ISOM3000H Blockchain Programming in Business Applications

Overview

This course provides students a comprehensive overview of blockchain technology, smart contract development, as well as hands-on experience in developing and deploying their dApps in the real-world application environments.

Course Objectives

Blockchain, defi, NFT, metaverse, and web3.0 are driving the development in the technology sector. To meet the business needs of a growing demand for blockchain developers, this course aims to teach students the technical fundamentals of blockchains, Solidity programming language, de-centralized applications, distributed system and web3.0 platform, as well as important industry-relevant tools and SDKs such that students can be equipped with industry-relevant experience and knowledge to develop blockchain-based solutions for important business applications.

Prerequisites

ISOM2020 or ISOM3400 or ISOM3320 or COMP1022P or COMP1021

Evaluations

Class Participation	20%
Homework	20%
Mid-term exam	20%
Group project	40%
Total	100%

Class Format

The course will be consisted of two parts. The first half of the course will provide an overview of the blockchain technology and a deep dive into smart contracts programming development. In this process, you will learn how to write your own smart contracts and dApps using industry standard development tools. In the second half of the course, we will shift our focus toward the business applications and working on group projects to use the blockchain and smart contracts for application development addressing real business needs.

Class Schedule

2 hours of lecture (1 session) + 3 hours of lab per week.

Week	Date	Topics
Week 1	3 Feb	Introduction to blockchain development
Week 2	10 Feb	Smart contracts and basic Solidity
Week 3	17 Feb	Development tools
Week 4	24 Feb	Advanced Solidity (I)
Week 5	3 Mar	Advanced Solidity (II)
Week 6	10 Mar	Connecting to the web
Week 7	17 Mar	dApp architecture: writing large & composable smart contracts
Week 8	24 Mar	Secure and efficient Solidity
Week 9	31 Mar	Business logic in dApp development
Week 10	14 Apr	Token economics
Week 11	21 Apr	Scalability architecture in web3 applications
Week 12	28 Apr	Privacy in web3 applications
Week 13	5 May	Group project presentation