City University of Hong Kong
Course Syllabus

offered by Department of Information Systems
with effect from Semester B 2018 / 2019

Part I   Course Overview

Course Title: Cryptocurrency and Blockchain

Course Code: IS3101

Course Duration: One Semester (13 weeks)

Credit Units: 3

Level: B3

Proposed Area:
(for GE courses only)
☐ Arts and Humanities
☐ Study of Societies, Social and Business Organisations
☐ Science and Technology

Medium of Instruction: English

Medium of Assessment: English

Prerequisites:
(Course Code and Title) CB2500 Information Management and one programming course (either IS3230 Java Programming for Business or IS2240 Python Programming for Business)

Precursors:
(Course Code and Title) Nil

Equivalent Courses:
(Course Code and Title) Nil

Exclusive Courses:
(Course Code and Title) Nil

Part II   Course Details

1.   Abstract
(A 150-word description about the course)

The course will cover cryptocurrencies (e.g., Bitcoin), blockchain technologies, distributed ledger technology, and their applications, implementation and security concerns. Students will learn how these systems work; analyse the security and regulation issues relating to blockchain technologies; and understand the impact of blockchain technologies on financial services and other industries. In addition, students also get hands-on learning opportunities to develop decentralized applications related with cryptocurrency and blockchain.

2.   Course Intended Learning Outcomes (CILOs)
(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs[#]	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	*A2*	*A3*
1.	Explain the concepts related with cryptocurrency, blockchain, and distributed ledger technologies.	20%	✓		
2.	Analyse the application and impact of blockchain technology in the financial domain and other markets.	30%	✓	✓	
3.	Evaluate security issues related with cryptocurrency and blockchain.	25%	✓	✓	
4.	Develop applications related with cryptocurrency and blockchain.	25%		✓	✓

* If weighting is assigned to CILOs, they should add up to 100%.   100%

[#] *Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.*

A1:   Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2:   Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to self-life problems.

A3:   Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

3. Teaching and Learning Activities (TLAs)
(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No. 1	2	3	4	Hours/week (if applicable)
TLA1: Lecture	Concepts, frameworks, and technologies of cryptocurrency and blockchain are explained.	✓		✓		Seminar: 3 Hours/Week
TLA2: Cases studies	Students are required to analyse how blockchain technology be used in different industries and evaluate its impact on businesses.	✓	✓	✓	✓	
TLA3 : Online discussion	It is a means of self-reflection and sharing concepts, techniques, and methods of knowledge management among students within or after formal classes.		✓	✓	✓	

4. Assessment Tasks/Activities (ATs)
(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No. 1	2	3	4	Weighting*	Remarks
Continuous Assessment: 100 %						
AT1: Participation Students should participate in class activities, such as small group discussions and presentations, self-reflection, raise and answer questions, and the like. Class participation is used to assess students' understanding of the topics and their abilities to apply the knowledge and concepts taught in class.	✓	✓	✓	✓	20%	
AT2: Individual Assignments Students will answer questions and solve problems in the area of blockchain technologies and applications.	✓	✓	✓	✓	50%	
AT3: Group Project A group project requires students to work in a team and solve a specific business problem by applying the concepts and tools learned in the course via hands-on experiences. A project report and presentation will be required to demonstrate the applications designed and developed by each team.	✓	✓	✓	✓	30%	
Examination: 0% (duration: n/a)						

The weightings should add up to 100%.   100%

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task (AT)	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
AT1: Participation	Ability to accurately explain the concepts related with cryptocurrency, blockchain, and distributed ledger technologies.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to accurately analyse the application and impact of blockchain technology in the financial domain and other markets.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to accurately assess security issues related with cryptocurrency and blockchain.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Capability to effectively apply blockchain technology and develop business applications related with cryptocurrency and blockchain.	High	Significant	Moderate	Basic	Not even reaching marginal levels
AT2: Individual Assignments	Ability to demonstrate understanding of the course topics through assignments.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to accurately analyse the application and impact of blockchain technology in the financial domain and other markets.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to accurately assess security issues related with cryptocurrency and blockchain.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Capability to effectively apply blockchain technology and develop business applications related with cryptocurrency and blockchain.	High	Significant	Moderate	Basic	Not even reaching marginal levels
AT3: Group Project	Ability to demonstrate understanding of the course topics through assignments.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to accurately analyse the application and impact of blockchain technology in the financial domain and other markets.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Ability to accurately assess security issues related with cryptocurrency and blockchain.	High	Significant	Moderate	Basic	Not even reaching marginal levels
	Capability to effectively apply blockchain technology and develop business applications related with cryptocurrency and blockchain.	High	Significant	Moderate	Basic	Not even reaching marginal levels

Part III   Other Information (more details can be provided separately in the teaching plan)

1.   **Keyword Syllabus**
      (An indication of the key topics of the course.)

      Cryptocurrencies; Bitcoin; Blockchain technology; Smart contracts; Data blocks; Internet of money; Decentralization; Peer-to-peer network; Distributed ledger; Security; Privacy; Regulation; Banking; Financial services; Decentralized Applications; New business models; Entrepreneurship; Programming and Application Development.

2.   **Reading List**
2.1   **Compulsory Readings**
      (Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	Andreas M. Antonopoulos, Mastering Bitcoin: Unlocking Digital Cryptocurrencies, O'Reilly Media, 1st edition (December 20, 2014).
2.	Arshdeep Bahga, Vijay Madisetti, Blockchain Applications: A Hands-On Approach, VPT, 1st edition (January 31, 2017).

2.2   **Additional Readings**
      (Additional references for students to learn to expand their knowledge about the subject.)

1.	Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, and Steven Goldfeder, Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction, Princeton University Press (July 19, 2016).
2.	William Mougayar, The Buisness Blockchain: Promise, Practice, and Application of the Next Internet Technology, Wiley, 1st edition (May 9, 2016).
3.	Don Tapscott, Alex Tapscott, Blockchain Revolution: How the Technology Behind Bitcoin is Changing Money, Business, and the World, Portfolio / Penguin (May 10, 2016).
4.	Narayan Prusty, Building Blockchain Projects: Building decentralized Blockchain applications with Ethereum and Solidity, Packt Publishing (April 27, 2017).