University of Nicosia, Cyprus

Course Code	Course Title	ECTS Credits
DFIN-511	Introduction to Digital Currencies	10
Department	**Semester**	**Prerequisites**
School of Business and Computer Science	Fall/Spring/Summer	None
Type of Course	**Field**	**Language of Instruction**
Required	Digital Currencies	English
Level of Course	**Year of Study**	**Lecturer(s)**
2nd Cycle	1st	Andreas Antonopoulos Antonis Polemitis Dmitry Apraksin
Mode of Delivery	**Work Placement**	**Co-requisites**
Distance learning	N/A	None

Objectives of the Course:

The course is designed to provide an introductory understanding of decentralized digital currencies (cryptocurrencies) such as bitcoin. In particular, the course will survey the theory and principles by which cryptocurrencies operate, practical examples of basic cryptocurrency transactions, the likely interaction of cryptocurrencies with the banking, financial, legal and regulatory systems, and how cryptocurrencies could be viewed within a framework of innovation and development.

The course will consist of four general topics:

1. Theoretical introduction to digital currencies: This will include the history of digital currencies, the invention of decentralized consensus through proof-of-work, and a technical overview of cryptographic currencies such as bitcoin, as well as alternative/advanced uses of the blockchain.

2. Practical introduction to digital currencies: This will include practical, introductory exercises in utilizing and constructing cryptocurrency transactions.

3. Banking, financial and regulatory implications of digital currencies: Overview of how cryptocurrencies map to the existing monetary and banking system and possible approaches to regulation and

development.

4. Innovation & development: How cryptocurrencies can be viewed through innovation frameworks and what possibilities exist for cryptocurrencies to accelerate development.

Learning Outcomes:

After completion of the course students are expected to be able to:

- Understand the technology components of blockchain-based digital currencies, the process of currency issuance, proof-of-work, consensus and distributed ledger

- Demonstrate an understanding of digital currencies and be able to conduct transactions from a digital currency wallet

- Understand more advanced uses of the blockchain such as escrow services, asset registration, attestation and smart contracts

- Understand alternatives to bitcoin, such as alt-coins, IOU-based systems and Ethereum

- Understand what parallels and differences cryptocurrencies have with the existing monetary and banking systems

- Understand likely frameworks for regulating cryptocurrencies

- Be able to place cryptocurrencies in the context of disruptive innovations and understand their potential for growth or development

Course Contents:

1. A brief history of money: From sea shells to cryptocurrency
2. The Byzantine' General's Problem: What is it, why is it important in computing, and solutions over time
3. Basics of Cryptocurrency: Public/private keys, transactions, mining
4. Bitcoin in practice – Part 1: Bitcoinqt, online wallets, sending/receiving, paper wallets/cold storage
5. Bitcoin in practice – Part 2: Bitcoind, constructing a transaction, mining
6. Alternative uses of the blockchain: Colored coins, meta-coins, asset registration, attestation, smart contracts, political speech
7. Alternatives to Bitcoin: Alt-coins; Ripple / IOU Based Systems, Ethereum
8. Cryptocurrency and Central Banking: Applying the concepts of money supply, fractional reserve banking, monetary policy, fiat/commodity money to cryptocurrencies
9. Cryptocurrency and Financial Institutions: Applying the concepts of exchanges, banks, money transmitters and capital markets to cryptocurrencies
10. Regulatory and tax treatment: Potential regulatory and legal frameworks for cryptocurrencies, including classification/recognition, AML, KYC, consumer protection, and taxation
11. Cryptocurrency and innovation: Applying framework of the innovators

| dilemma, and competitive strategy to cryptocurrencies |
| 12. Cryptocurrency and the developing world: Understanding cryptocurrencies' potential impact on microfinance, infrastructure development, and non-traditional payment systems (M-Pesa) |

Learning Activities and Teaching Methods:

| Lectures, Seminars, Assignments |

Assessment Methods:

| Online quizzes and problem sets, Projects |

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Andreas Antonopoulos	Mastering Bitcoin	O'Reilly Publishing	2014	

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Satoshi Nakamoto	Bitcoin: A Peer-to-Peer Electronic Cash System		2009	

Selected Online Readings:

http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/...moneycreation.pdf

http://dealbook.nytimes.com/2014/01/21/why-bitcoin-matters/

http://www.usv.com/posts/bitcoin-as-protocol

http://startupboy.com/2013/11/07/bitcoin-the-internet-of-money/

http://startupboy.com/2014/03/09/the-bitcoin-model-for-crowdfunding/

http://mercatus.org/sites/default/files/Brito_BitcoinPrimer_embargoed.pdf

http://www.hmrc.gov.uk/briefs/vat/brief0914.htm

http://fincen.gov/statutes_regs/guidance/html/FIN-2013-G001.html

http://www.scribd.com/doc/212058352/Bit-Coin

http://bitcoinmagazine.com/9671/ethereum-next-generation-cryptocurrency-decentralized-application-platform/
http://www.andrew.cmu.edu/course/15-749/READINGS/required/resilience/lamport82.pdf