



LGST 244x/644x

Blockchain and Cryptocurrencies: Business, Legal, and Regulatory Considerations

Overview

Blockchain technology is a form of decentralized database that allows for the secure exchange of value without reliance on trusted intermediaries. Blockchain is the foundation for cryptocurrencies such as Bitcoin, as well as for distributed ledger platforms used by enterprise consortia in various industries. Many believe that blockchain solutions have revolutionary potential. They promise to replace legal enforcement with technical mechanisms of cryptographic consensus as the means of generating trust. The technology has generated significant excitement, investment, and entrepreneurial activity in recent years. However, the business value of blockchain-based solutions is uncertain, cryptocurrency valuations are speculative, and there are serious legal, regulatory, and governance challenges to be addressed. This course is designed to give students the tools for critical assessment of ongoing developments in this evolving area.

Instructor

Kevin Werbach
Professor of Legal Studies & Business Ethics
673 Huntsman Hall | (215) 898-1222 | werbach@wharton.upenn.edu

Office Hours: Tuesday/Wednesday 1:30-2:30pm

Learning Objectives

At the end of this course, you should be able to:

1. Explain the essential features of blockchain, cryptocurrencies, and distributed ledger technology.
2. Evaluate current and potential business use cases.
3. Describe the major legal and regulatory challenges these technologies raise.

Course Materials

Kevin Werbach, [THE BLOCKCHAIN AND THE NEW ARCHITECTURE OF TRUST](#) (2018)
Other readings available online through hyperlinks, or from Study.net Coursepack.

Requirements and Grading

The course is designed to be generally accessible. It does not require any technical skills, finance knowledge, or prior experience with cryptocurrencies.

The class meets once a week, for three hours. For most weeks after the first few sessions, we will have a guest speaker for half the time. You are expected to complete assigned readings and prepare for discussion with the guest speaker prior to each class. I will use a mixture of lecture, discussion, and in-class interactive activities; your active engagement is expected.

Your grade in the course will be comprised of the following elements:

Choose Your Own Adventure (45%)

- You will be provided with a list of possible assignments. You must complete at least three of them, which are each worth 15% of your grade. What assignments you complete, in what order, is up to you, although many of the assignments are best done after class sessions covering relevant material.
- You may also contact the professor to propose alternate assignments of your own design. With approval, these will receive equivalent credit.
- If you submit two assignments before a monthly deadline, you will receive the higher grade. However, you cannot submit additional assignments later to receive credit for prior months.
- Additional details are provided on the Canvas assignment page.

Guest Speaker Questions (5%)

- We will have guest speakers for at least seven class sessions. You must prepare questions for five of them, with each submission worth one point, up to a maximum of five. Submit your questions, and explanations for them, to the relevant assignment on Canvas. Your submissions will be graded for completion.

Midterm Exam (15%)

- There will be a midterm exam to complete online during the week of October 9, when the class will not meet. It will be 60 minutes in length, and available on Canvas.

Final Exam (20%)

- The final exam will be administered during the last class session, on December 4. It will be 80 minutes in length, and will be completed online on Canvas. The exam will include material from the entire semester, but will focus on concepts and readings after the midterm.

Participation (15%)

- I will assess your overall contribution to the course. Attendance is a factor, but not the primary one. Active involvement in class discussions and activities is more important.

Syllabus

DATE		
August 28	<p>Blockchain and the Trust Challenge</p> <ul style="list-style-type: none"> - Course overview - Introduction to blockchain - Forms of trust - The need for a new trust architecture 	<p><u>Read</u> Werbach, Chapter 1 Andreesen, Why Bitcoin Matters Stinchcome, Blockchain Is Not Only Crappy Tech Iansiti & Lakhani, The Truth About Blockchain</p>
September 4	<p>Money: From Yap Stones to Digital Cash</p> <ul style="list-style-type: none"> - Money as a form of trust - Financial history and regulation - What’s wrong with the money we have? - Cryptocurrency as a financial revolution <p><u>Guest speaker:</u> Caitlin Long</p>	<p><u>Read</u> Martin, Chapter 1 (in Coursepack) Narayanan et al, Preface pp. 1-13</p>

September 11	Cryptography and Distributed Systems <ul style="list-style-type: none"> - Information security as a form of trust - Public and private keys - Digital signatures - Hashing - Byzantine fault tolerance 	<u>Read</u> Narayanan et al, Preface pp. 13-18; Chapter 1
September 18	Bitcoin and Cryptocurrencies <ul style="list-style-type: none"> - How Bitcoin achieves trust - Proof of work consensus and mining - Major cryptocurrency networks - Wallets and exchanges 	<u>Read</u> Werbach, Chapter 2 Nakamoto, Bitcoin Whitepaper
September 25	Is Crypto Evil? <ul style="list-style-type: none"> - Illegal uses of cryptocurrency - Money laundering - Tracing blockchain transactions <p><u>Guest speaker:</u> Yaya Fanusie</p>	<u>Read</u> Krugman, Bitcoin is Evil Bearman, The Untold Story of Silk Road (Part 1 Part 2) Lagarde, Addressing the Dark Side of the Crypto World FinCEN, Virtual Currency Guidance Weinstein, How Can Law Enforcement Leverage Blockchain
October 2	Beyond Money: The World Computer <ul style="list-style-type: none"> - Smart contracts - Ethereum and decentralized applications - The DAO Hack 	<u>Read</u> Werbach, Chapter 3 Szabo, Smart Contracts: Building Blocks for Digital Markets Spode, The Great Cryptocurrency Heist Dixon, Why Decentralization Matters
October 9	Yom Kippur – No Class <p>Watch video: Token Offerings</p> <ul style="list-style-type: none"> - Tokens as a funding mechanism - The ICO phenomenon - Securities regulation <p>Midterm Exam</p>	<u>Read</u> Cohn et al, Coin Operated Capitalism , Parts I and II PWC, ICOs: A Strategic Perspective Srinivasan, Thoughts on Tokens SEC, Framework for Analysis of Digital Assets
October 16	Digital Assets <ul style="list-style-type: none"> - The rise of crypto trading markets - Asset-backed tokenization - Centralized and distributed exchanges - Decentralized finance - Financial regulation of cryptoassets <p><u>Guest Speaker:</u> Jalak Jobanputra</p>	<u>Read</u> SEC, Statement on Digital Asset Securities SEC v. Kik Complaint McKeon, The Security Token Thesis John and Lundy-Bryan, Mapping Decentralized Finance
October 23	Public Blockchain <ul style="list-style-type: none"> - Cryptoeconomics - Consensus mechanisms 	<u>Read</u> Werbach, Chapter 5 Catalini & Gans, Some Simple Economics of the Blockchain

	<ul style="list-style-type: none"> - Managing decentralized networks - The value of permissionless systems <p><u>Guest Speaker:</u> Lane Rettig</p>	
October 30	<p>Enterprise Blockchain</p> <ul style="list-style-type: none"> - Permissioned DLT systems - When do you really need a blockchain? - Tradelens case study <p><u>Guest Speaker:</u> Patrick Schhmid</p>	<p><u>Read</u></p> <p>Werbach, Chapter 4</p> <p>World Economic Forum, Blockchain Beyond the Hype</p> <p>Maersk: Betting on Blockchain (in Coursepack)</p>
November 6	<p>Blockchain Meets Law</p> <ul style="list-style-type: none"> - Regulation of cryptocurrency services - Global and state-level approaches - Legal analysis of smart contracts - Code vs. Law <p><u>Guest Speaker:</u> Josh Klayman</p>	<p><u>Read</u></p> <p>Werbach, Chapter 8</p> <p>Long, What Do Wyoming's Blockchain Laws Mean?</p>
November 13	<p>Will Crypto Transform Global Finance?</p> <ul style="list-style-type: none"> - Stablecoins - Facebook Libra - Cryptocurrency markets beyond the U.S. <p><u>Guest Speaker:</u> Joyce Yang</p>	<p><u>Read</u></p> <p>Libra White Paper</p> <p>Masterthecrypto, Guide to Stablecoin</p> <p>Reuters, Cryptocurrency Basis to Shut Down</p> <p>GCR, The Small Handbook to Asia Crypto (skim)</p>
November 20	<p>Governance and Identity</p> <ul style="list-style-type: none"> - Theories of governance - Blockchain governance struggles - On-chain governance - Privacy coins - Self-sovereign identity <p><u>Guest Speaker:</u> Kathryn Harrison</p>	<p><u>Read</u></p> <p>Werbach, Chapter 7</p> <p>De Filippi et al, The Invisible Politics of Bitcoin</p> <p>Buterin, Notes on Blockchain Governance</p> <p>Olshansky, Do Blockchains Have Anything to Offer Identity?</p>
December 4	<p>Where Do We Go From Here?</p> <ul style="list-style-type: none"> - Scaling blockchains - Re-decentralizing the internet - Emerging issues <p>Final Exam</p>	<p><u>Read</u></p> <p>Werbach, Chapter 11</p> <p>Dixon, Why Decentralization Matters</p> <p>Croman et al, On Scaling Decentralized Blockchains</p>