Module Specification

Blockchain and Cryptocurrency

Version: 2023-24, v2.0, 20 Mar 2023

Contents

Part 1: Information

Module title: Blockchain and Cryptocurrency

Module code: UFCFXQ-15-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Computer Sci & Creative Tech

Partner institutions: None

Delivery locations: Not in use for Modules

Field:

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module covers the technological underpinnings of blockchain operations as distributed data structures and decision-making systems, their functionality and different architecture types. It provides a critical evaluation of existing “smart contract” capabilities and platforms, and examines their future directions, opportunities, risks and challenges.

Features: Not applicable

Educational aims: This module aims to provide conceptual understanding of the function of Blockchain as a method of securing distributed ledgers; how consensus on their contents is achieved; and the new applications that they enable.

Outline syllabus: The module will cover topics that include:

An Introduction to Blockchain and Cryptocurrency:
The big picture of the today's industry
Understanding the differences between Blockchain, Bitcoin, Cryptocurrencies and Distributed Ledger Technology (DLT)
Examples of blockchain platforms with respect to their functionality (e.g. currency, identity, chain of custody)
Networking, Trust and Vulnerabilities
Concepts of decentralisation, high and low trust societies, types of trust model
Examples of decentralised networks

Introduction to Cryptography:
Goals of cryptography
Understanding different approaches cryptography (e.g. Symmetric-key cryptography, Public-key
cryptography etc.)
Understanding digital signatures

Application of Cryptography to Blockchain:
Introduction to Ledgers, Geneses Blocks, Consensus
Application of hash functions to chain blocks, digital signatures to sign transactions and Proof-of Work

Blockchain Dynamics:
Understanding of public and private blockchains and scalability issues
Ways and the need to make hard and soft forks

Smart Contracts and Ethereum:

What are smart contracts and their potential?
Understanding of the various legal and socio-economic issues related to the application of smart contracts.
Examples of using smart contract in security policy and data management

Supply Chain and Identity on Blockchain:
Comparison of Blockchain with existing supply chain infrastructures
Future of Blockchain and broader implications on technology, finance, and law including moral issues

Part 3: Teaching and learning methods

Teaching and learning methods: See Assessment

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Understand the structure of a blockchain and why/when it is better than a simple distributed database

MO2 Evaluate the setting where a blockchain based structure may be applied, its potential and its limitations

MO3 Apply problem solving skills necessary for understanding “smart” contract and its legal implications

MO4 Attain awareness of the new challenges that exist in monetizing businesses around blockchain and smart contracts

MO5 Be able to apply problem-solving skills to differentiate between prominent blockchain structures and permissioned blockchain service providers, including rising alliances and networks

MO6 Demonstrate knowledge of making informed business decisions pertaining to Blockchain proof-of-concept implementations

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ufcfxq-15-m.html

Part 4: Assessment

Assessment strategy: The assessment strategy for this module is a combination of a reflective log and a coursework assignment.

In order to develop a deep learning style, the students will be encouraged to engage in many in-class activities in which they reflect and develop/express, their individual views on blockchain and cryptocurrency issues and applications.

The students will be asked to design a solution to real-word problem using blockchain. They will submit a report analysing the application of blockchain to their chosen financial domain. The problem scenario will be carefully chosen to demonstrate understanding of blockchain core principles (models, techniques and evaluation).

The coursework is required to be carried out by individual students.
The reflective log will help students to actively participate in their learning by spending time reflecting on material and on in class activities covered during each session of the course. This will help them to integrate these materials into their knowledge base.

Assessment components:

Reflective Piece (First Sit)
Description: Reflective Log

Weighting: 25 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO4

Report (First Sit)
Description: Individual Course Work Report (2000 Words)
Weighting: 75 %
Final assessment: No
Group work: No
Learning outcomes tested: MO2, MO3, MO5, MO6

Reflective Piece (Resit)
Description: Reflective Log
Weighting: 25 %
Final assessment: Yes
Group work: No
Learning outcomes tested:

Report (Resit)
Description: Individual Course Work Report (2000 Words)
Weighting: 75 %
Final assessment: No
Group work: No
Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Financial Technology [Frenchay] MSc 2023-24