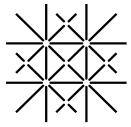


University of Basel

Center for Innovative Finance

Bitcoin, Blockchain and Cryptoassets

Intro: Welcome to the Course

Prof. Dr. Fabian Schär
University of Basel

Release Ver.: (Local Release)
Version Hash: e02a11fa97c64a0a6d4305b06c5afce7342a0e4b
Version Date: 2021-03-09 11:27:12 +0100

Course Structure 1

1. **Introductory Part:**
   - Introduction to the Class
   - Foundations of Monetary Theory
   - Payment Systems
   - Monetary Control Structures
   - Bitcoin Primer
2. **Transaction Capacity:**
   - Peer-to-Peer Networks
   - The Bitcoin Network
3. **Introduction to Cryptography:**
   - Hash Functions
   - Symmetric Cryptography
   - Asymmetric Cryptography
   - Elliptic Curve Cryptography
   - FAQ: Attack Vectors

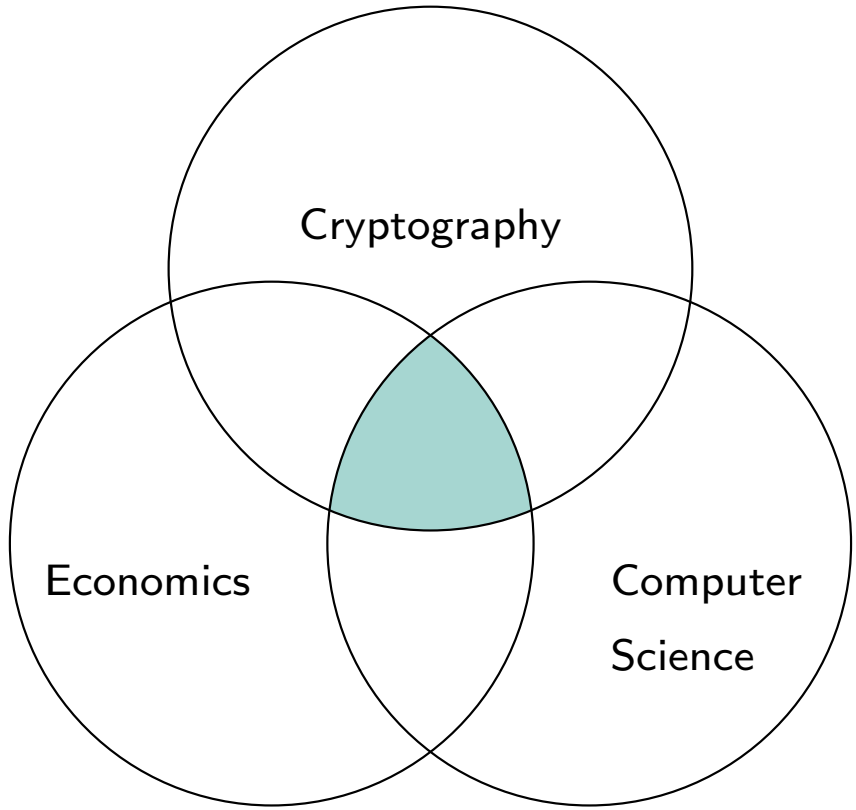
Course Structure 2

4. **Transaction Legitimacy:**
   - Transactions
   - Bitcoin Script and Standard Transactions
   - Example Transaction
   - Sig Hash Types
5. **Transaction Consensus:**
   - Block Assembly
   - Chain Structure
   - Introduction to Consensus
   - Consensus Protocols Overview
   - Proof-of-Authority
   - Proof-of-Work
   - Fork Theory
   - Incentives and Potential Attacks

Course Structure 3

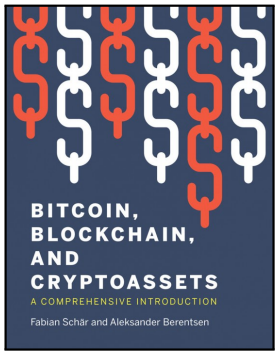
6. **Bitcoin as Money:**
   - History of Digital Money
   - Valuation Models
   - Volatility
   - CBDC and Stablecoins
   - Risks and Illicit Activity
7. **Advanced Topics:**
   - Bitcoin Applications
   - Economic Scripting
   - Scalability
   - Payment Channels and LN
   - Transaction Malleability and SegWit
   - Teaser: Next Steps

Interdisciplinary Approach

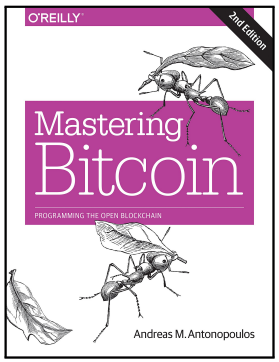


Bitcoin and public Blockchains can only be fully understood, when they are studied from various perspectives. This is the reason why this class uses an **interdisciplinary** approach.

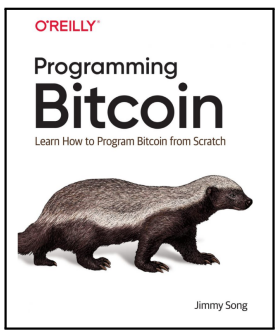
Recommended Literature



Bitcoin, Blockchain and Cryptoassets
Fabian Schär and Aleksander Berentsen
ISBN: 978-0262539166



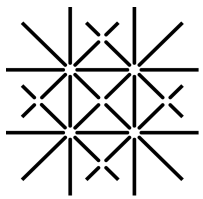
Mastering Bitcoin - Second Edition
Andreas Antonopoulos
ISBN: 978-1491954386



Programming Bitcoin
Jimmy Song
ISBN: 978-1492031499

Part of Multi-Course Series

Blockchain courses have been part of the University of Basel's curriculum since 2017.



University of Basel

Center for Innovative Finance

- This is a University undergrad-/ bachelor-level course
- It is part of a series of courses
- First course to switch to open lecture format

→ There will be more open lecture courses.

Three Options to Take This Course

The goal of our open lectures is to make teaching resources freely available. There are **three options** for taking this course:

	Videos	Platform	Assignments	ECTS
YouTube	✓			
Cryptolectures.io	✓	✓	✓	
University of Basel	✓	✓	✓	✓

- YouTube Channel
- Cryptolectures.io
- University of Basel - General Information

Information for University of Basel Students

Exam:

- 90 Minutes
- Closed book
- T/F, MC, Numbers and Text/Figure Boxes
- You may use a non-programmable calculator (↗ Rules)

Mid-Semester Problem Set:

- Problem set will be published mid-semester
- Extra credit if you hand-in correct solutions before deadline.

Meet the Open Crypto Lectures Team

Professor

Fabian Schär

PhD Candidates

Mitchell Goldberg

Matthias Nadler

Katrin Schuler

Student Assistants

Lorenz Geering

Jakob Roth

Dario Thürkauf