

Course Outline

Virtual Exchange Spring Semester 2022

Course Title: Blockchain

Number of ECTS-Credits: 3

Format of the course:

- synchronous online course (FIX timeslots)
- asynchronous online course (NO fix timeslots)
- mix of synchronous and asynchronous online course
- synchronous hybrid course (students can choose online OR on campus in FIX timeslots)
- asynchronous hybrid course (students can choose online OR on campus in NON-fix timeslots)
- mix of synchronous and asynchronous hybrid course
- other, namely:

Number of Students accepted

- Total number of students is limited to 35
- Total number of students is unlimited
- Total number of virtual exchange students is limited to 10
- Total number of virtual exchange students is unlimited

Do Virtual Exchange students need an FHNW E-Mail Account for this course? yes no

Responsible lecturer: Walter Dettling

Link to lecturer's profile at FHNW: <https://www.fhnw.ch/en/people/walter-dettling>

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1. Course content

- Historical view on blockchain
- Cryptographic methods
- Blockchain mechanism, proof of work, proof of stake
- Principles of Bitcoin, Ethereum and Cardano
- Cryptocurrencies, Tokens, Smart Contracts
- Business strategies related to blockchain architecture

2. Learning objectives

Knowledge and understanding

Principals of decentralised transaction systems. Blockchain protocols: Bitcoin, Ethereum, Cardano
Cryptocurrencies, tokens, smart contracts, and their economic impact

Application of knowledge and understanding

Data and transaction architecture of blockchain-based datastorage
Application of coins, tokens and smart contracts for different business models

Ability to make judgements

Relevance of different blockchain protocols for business applications
Relevance of different blockchain platforms for strategic business decisions

Communication

Use of correct vocabulary in blockchain related topics
Understanding and expressing concise concepts

Self-learning skills

Reading and understanding further publications about blockchain
Abstract thinking and enjoying learning by mistakes

3. Prior knowledge and entry requirements

- As this module requires participants to be able to discuss complex issues fluently, a good level of English is required min. B2/C1 (CEFR), IELTS 5.5, TOEFL iBT 46-59 or equivalent
- There are no further formal entry requirements for this course.

4. Course structure and dates

21.2.2022	17.15-21.00	Welcome, Introduction, Historic background; Principles of blockchain
28.2.2022	17.15-21.00	Cryptographic methods; Introduction bloxxgame, practice Hashing and Signatures
07.3.2022	17.15-21.00	Consensus algorithms: Proof of work, Proof of stake, practice with bloxxgame
14.03.2022	17.15-21.00	Smart contracts, Ethereum, Cardano;
21.3.2022	17.15-21.00	Digital and cryptographic assets: Crypto tokens, NFTs
28.03.2022	17.15-21.00	Wallets, Exchange, Defi, bloxxgame competition
04.04.2022	17.15-19:00	Exam

5. Assessment

- Assessment with (online) practice test
- Final written test on campus can be replaced for remote students with an additional assignment
- Final written test on campus can be replaced for remote students with oral testing

6. Literature

Nakamoto S (2008) Bitcoin : A Peer-to-Peer Electronic Cash System

Schär F., Berentsen A.(2020): Bitcoin, Blockchain, and Cryptoassets: A Comprehensive Introduction.

7. Grading

Pass-fail

According to swiss grading system (see below)

Mark	6.0	5.5	5.0	4.5	4.0	below 4
In words	excellent	very good	good	satisfactory	pass	fail