

## **Digital Currency, Blockchains, and the Future of the Financial Services Industry**

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KMC 1-70, 44 West 4<sup>th</sup> Street  
Mondays & Wednesdays, 12:30 –1:50  
Spring 2021

### Course overview

Bloomberg in 2016 summarized a research report issued by McKinsey & Co:

*Firing people won't be enough to save the world's biggest banks from technological and regulatory changes that have reshaped the industry - whole businesses must go, according to McKinsey & Co. Almost every bank will have to quash aspirations to be all things to all customers . . . Only three to five global full-service banks will survive, McKinsey said.*

In 2020, Goldman Sachs appointed a new Head of Digital Assets, who told CNBC in an interview that:

*In the next five to 10 years, you could see a financial system where all assets and liabilities are native to a blockchain, with all transactions natively happening on-chain.*

This course covers digital currencies, blockchains, and related topics in the FinTech area, perhaps the most significant innovation in the financial world since the advent of double-entry bookkeeping centuries ago. The technology appears to represent an existential challenge for major parts of the finance industry. It is now commonly suggested by experts such as McKinsey that commercial banks and stock exchanges may no longer exist, or may become much smaller, within the next 10 to 20 years, with increasing volumes of payments and exchange taking place on a peer to peer basis.

We will begin with a study of the nature of money and legacy payment and banking systems. We will then study the emergence of stateless, cloud-based digital currency systems since 2009. Further lectures will explore threats that blockchain technology poses to incumbent firms and their resulting attempts to co-opt the technology into existing business models. We survey related issues including hacking, “smart contracts,” governance, and emerging regulation.

Learning Outcomes: The goal of this course is to equip the students to better understand the law and business of blockchain technology, both in its initial application in the digital currency Bitcoin, as well as in the applications currently being explored for a wide

variety of uses and functions. The course is also intended to create a bridge between law students and business students that will enhance the quality of their communications after they enter into their careers.

### Course organization

The course meets twice a week for lectures, Mondays and Wednesdays from 12:30–1:50. All classes will be held remotely on Zoom. The course will feature a number of guest speakers from industry and government.

The Stern School and Law School have somewhat different class schedules during the Spring 2021 semester. Our first class meeting will be Monday, February 1 (even though the Law calendar begins January 20), and our final class meeting will be Monday, April 26 (even though Stern's calendar continues to May 10). In between, *we will hold class on any Monday or Wednesday on which either school would have been scheduled to hold class*. This includes one Tuesday (February 16) and one Thursday (March 25) which will be treated as Legislative Mondays at the Law School. There will be 26 class meetings, the same as in a normal semester.

All class meetings will be recorded for later viewing. Links to recordings will be available on the NYU Classes website.

### Readings

Many readings for the course will be posted in .pdf or .ppt format on NYU Classes, or will be available through Internet links included in the syllabus below. The syllabus may be updated several times during the semester to reflect the availability of new readings or guest speakers.

We will also use three textbooks:

- Carnell, Macey & Miller, *The Law of Financial Institutions* (6<sup>th</sup> edition, 2017). Excerpts will be distributed to students via NYU Classes.
- Burniske and Tatar, *Cryptoassets: The Innovative Investor's Guide to Bitcoin and Beyond* (2018). This book is available for purchase at the NYU campus bookstore and from other retail sources.
- Narayanan et al., *Bitcoin and Cryptocurrency Technologies* (2016). This book, a companion to Princeton University's Coursera open on-line course in digital currency, is available for purchase, but a full pre-publication draft [can be downloaded at no cost](#).

Note that due to the fast-changing nature of the subject matter, material in all of these books may already appear to be out of date.

Students are encouraged to stay current on the topic by following recent developments. For daily breaking FinTech news, the authoritative source is the website [Coindesk](#).

A succinct, non-technical and highly readable introduction to the field is Malekan, *The Story of the Blockchain* (2018).

### Evaluation

Evaluation will be based 90% on student papers or projects that will be due during the May exam period, and 10% on the “student participation” short writing assignments described below.

### Student Participation

Each student shall turn in a 1 to 2-page essay analyzing or discussing a topic that was discussed in class or addressed in the assigned readings during the prior month. The essay shall explore an issue or question that remains unsolved, or inadequately explored or resolved, and explain why that issue is important or impactful. The essay will be written in 12 point font, with citations as necessary to the lecture or class assigned reading and any other sources. All essays will be submitted by 5:00pm Eastern time on the below dates via NYU Classes in .docx or .pdf format. These essays will be graded on a pass/fail basis and will account for 10% of the student grade. *Essay due dates:* February 26, March 26, and April 23.

### Lecture topics

An approximate list of the course’s lecture topics appears below. We may deviate from this schedule based upon factors including the pace of individual lectures and the availability of guest speakers. Additional readings may be supplied by guest speakers and posted on NYU Classes when they become available.

Monday, February 1                      GM/MR/DY                      Introductory class

- *The Economist*, 2015, “The Great Chain of Being Sure About Things.”
- Ferguson, 2020, “[Bitcoin Is Winning the COVID-19 Monetary Revolution.](#)”

Wednesday, February 3              GM                                      Payment systems

- Narayanan et al, Preface pp 3-22.
- Carnell, Macey & Miller (50-56; 65-78)

Monday, February 8                    GM                                      The nature of money

- Carnell, Macey & Miller (19-21; 31-40; 199-204)

Wednesday, February 10	GM	Bank created money
		<ul style="list-style-type: none"> <li>• Carnell, Macey &amp; Miller (238-249; 260-267)</li> </ul>
Tuesday, February 16	DY	The road to Bitcoin
		<ul style="list-style-type: none"> <li>• Burniske &amp; Tatar, Ch. 1-3.</li> <li>• Nakamoto, 2008, "<a href="#">Bitcoin: A Peer-to-Peer Electronic Cash System.</a>"</li> <li>• Segal, 2014, "<a href="#">Eagle Scout. Idealist. Drug Trafficker?</a>"</li> <li>• <i>Optional:</i> For a possible narrative of the mysterious circumstances surrounding the creation of Bitcoin, visit <a href="http://vu.hn/bitcoin%20origins.html">http://vu.hn/bitcoin%20origins.html</a> and see the discussion at <a href="https://blocksplain.com/2018/02/15/satoshi-nakamoto-scronty/">https://blocksplain.com/2018/02/15/satoshi-nakamoto-scronty/</a></li> </ul>
Wednesday, February 17	DY	Blockchains and mining
Monday, February 22		
		<ul style="list-style-type: none"> <li>• Narayanan, et al. Ch. 1.</li> <li>• Burniske &amp; Tatar, Ch. 13.</li> <li>• Haber and Stornetta, 1991, "<a href="#">How to Time-Stamp a Digital Document.</a>"</li> <li>• Böhme, Christin, Edelman, and Moore, 2015, "<a href="#">Bitcoin: Economics, Technology, and Governance.</a>"</li> </ul>
Wednesday, February 24	DY	Mining, forks, and code=law
		<ul style="list-style-type: none"> <li>• Narayanan, et al. Ch. 5.</li> <li>• Burniske &amp; Tatar, Ch. 14.</li> <li>• Leisig, 2017, "<a href="#">The Ether Thief.</a>"</li> </ul>
Monday, March 1	[MR]	Cryptocurrency as a commodity
<i>Guest speaker:</i>	<b>Heath Tarbert</b> , former U.S. CFTC Chairman	
Wednesday, March 3	[GM]	Electronic cash, decentralized exchange, and the Constitution
<i>Guest speaker:</i>	<b>Peter van Valkenburgh</b> , Coin Center	
Monday, March 8	GM/DY	Stablecoins
Wednesday, March 10		& Central bank digital currency

- Carnell, Macey & Miller (204-238)
- Dyson and Hodgson, 2016, “[Digital Cash: Why Central Banks Should Start Issuing Electronic Money.](#)”
- Brunnermeier, James, and Landau, 2019, “[The Digitalization of Money.](#)”
- [www.digitaldollarproject.org](http://www.digitaldollarproject.org)
- European Central Bank, [Report on a Digital Euro](#), 2020

Monday, March 15	[DY]	Blockchain forensics
<i>Guest speaker:</i>	<b>Jonathan Levin</b> ,	Chainalysis
Wednesday, March 17	DY	Alternative consensus protocols; altcoins
		<ul style="list-style-type: none"> <li>• Narayanan et al, Ch. 4.</li> </ul>
Monday, March 22	MR	Criminal litigation
		<ul style="list-style-type: none"> <li>• <a href="#">SEC v. Shavers, case no. 4:13-CV-416, at *1 (E.D. Tex. Aug. 6, 2013)</a></li> <li>• <a href="#">U.S. v. Faiella, 39 F. Supp. 3d 544 (S.D.N.Y. 2014) (Rakoff, J.)</a></li> <li>• <a href="#">U.S. v. Ulbricht, 31 F. Supp. 3d 540 (S.D.N.Y. 2014) (Forrest, J.)</a></li> </ul>
Wednesday, March 24	MR	Securities regulation and blockchains
		<ul style="list-style-type: none"> <li>• Van Valkenburgh, 2018, “<a href="#">Framework for Securities Regulation of Cryptocurrencies.</a>”</li> <li>• Raskin, 2019, “<a href="#">A Regulatory Classification of Digital Assets: Toward an Operational Howey Test for Cryptocurrencies, ICOs, and Other Digital Assets.</a>”</li> <li>• <a href="#">SEC v. Ripple Labs</a>, case no. 20 Civ. 10832 (S.D.N.Y., Dec. 22, 2020)</li> <li>• Garlinghouse, 2020, “<a href="#">The SEC’s Attack on Crypto in the United States.</a>”</li> </ul>
Thursday, March 25	[MR]	Securities regulation and blockchains
<i>Guest speaker:</i>	<b>Jorge Tenreiro</b> ,	U.S. Securities & Exchange Commission
Monday, March 29	MR	Smart contracts
		<ul style="list-style-type: none"> <li>• Burniske &amp; Tatar, Ch. 4 &amp; 16</li> <li>• Narayanan et al., Ch. 9.</li> <li>• Szabo, 1996, “<a href="#">Formalizing and Securing Relationships on Public Networks.</a>”</li> <li>• Chamber of Digital Commerce, 2016, “<a href="#">Smart Contracts – 12 Use Cases for Business &amp; Beyond.</a>”</li> </ul>

- Raskin, 2017, “[The Law and Legality of Smart Contracts.](#)”

Wednesday, March 31                      [DY]                      DeFi  
*Guest speaker:*                      **Jake Chervinsky**, General Counsel, Compound

Monday, April 5                      MR                      Jurisdictional issues in civil litigation

- Raskin, 2015, “[Realm of the Coin: Bitcoin and Civil Procedure.](#)”

Wednesday, April 7                      DY                      Cryptocurrency investing

- Choi, Lehar, and Stauffer, 2020, “[Bitcoin Microstructure and the Kimchi Premium.](#)”
- Li, Shin & Wang, 2020, “[Cryptocurrency Pump and Dump Schemes.](#)”

Monday, April 12                      [DY]                      Cryptocurrency investing  
*Guest speaker:*                      **Barry Silbert**, Digital Currency Group

Wednesday, April 14                      [DY]                      Cryptocurrency derivative markets  
*Guest speaker:*                      **Thomas Pacchia**, HODL Capital

Monday, April 19                      [DY]                      Blockchains and intellectual property  
*Guest speaker:*                      **Amy Whitaker**, NYU Steinhardt

- Whitaker, 2019, “Art and Blockchain,” *Artivate*.

Wednesday, April 21                      DY                      Blockchains and the capital markets

- Yermack, 2017, “[Corporate Governance and Blockchains.](#)”
- Howell, Niessner & Yermack, 2020, “[Initial Coin Offerings: Financing Growth with Cryptocurrency Token Sales.](#)”

Monday, April 26                      [MR]                      Final class  
*Guest speaker:*                      **Erik Voorhees**, crypto pioneer;  
founder of SatoshiDice and ShapeShift