

CIS600/FIN600: Blockchain and Financial Applications

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Course Description

BitCoin/Blockchain is a disruptive technology across many industries, including banking, supply-chain, insurance, cloud, information-technology and beyond. This course teaches about the BitCoin/Blockchain technology from a practice perspective. The learning objective is for students to identify, design and develop financial applications on BitCoin and Blockchain. Towards the goal, it will include lectures, case studies, labs and projects on BitCoin/Blockchain. The hands-on part of the course will be application design and development on real software (ethereum.org). It will cover Bitcoin and Blockchain in terms of their interfaces, applications and internal mechanisms.

This will be a 3-credit course.

Learning Objectives

Students will be able to 1) analyze existing applications on Blockchain, 2) design and development financial applications on Blockchain/cryptocurrency, and 3) identify new Blockchain applications. The learning goals will lead to potential startup opportunities on Blockchain.

Texts - Recommended

Bitcoin and Cryptocurrency Technologies, Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, Steven Goldfeder, [[online-book version](#)]

Grading

Class participation (10%), homework (20%), labs or technical reviews (40% choose one), project (30%)

Course Schedule (Tentative)

- Lectures
 - Blockchain as transaction storage
 - Blockchain as smart-contract execution platform
 - Blockchain as cryptocurrency mine
 - Issues in Blockchain
- Case studies of real-world Blockchain applications
 - CryptoKitties, EggFry, etc.
- Labs
 - Lab 1: Blockchain transactions and storage
 - Lab 2: Smart contract programming in Ethereum/Solidity
 - Lab 3: Cryptocurrency exchange services and payment applications (CoinBase alike)
 - Lab 4: Access Control on Smart Contract for Permissioned Blockchain
- Project example topics (Choose one):
 - Archiving legal documents on Blockchain
 - Medical supply-chain on Blockchain
 - Infrastructure management with Blockchain
 - Cloud storage on Blockchain