Advanced Topics in Blockchain 區塊鏈進階

This course aims to cover advanced topics on blockchain. The focus will be on advanced topics like permissionless blockchain, Ethereum, smart contract, mining pool, permissioned blockchain, anonymity, new consensus, sidechain, ripple, offchain and lightning network.

Advisory: Students are expected to have solid foundations on operating systems and database systems.

Grade Descriptor:

A
EXCELLENT - exceptionally good performance far exceeding expectation in all or most of the course learning outcomes; demonstration of superior understanding of the subject matter, the ability to analyze problems and apply extensive knowledge, and skillful use of concepts and materials to derive proper solutions.

B
SATISFACTORY - adequate performance in all course learning outcomes; demonstration of adequate understanding of the subject matter, and the ability to solve straightforward problems.

C
REASONABLE - adequate performance in the essential course learning outcomes, reasonable performance, and the ability to solve simple problems.

D
MARGINAL - performance barely meeting the expectation in the essential course learning outcomes; demonstration of partial understanding of the subject matter, and the ability to solve simple problems.

Failure - performance not meeting expectation in the essential course learning outcomes; demonstration of serious deficiencies, and the need to retake the course.

Equivalent Offering:
Units: 3 (Min) / 3 (Max) / 3 (Acad Progress)
Grading Basis: Graded
Repeat for Credit: N
Multiple Enroll: N
Course Attributes: MSc Computer Science, MPhil-PhD Computer Sci & Erg

Topics:

COURSE OUTCOMES

Learning Outcomes:
At the end of the course of studies, students will have acquired the ability to
1. Understand what most kinds of cryptocurrencies out there and what are the differences between them.
2. Understand the advanced technology in blockchain.
3. Understand the other potential applications of blockchain beyond cryptocurrency.

Course Syllabus:
This course aims to cover advanced topics on blockchain. The focus will be on advanced topics like permissionless blockchain, Ethereum, smart contract, mining pool, permissioned blockchain, anonymity, new consensus, sidechain, ripple, offchain and lightning network.
Advisory: Students are expected to have solid foundations on operating systems and database systems.

Assessment Type:
Essay test or exam : 50%
Homework or assignment : 50%
Feedback for Evaluation:

1. Quiz and examinations
2. Course evaluation and questionnaire
3. Question-and-answer sessions during class
4. Student consultation during office hours or online

Required Readings:

To be provided by course teacher.

Recommended Readings:

2. Research Perspectives and Challenges for Bitcoin and Cryptocurrencies, by Bonneau, Miller, Clark, Narayanan, Kroll and Felten
3. Cryptocurrency Online Bibliography, maintained by Jeremy Clerk

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Enrollment Requirement Group:
For students in MSc Computer Science or MPhil-PhD Computer Science & Engineering or UG Computer Science or UG Computer Engineering;
Pre-requisites: CSCI3150 & CSCI3170 (for UG students only); Exclusions: IERG5590 or FTEC5520 or IEMS5725

New Enrollment Requirement(s):
Pre-requisite = no change
Exclusion = change to "IERG5590 or FTEC5520 or IEMS5725"