

ISOM3000H Blockchain Programming in Business Applications

Overview

This course provides students with a comprehensive overview of blockchain technology, smart contract development, as well as hands-on experience in developing and deploying web3.0 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 and web3.0 developers, this course aims to teach students the technical fundamentals of blockchains, Solidity programming, web3.0 de-centralized applications, distributed system and 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

Basic knowledge about programming languages such as python or javascript recommended.

ISOM2020, ISOM3400, ISOM 3320, COMP 1022P or COMP1021

Evaluations

Class Participation	20%
Homework	20%
Mid-term exam	20%
Course 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 business applications and working on course projects to use the blockchain and smart contracts for application development addressing the real-world business needs.

Class Schedule

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

Week 1	Introduction to blockchain technology and web3.0
Week 2	Smart contracts and basic Solidity
Week 3	Development tools
Week 4	Advanced Solidity
Week 5	Connecting to the web
Week 6	dApp architecture: writing large & composable smart contracts
Week 7	Secure and efficient Solidity
Week 8	Business logic in dApp development
Week 9	Token economics
Week 10	Scalability architecture in web3 applications
Week 11	Privacy in web3 applications
Week 12	Project presentation