

IB9YW-15 FinTech: Digital Currencies and Decentralised Finance

26/27

Department

Warwick Business School

Level

Taught Postgraduate Level

Module leader

Ganesh Viswanath Natraj

Credit value

15

Module duration

9 weeks

Assessment

30% coursework, 70% exam

Study location

University of Warwick main campus, Coventry

Description

Introductory description

In this class we discuss the emerging areas of Digital Currencies and Decentralized Finance (or DeFi). By utilizing blockchain and smart contract technologies, DeFi provides a new platform for programmable, automated finance services that remove the reliance on central trust and intermediaries.

In this course we will examine the economics of blockchains, decentralized applications like lending protocols and exchanges, and stablecoins, which are the bridge between decentralized and centralized finance. We will also consider alternative applications like the rise of central bank digital currencies.

Students will examine critically the welfare and associated risks of these applications, and compare them to traditional financial markets. In a group project, students conduct a case study and critically evaluate the design of a DeFi protocol.

Module aims

The module aims are for students to:

Learn both the economics and computer science aspects behind blockchains and DeFi applications.

Compare and contrast the design and efficiency of traditional finance systems with decentralized finance

Understand the potential use cases of DeFi, and its associated risks

Think critically about DeFi protocol design and how it can be used to improve traditional financial markets

Understand basic programmability features of smart contracts

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Economics of blockchains

Cryptocurrency pricing (theory+empirics)

Stablecoins

Decentralized Lending Protocols

Decentralized Exchanges

Miscellaneous DeFi innovations (eg. Tokenized Assets, Governance, Oracles)

CBDCs

Learning outcomes

By the end of the module, students should be able to:

- Demonstrate understanding of key design issues of blockchains and DeFi applications.
- Demonstrate understanding of the economics behind different blockchain systems such as proof of work and proof of stake.
- Apply the framework for analysing DeFi to a new protocol and think critically about the efficiency and risks of a protocol.

Indicative reading list

[Reading lists can be found in Talis](#)

Research element

Students are expected to research a DeFi protocol in depth for a case study. Students are expected to outline the design of the protocol and quantify the efficiency and risks of the protocol.

Interdisciplinary

This module can be taken by students of other majors in economics, mathematical finance, and students in computer science. While it focuses on the economics and finance of these applications, there will be discussion of programmability of blockchains and DeFi applications and an introduction to programming with smart contracts.

Subject specific skills

Apply empirical financial analysis used in traditional finance markets in DeFi.

Analyse the design and stability features of stablecoins.

Assess the design and efficiency of lending protocols and decentralized exchanges.

Transferable skills

Written communication

Study

Study time

Type	Required
Lectures	9 sessions of 2 hours (12%)
Other activity	8 hours (5%)
Private study	50 hours (33%)
Assessment	74 hours (49%)
Total	150 hours

Private study description

Private study to include pre-reading for lectures

Other activity description

1 hr F2F workshops weeks 3-10

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group D3

	Weighting	Study time	Eligible for self-certification
Assessment component			
Group Report 3000 words	20%	15 hours	No

Reassessment component

Individual Assignment Individual Assignment 1000 words			Yes (extension)
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Assessment component

Participation Combination of graded quizzes and participation at seminars.	10%	7 hours	No
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Reassessment component is the same

Assessment component

Centrally-timetabled examination (On-campus)	70%	52 hours	No
Answerbook Gold (24 page)			

Reassessment component is the same

Feedback on assessment

via my.wbs

[Past exam papers for IB9YW](#)

Availability

Courses

This module is Core for:

- Year 1 of TIBS-H60Z MSc Financial Technology

This module is Optional for:

- Year 1 of TIBS-N4N6 MSc in Accounting and Finance
- Year 1 of TIBS-N300 MSc in Finance
- Year 1 of TIBS-N1F5 Postgraduate Taught Business and Finance
- Year 1 of TIBS-LN1J Postgraduate Taught Finance and Economics
- Year 1 of TIBS-N3G2 Postgraduate Taught Mathematical Finance