

PRE-ESTABLISHED PROGRAMME

INTRODUCTION TO CRYPTO ECONOMY AND DECENTRALIZED FINANCE (DEFI)

Course contact hours: 45

Recommended credits: 6 ECTS – 3 US

Language: English

Prerequisites

Fluent in English

Objectives and Contextualisation

Crypto economy and decentralized finance (DeFi) will increasingly be part of our lives. This course is designed to understand the basic principles and mechanics behind cryptocurrencies, digital assets and blockchain technologies. It covers how decentralized finance systems work, such as exchanges or smart contracts, how DeFi platforms are used to invest and trade digital assets, cryptocurrencies or crypto projects, and how blockchain technology is the basis for innovation and new business models. You'll also learn about the potential risks to navigate this new world.

The course incorporates concepts like justice, equity, diversity, and inclusion, ensuring that participants not only understand the technicalities but also the broader social implications of crypto economy and decentralized finance. Therefore, it emphasizes the potential of these technologies and a financial framework to foster a more inclusive and fair world.

Competences

- Understand the basic principles and mechanics behind cryptocurrencies, digital assets and blockchain technologies.
- Understand the impact of these technologies and the financial framework on economy and business.
- Understand the social implications of crypto economy and decentralized finance.
- Develop teamwork skills through group projects and activities.
- Give and receive constructive feedback to classmates.
- Practice research skills to find relevant sources and information.
- Develop reading skills that help understand and synthesize case studies.
- Develop oral presentation skills.
- Creative thinking skills.

Learning Outcomes

Students should acquire a robust understanding of the crypto economy's technical and business aspects, and be equipped to critically engage with its broader social, ethical, and economic implications.

1. List and identify key milestones in the history of trade systems and the evolution of decentralized finance and crypto economy.
2. Describe the foundational principles and mechanics of blockchain technology, including how they promote inclusivity, decentralization, and democratization.
3. Explain the significance and role of smart contracts, oracles, stablecoins, and DAOs within the DeFi ecosystem.
4. Use DeFi platforms and tools effectively, including participating in decentralized exchanges and lending/borrowing platforms.
5. Distinguish between traditional financial models and DeFi business models, emphasizing the latter's potential for innovation and inclusivity.
6. Assess and evaluate the various risks and ethical challenges within the crypto economy.
7. Construct and design basic tokenization proposals or DeFi projects.
8. Critique and appraise current regulatory frameworks, discussing their relevance and potential impact on the crypto economy's future.
9. Formulate opinions on the future direction of the crypto economy, emphasizing its potential challenges and opportunities for fostering inclusive growth.
10. Relate principles of the crypto economy to historical, societal, and ethical contexts, promoting a holistic understanding of the subject.

Content

1. Contextualizing crypto economy: from barter to blockchain.
2. Introduction to crypto economy.
3. Basics of blockchain technology: a tool for empowerment.
4. Cryptocurrency: the democratization of money.
5. Decentralized finance (DeFi): financial justice and autonomy.
6. Smart Contracts: codifying equity and trust.
7. DeFi lending and borrowing: financial access for all.
8. Decentralized Exchanges (DEXs).
9. Stablecoins: financial stability.
10. Yield farming and liquidity mining: democratizing finance returns.
11. Tokenization.
12. DeFi governance and DAOs: a new era of democratic decision making.
13. Role of oracles in DeFi.
14. Risks in crypto economy: ensuring justice and protection.
15. Ethical considerations in crypto economy.
16. Regulatory and compliance landscape.
17. DeFi business models: a landscape for entrepreneurial innovation.
18. The Future of crypto economy: opportunities and challenges.

Methodology

Instructional strategy in this course includes a mixture of lectures, case study reviews, discussions, in-class exercises and collaborative projects.

During lectures we discuss the main theoretical concepts. The case studies provide further opportunities to expand on the understanding of theoretical concepts and how they apply in real-world situations, companies, industries and markets.

The projects give you the opportunity to: (1) rehearse and enhance your analytical and critical thinking skills, (2) enhance your ability to search, synthesize and present relevant information, (3) practice creative thinking, and strengthen your group-work and project management skills.

Your final grade is determined by your ability to understand the theoretical concepts presented through readings and discussed during class sessions and by your proven ability to apply these concepts to real-life situations and to the team projects developed during the course.

Activities

Directed:

Class sessions (practice)	20 hours
Class sessions (theory)	22 hours
Assessment	3 hours

Supervised:

Project and Cases	60 hours
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Assessment

1. Exams (30%)
 - a. Midterm exam: 15%
 - b. Final exam: 15%
2. Participation: 20%
3. Preparation and presentation of case studies (25%)
4. Project: preparation and presentations (25%)

Midterm and Final Exam – The exams are a stimulus for the student's ongoing evaluation and will cover the material studied during the course (theory and practice classes).

Cases: case studies are part of the learning methodology. During the course, different cases will be worked on that refer to real situations in the economy and business world and reflect situations in the context of crypto economy. These cases are discussed in depth, presented and discussed in class and require very high student involvement to be successful, both in preparing, presenting, or participating in the presentation discussion of other groups.

Project: allows students to thoroughly analyse and develop a project in the context of crypto economy and decentralized finance.

Presentation of cases and the different parts of the project (quality, originality, use of different visual supports) as well as commitment to them will be evaluated. All case information should be included in the presentation with appropriate referencing of the different sources.

Participation: participation in class sessions is critical to the success of the course. That is why the participation grade will depend on:

- Quality input made during discussions or topics proposed by the teacher in class.
- Relevant questions asked during teacher presentations.
- Quality feedback and questions made during classmates presentations.

Assessment Activities

Title	Weighting	Hours	Learning outcomes
Midterm exam	15%	1,5	1-10
Final exam	15%	1,5	1-10
Case studies	25%	30	3,4,5,6,8,9,10
Project	25%	30	3,5,6,7
Participation	20%		1-10

Bibliography

Teaching presentations will be available through the virtual classroom.

Required

Antonopoulos, A. M. (2014). Mastering Bitcoin: Unlocking Digital Cryptocurrencies. O'Reilly Media.
URL: <https://www.amazon.com/Mastering-Bitcoin-Unlocking-Digital-Cryptocurrencies/dp/1449374042/>

Antonopoulos, A. M. (2016). The Internet of Money. Merkle Bloom LLC.
URL: <https://www.amazon.com/Internet-Money-collection-Andreas-Antonopoulos/dp/1537000454/>

Antonopoulos, A. M., and Wood, G. (2018). Mastering Ethereum: Building Smart Contracts and DApps. O'Reilly Media.
URL: <https://www.amazon.com/Mastering-Ethereum-Building-Smart-Contracts/dp/1491971940/>

Harari, Y. N. (2015). Sapiens: A Brief History of Humankind. Harper.
URL: <https://www.amazon.com/Sapiens-Humankind-Yuval-Noah-Harari/dp/0062316095/>

Harari, Y. N. (2018). 21 Lessons for the 21st Century. Spiegel and Grau.
URL: <https://www.amazon.com/21-Lessons-21st-Century-Harari/dp/0525512179/>

Nakamoto, S. Bitcoin: A Peer-to-Peer Electronic Cash System.
Bitcoin Whitepaper
URL: <https://bitcoin.org/bitcoin.pdf>

Tapscott, D., and Tapscott, A. (2016). Blockchain Revolution: How the Technology Behind Bitcoin and Other Cryptocurrencies is Changing the World. Penguin.

URL: <https://www.amazon.com/Blockchain-Revolution-Technology-Cryptocurrencies-Changing/dp/1101980141>

Recommended

Ammous, S. (2018). The Bitcoin Standard: The Decentralized Alternative to Central Banking. Wiley.

URL: <https://www.amazon.com/Bitcoin-Standard-Decentralized-Alternative-Central/dp/1119473861/>

Burniske, C., and Tatar, J. (2017). Cryptoassets: The Innovative Investor's Guide to Bitcoin and Beyond. McGraw-Hill.

URL: <https://www.amazon.com/Cryptoassets-Innovative-Investors-Bitcoin-Beyond/dp/1260026671/>

Drescher, D. (2017). Blockchain Basics: A Non-Technical Introduction in 25 Steps. Apress.

URL: <https://www.amazon.com/Blockchain-Basics-Non-Technical-Introduction-Steps/dp/1484226038/>

Harari, Y. N. (2017). Homo Deus: A Brief History of Tomorrow. Harper.

URL: <https://www.amazon.com/Homo-Deus-Brief-History-Tomorrow/dp/0062464310/>

Lewis, A. (2018). The Basics of Bitcoins and Blockchains. Mango Publishing.

URL: <https://www.amazon.com/Basics-Bitcoins-Blockchains-Antony-Lewis/dp/1633538009/>

Modi, R. (2018). Solidity Programming Essentials: A Beginner's Guide to Smart Contracts, Blockchain, Ethereum, and Solidity. Packt.

URL: <https://www.amazon.com/Solidity-Programming-Essentials-Beginners-Blockchain/dp/1789611707/>