

Blockchain and its application in finance

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Course description

The aim of the course is to explore the blockchain application in finance and the essence of the cryptoeconomics. The story begins with the blockchain fundamentals and cryptography. The following part will be devoted to the ICO boom of the 2017 and the instruments of fund raising and money transmission emerged in the light of it. In the third part of the course we will walk through the crypto assets trading and the business of crypto exchange as one of the few sustainable use cases in the cryptoeconomy. The latest part will be about the decentralized finance concepts and projects.

Course requirements, grading, and attendance policies

The course has no specific prerequisites.

Grading:

- Homework #1 (10%)
- Homework #2 (10%)
- Homework #3 (10%)
- Final project (70%)

Course contents

- Class 1: Blockchain fundamentals:
 - Cryptography basics: Hash function, elliptic curves, digital signature
 - Distributed ledger technology: blocks, transactions, producers
 - Essential issues of DLT
- Class 2: Operations in blockchain: Bitcoin and Ethereum
 - Consensus: PoW, PoS, DPoS, PoA
 - Bitcoin transactions, UTXO-model
 - Ethereum smart contracts: logics and applications
- Class 3: ICO, Stable coins, IEO, Utility and Security tokens:
 - Transactional indicators
 - Security vs. Utility; Tokens vs. Coins
 - ICO & IEO
 - Stable coins
- Class 4: Crypto exchanges:
 - Technical architecture of the exchange
 - Business structure, revenue streams and challenges
 - Tier 1, tier 2, tier 3 players

- Legal and compliance, regulations (SEC).
- Class 5: Trading strategies in crypto:
 - Top coins
 - Marginal trading
 - Derivatives: Futures, Perpetual swaps
- Class 6: Options and Decentralized Finance
 - BTC and ETH options: trading and pricing
 - Decentralized Finance: concept and projects
- Class 7: M&A in Crypto, Blockchain in non-financial area
 - M&A market in crypto
 - Use cases in real economy

Course materials

All materials will be provided during lectures.

Academic integrity policy

Cheating, plagiarism, and any other violations of academic ethics at NES are not tolerated.