas, techniques, and trends in blockchain and digital assets.

Assessment

The final course grade will be computed based on the following weights:

Assessment Components	Weightage
Pre-readings and assignments	10%
In-class participation	20%
Test	40%
Team presentation	30%
Total	100%

In-class participation:

Online students are required to keep a video on with their real name on the screen.

In-class participation grades will be allocated on the basis of quality of participation. In evaluating class participation, I will look for comments that are thoughtful and lead the discussion forward. Excellent participation involves enhancing the class experience for your classmates by answering questions that I ask of you or the class, making relevant comments, posing valuable questions, and participating when your classmates make presentations. Peer-learning is the bedrock of executive education; please take advantage of your classmates' knowledge and experience.

Test

Test will consist of multiple-choice questions and will cover all assigned readings and problems as well as material covered and discussed in class. All questions will be designed to test your analytical and problem-solving skills, and your knowledge of conceptual and qualitative material. It is an open-book test. If you have a medical emergency, please let me know.

Team project

The objective of the team project is to identify, analyze, and present the existing real-world application of blockchain in finance industry. Please note that I am not asking you to propose your own blockchain application, but rather the one that is already existing, being developed, or proposed in the real world **by a specific company**. You can choose to critique a failed blockchain application (we can learn from failures of others as well), but I would much prefer a valuable solution.

The ideal team presentation would provide clear description of the problem, the blockchain application, and the proposed solution. Presentation should explain how blockchain solves the existing real-world problem (or an anticipated problem). More specifically, how blockchain provides better, faster, cheaper, safer, etc, solution to a problem. Presentations do not have guidelines (except time limit – 12–15 minutes for the presentation and 8–10 minutes for questions). The team decides format of the presentation. Keep these in mind:

- You should explain why it is an interesting problem and a valuable solution.
- While you should try to present a valuable solution, do not be overly defensive about it.
- Focus on economics of it, not technical details. Leave tech issues to programmers.
- Be aware of the issues/limitations of the solution and consider laying them out explicitly.
- Be aware of the strict time limitations; practicing helps.
- Focus more on the substance of your presentation and less on fancy slides.
- Be prepared for questions.

The benefits of identifying your own topic are numerous; I would encourage you to take this seriously. However, if the team cannot find a topic, I will assign the topic to your team, but will subtract 15% from the grade. If I do not receive the tentative outline of the presentation by the deadline, I will automatically assign the topic to your team (and subtract above-mentioned percentage).

After the team presentation in class, please submit your presentation (one document per team) to LumiNUS (NUS learning portal) within 24 hours after the presentation. The document title should be "GNAM_teamX_projecttitle". Presentations will be graded as a team (not individually). The NUS EMBA Programmes Office will assign students to teams 2-4 weeks before the course begins).

DEADLINES

I encourage each team to start thinking about the project at least 2 weeks before the course (i.e., **you should start thinking about it by Monday, May 29**). Each team must submit a short (1-page) tentative outline of the project before the class begins (**Deadline: Friday, June 9 at 12 noon**). There is no need for any analysis in this outline, I just want to make sure that you identified an appropriate topic and started thinking about it.

Each student should submit a summary of each of required case studies (one page per case study) (**Deadline: Friday, June 9 at 12 noon**). All summaries should be in one document (each summary should start on a new page). There is no need for any analysis.

Each student is strongly encouraged to do other pre-readings, but no written assignments or submissions are necessary.

Schedule and Outline

Lecture	Topics and readings
June 12	Syllabus / Outline **Brief History of Money and Digital Money** **Cryptocurrencies, Smart Contracts, and Basic DeFi Applications** Cryptoassets, Ch. 1-3 *1) Note: An Introduction to Blockchain, UVA-F-1810* *2) Case study: The DAO Hack: A Blockchain Dilemma, Ivey 9B20E017*
June 13	**Raising Capital and Tokenization** Cryptoassets, Ch. 16 *3) Case study: Yuser: Funding Start-up Growth with Token Issuance?, Ivey 9B20N038* *4) Case study: Can TikTok (Byte)Dance on Blockchain: ADDX's Tokenizaton Dilemma* Team consultations (if time permits)
June 14	**Blockchain and Money – Stablecoins, CBDCs, and Monetary Policy** **DeFi Myths and Facts** Team consultations (if time permits)
June 15	**Risk and Returns of Crypto Assets** Test
June 16	Team Presentations (12-15 minutes for presentation and 8-10 min for Q&A session)

REQUIRED PRE-READINGS

Introductory Materials and Non-Technical Short Videos:

- Explain Bitcoin Like I'm Five
- Blockchain explained [6 minutes]
- The Essence of How Bitcoin Works [5 minutes]
- Introduction to Bitcoin [37 minutes]
- Warren Buffett: Bitcoin Is An Asset That Creates Nothing | CNBC [6 minutes]
- Chamath Palihapitiya: I Am A Buffett 'Disciple' But He's Wrong About Bitcoin | CNBC [5 minutes]

Required case studies (and notes):

- An Introduction to Blockchain, UVA-F-1810
- The DAO Hack: A Blockchain Dilemma, Ivey 9B20E017
- Yuser: Funding Start-up Growth with Token Issuance?, Ivey 9B20N038
- Can TikTok (Byte)Dance on Blockchain: ADDX's Tokenizaton Dilemma

RECOMMENDED READINGS

Key documents

- Bitcoin: A Peer-to-Peer Electronic Cash System (Satoshi Nakamoto, 2009)
- The idea of smart contracts (Nick Szabo)

Technical videos:

- How Bitcoin Works Under the Hood [22 minutes]
- How Bitcoin Works in 5 Minutes [5 minutes]
- Ever wonder how Bitcoin (and other cryptocurrencies) actually work? [26 minutes]
- Bitcoin and Cryptocurrency Technologies (Coursera online course by Arvind Narayanan - Advanced)

Recommended Book

- Chris Bruniske and Jack Tatar, **Cryptoassets: The Innovative Investor's Guide to Bitcoin and Beyond** (2017)

Additional Books

- Arvind Narayanan et al., **Bitcoin and Cryptocurrency Technologies**, (2016).
    a) [Coursera course by the same name run by Arvind Narayanan. Lectures also on YouTube.]
    b) A full pre-publication draft can be downloaded for free: https://d28rh4a8wq0iu5.cloudfront.net/bitcointech/readings/princeton_bitcoin_book.pdf
- Cam Harvey et al., **DeFi and the Future of Finance** (2021)
- Paul Vigna and Michael J. Casey, **The Age of Cryptocurrency: How Bitcoin and Digital Money Are Challenging the Global Economic Order** (2015)
- Paul Vigna and Michael J. Casey, **The Truth Machine: The Blockchain and the Future of Everything** (2018)

Recommended case studies

- The Economics of Cryptocurrency, UVA-GEM-0190
- R3 Corda: A Distributed Ledger Technology for Financial Services, Ivey 9B18M141
- Bitcoin: Investment or Illusion, UVA-F-1819
- Don't Read Too Much into Bitcoin's Status in El Salvador, Ivey 9B21TE01
- Visa Inc.: Threat from Cryptocurrency?, Ivey 9B20M038
- Filecoin's ICO, ABCC-2018-014
- Getting Rich on Crypto, Ivey UVAQA0897

- Tezos: Governance in the Cryptocurrency World, F&A0549
- China Merchants Bank: Light Banking, Payments and Blockchain, Ivey 9B20N024
- TokenFunder: Democratizing Funding and Investing with Blockchain, Ivey 9B18M186
- A Note on China's Approach to Cryptocurrency and Blockchain Application in the Games Industry: Coco Game Currency, Ivey 9B20M071

Academic Honesty & Plagiarism

Academic integrity and honesty is essential for the pursuit and acquisition of knowledge. The University and School expect every student to uphold academic integrity & honesty at all times. Academic dishonesty is any misrepresentation with the intent to deceive, or failure to acknowledge the source, or falsification of information, or inaccuracy of statements, or cheating at examinations/tests, or inappropriate use of resources.

Plagiarism is 'the practice of taking someone else's work or ideas and passing them off as one's own' (The New Oxford Dictionary of English). The University and School will not condone plagiarism. Students should adopt this rule - You have the obligation to make clear to the assessor which is your own work, and which is the work of others. Otherwise, your assessor is entitled to assume that everything being presented for assessment is being presented as entirely your own work. This is a minimum standard. In case of any doubts, you should consult your instructor.

Additional guidance is available at:

- Administrative Policies
- http://www.nus.edu.sg/registrar/administrative-policies-procedures/acceptance-record#NUSCodeofStudentConduct
- http://nus.edu.sg/osa/resources/code-of-student-conduct