Blockchain Training Camp

I. Background

Blockchain comes from bitcoin created by Satoshi Nakamoto. As the underlying technology of bitcoin, blockchain is in its nature a decentralized database, namely a technical solution to maintaining a reliable database in a decentralized and trustless way. On 15 December 2016, China's State Council published the "Thirteenth Five-Year Plan for National Information" in which blockchain was first listed among other cutting-edge new technologies calling for fundamental development. In 2017, blockchain technology became a favourite of the fintechers, stealing the spotlight of the finance sector. Many traditional financial institutions and fintech start-ups started to explore the use of blockchain in finance. Characterised by decentralisation, consensus mechanism and inchangeability, the technology of blockchain was able to solve the long-existing headaches of the finance industry while applied successfully in such scenarios as digital currency, cross-border payment and settlement, bill- and supply-chain-related financial services, security issuing and transaction, and credit investigation and anti-fraud issues.The turning point came, however, on 4 September of the same year when seven ministries and commissions of China including the central bank issued an announcement about the prevention of financing risks from token offerings, which defined Initial Coin Offerings as an unapproved and illegal public fundraising approach. It was ordered that all virtual currency exchange platforms in China be closed by regulators from 8 September 2017. Consequently, the price of virtual currencies took a tumble.

What on earth is blockchain? Is it a revolutionary technology or a scam? Where does the value of digital currencies come from? Why is blockchain revolutionary and what is its bottleneck? What changes would it bring to future finance and other sectors like tourism? How can we develop a simple blockchain application? All the questions above will be answered in this training course.

II. Course Introduction Session

Course Introduction Session "What is Blockchain?"
Date and Time: 5 September 2018, 3:00pm – 4:30pm
Venue: Centre for Innovation (N1 1st floor), University of Macau

Registration:

III. Course

Date and Time:	Theory and Application	19 and 26 September, 24 and 31 October 2018 (Wednesdays) 3:00pm – 4:30pm each session, 4 sessions totally
	Practice	10 and 11 November (Saturday and Sunday) 9:30am – 1:00pm and 2:30pm – 6:00pm each day, 4 sessions totally
Quota:	about 40 students	
Target:	UM students with priority to postgraduate students and those with programming knowledge	
Fee:	Free of charge (MOP200 deposit)	
Location:	University of Macau	
Medium of Instruction:	Mandarin and English	
Application:	1. Online registration: https://goo.gl/forms/ifgiB1u044GVF0lW2 2. Download and complete the application form and send it to ICI.Innovation@umac.mo	
Deadline of Application:	11 September 2018	
Announcement of Admission:	14 September 2018	
Deposit:	The deposit should be paid at the Centre for Innovation (N1-1001) within 3 days upon admission notification. Otherwise, the quota should be deemed given up. The deposit will be fully refunded to students with attendance reaching 75%.	
Certificate:	Participants with attendance reaching 75% (including at least two sessions of practical learning) and completing the class requirements will be awarded a certificate issued by the Institute of Collaborative Innovation.	

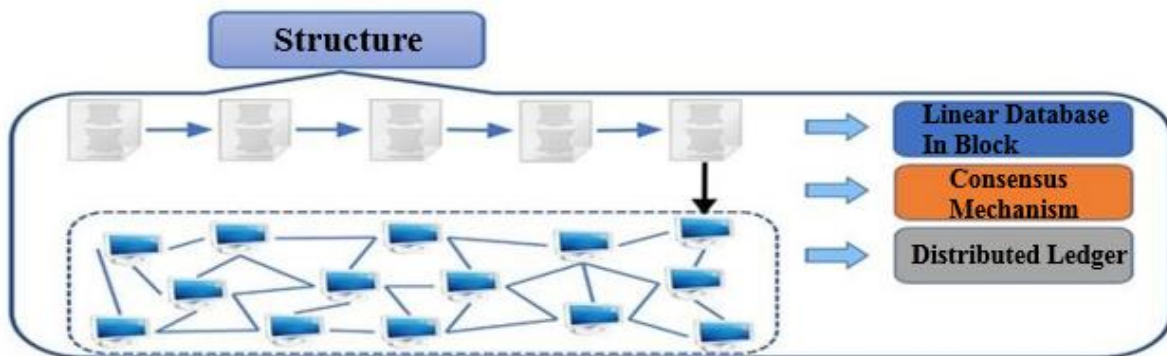## IV.   Instructor (Tentative)

Prof. Jerome Yen is currently the Interim Director of Institute of Collaborative Innovation, Head of Centre for Innovation and Distinguished Professor of Business Information Systems of the University of Macau. Before joining the University of Macau, he served as the director of internet finance at the Hong Kong Applied Science and Technology Research Institute, and as the senior vice president and deputy chief risk officer in a company of Forbes 500 and Fortune 500. He has also worked in the University of Hong Kong, Hong Kong University of Science and Technology and Chinese University of Hong Kong with good connections with the industry. Prof. Yen is also active in promoting the blockchain technology on and off campus, such as assisting in the setup of the Guangdong-Hong Hong-Macau Greater Bay Area Blockchain Institute at Huangpu of Guangzhou, incubating blockchain startups.

Dr. Suiunbek Ibraev has more than 17 years of investment banking experience. He worked in Frankfurt, London and Singapore as a front office quant in Dresdner Kleinwort, Commerzbank, VTB Capital, ANZ specialising in interest rates and foreign exchange exotics. Models developed by Dr. Ibraev had been used for real time pricing, hedging and risk management. He holds PhD in Global Optimisation on Parallel Computer from University of Wuppertal, Germany. Dr. Ibraev gave an introductory course on Blockchain in the Singapore Management University Academy.

V.   Course Contents

The course consists of both theory and practice, covering the following contents:

1. What is blockchain

2. Current development of blockchain

● Analyze the current development of blockchain from international, domestic and financial perspectives.

● Analyze how regulatory policies influence the development of blockchain technology.

3. Classification of blockchain

● By application type: digital currency (1.0) → smart contract (2.0) → …… (3.0).

● By decentralization level: public blockchain → consortium blockchain → private blockchain.

4. Key technologies of blockchain

● Linear database of chronologically recorded blocks (units).

● Consensus mechanism: POW, POS, DPOS, PBFT etc.

● Distributed bookkeeping.

● Encryption algorithm system: SHA256, HASH256, ECC, Merkle Root etc.

5. The revolutionary blockchain technology and its bottleneck

● Analyze why blockchain technology is revolutionary and what constitutes its bottleneck by comparing the case of digital currency with the current e-payment solutions in terms of function, performance, occupancy of resources and security.

● Analyze the differences and connections between distributed bookkeeping, distributed computing and distributed database.

6. Relationship between the value of digital currency and blockchain technology

● Analyze if blockchain technology generates value for digital currency

7. Smart contract

● Introduce what a smart contract is and how it works.

● Analyze the advantages of combining a smart contract and a blockchain.

8. Application of blockchain in finance

Analyze the practical application of blockchain in the finance sector: cross-border payment, R3 consortium's Corda platform, hyperledger etc.

9. Application and prospect of blockchain in other industries

● Analyze the advantages of blockchain in areas such as smart contract, record keeping and paperless credentialing.

● Provide an outlook for the development of blockchain technology through comparing consortium blockchain and public blockchain.