

## Fintech – UH 4504 (Spring 2018)

Class: MW 2:30 – 3:45, in Great Room C (room number 2315), Ambler Johnston Hall

Professor: Dan Simundza, Office Hours: Wed 10:00 – 11:30 at GFURR office (Kent Square building, 250 S. Main, Suite 312); also by appointment

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### Description:

The collapse of the financial system during the crisis of 2007/08 has not only laid bare its inherent fragility, but it has also raised new questions about the costs and benefits of the financial industry more broadly. While the IT revolution has lowered the cost of retail finance substantially, the unit cost of financial intermediation in the U.S. has remained around 2% for the past 130 years! How is it possible for today's finance industry not to be significantly more efficient than the finance industry of John Pierpont Morgan? What happened? Why did we get the bloated finance industry of today instead of the lean and efficient Wal-Mart? Is it likely that the rapidly expanding digital revolution in finance ("Fintech") might change all of this?

FinTech generally refers to the application of technology to improve financial activities – e.g. mobile payments, fundraising, transaction clearing, automated investing. This class will study the modern FinTech industry through the lens of 'creative destruction' – the "process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one" [p. 82, Schumpeter (1942)]. Finance is especially vulnerable to disruption by technological innovations because so many financial services are information based (similar to how technology has continually transformed the publishing and music businesses).

We will begin our study of modern fintech with the blockchain – what is it (a way of keeping records), who uses it (Bitcoin, NASDAQ, Airbnb, amongst many others), and how might it disrupt the financial world (by transforming how we create, store, and transfer value and information). This section of the course will cover the most famous application of blockchain technology, that of cryptocurrencies (e.g. Bitcoin, Ethereum, Bitshares, etc.), as well as other applications which include property registries, "smart contracts," and methods of storing, establishing, and sharing identity. Throughout this section, we will use the blockchain as a lens through which to view the changing financial world.

We will then take a step back and investigate the history of finance, which is itself a story of constant innovation and evolution. Our focus here will be on the development of different types of money and credit, but we will also discuss the history of payment systems, joint-stock companies, debt securities, and exchanges. This section of the course is meant to show the students that, while finance is a process of constant innovation and evolution, it is also often the case that, in some sense, "everything old is new again".

In the last section of the course, we will return to the modern age to study more disruptive innovations in finance. Here we will cover such topics as algorithmic and high-frequency

trading, robo-advisors, and crowd-sourced and peer-to-peer funding. We will assess to what degree the modern developments in fintech are merely a continuation of prior evolution, or are truly innovative and revolutionary.

### Studio work:

Throughout the course, students will work in small groups on studio projects analyzing a particular facet of FinTech and its disruptive qualities. The final product of this studio project will be a podcast. Some examples of possible studio project topics include:

- A comparison of cryptocurrencies – e.g. Bitcoin vs. Ethereum.
- A case study of the Bank of England Fintech Accelerator (or another “regulatory sandbox”), and how it has shaped the regulatory landscape.
- The “Bitcoin split” – what happened, how, and why?
- “Follow the money” – behind the scenes of a cross-border payment
- The feasibility of transitioning to a wholly digital US dollar.

This will, for sure, be a large endeavor, and one to which we will build up. We will, throughout the course, have intermediate activities and assignments due that are meant to help keep you on track for creating the final podcast. As examples, we will tour a podcast recording booth at the library, write the outline of a script, turn the outline into a rough draft, record a short 2-minute section of the script, provide and receive feedback from the class, etc. We will also listen to, discuss, and critique a lot of podcasts – the content, the argument, the production values, the aesthetics, the storytelling, etc. I will also, with the help of the library and other offices on campus, offer advice and guidance on the creative, technical, and practical aspects of writing and recording a podcast.

### Student responsibilities:

My expectations for students in this class are high. I expect students to prepare thoroughly, contribute to class discussions and debates, and to seek help when they need it.

- Classroom participation [25%] – The easiest way for you to do well in this class is to actively participate. Learning is not accomplished via osmosis; it requires costly effort. I provide incentives for effort by giving credit for participation in classroom discussions. The most important thing you can do in order to learn the material, and an easy way to earn participation credit, is to ask questions. Questions (and answers) are public goods, and as such are underprovided by the free market. Providing participation credit is intended to prevent this market failure. Please ask questions – if you are confused, I guarantee someone else is as well. Please let me know.
  - Skills/abilities learned: communication; team work; reflective and critical analysis
- Presentations [25%] – Our class offers opportunities for students to present individually or in small groups and to engage in debate on a topic of critical, real-world significance. These exercises require students to discover, define, and analyze issues and problems related to development and innovation in the financial system. You will be evaluated on your

knowledge of the subject matter, your analysis of the issue (including any use of data and theories discussed in class), and your ability to persuasively and clearly communicate the results of your investigation. The goal of these exercises is to get students from diverse disciplines to collaborate on substantial problems, and to work creatively towards a solution.

- Skills/abilities learned: transdisciplinary collaboration and communication; public speaking; identifying and addressing problems
- Midterm exam [10%] – There will be a take-home exam assigned on Wed March 21 that will require students to use the concepts discussed in class and apply them to a new situation. This is not merely a test of your knowledge – rather, it is a test of your ability to use what you have learned to critically analyze and address real-world issues.
  - Skills/abilities learned: analytical knowledge of political economy, finance, and fintech
- Studio project [40%] – Approximately one quarter of our class meetings will be devoted to your podcast project. The final recording will be due at the end of the semester. You will be graded on the content, creativity, and execution of your final submission, as well as the timely completion of all intermediate assignments.
  - Skills/abilities learned: data management; transdisciplinary collaboration and communication; research methods and analysis; script writing

### Policies:

*Accommodation* – Students with need of special accommodations due to a documented disability should provide the appropriate accommodation letter from Services for Students with Disabilities by Monday, January 29.

*Behavior* – Very simply, your actions cannot negatively impact or interfere with the learning opportunities of other students. Please be courteous.

*Academic integrity* - The undergraduate Honor Code pledge that each member of the university community agrees to abide by states:

“As a Hokie, I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.”

Students enrolled in this course are responsible for abiding by the Honor Code. A student who has doubts about how the Honor Code applies to any assignment is responsible for obtaining specific guidance from the course instructor before submitting the assignment for evaluation. Ignorance of the rules does not exclude any member of the University community from the requirements and expectations of the Honor Code. For additional information about the Honor Code, please visit: <https://www.honorsystem.vt.edu/>

## Readings:

There is no required textbook for this class. Instead, readings for each module will consist of selections from books, academic articles, and news articles (with the odd video thrown in for good measure).

Depending on your background, however, you may wish to take a look at the following three books which provide historical context on the development of economic thought. The theories they discuss provide the lens through which we will cast modern economic and financial developments.

- Heilbroner, R. (1999) "[The Worldly Philosophers: The Lives, Times and Ideas of the Great Economic Thinkers](#)," 7<sup>th</sup> Ed.  
Kocka, J. (2016) "[Capitalism: A Short History](#)"  
Kurz, H. (2016) "[Economic Thought: A Brief History](#)"

## Key:

- [B] Book  
[A] Academic article  
[P] Podcast  
[V] Video  
[N] News/popular press article

## Module 1: Cryptocurrencies and the blockchain

- [A] Nakamoto (2009), "[Bitcoin: A Peer-to-Peer Electronic Cash System](#)"  
[A] Brito & Castillo (2013), "[Bitcoin: A Primer for Policy Makers](#)"  
[A] Wright & De Filippi (2015) "[Decentralized Blockchain Technology and the Rise of Lex Cryptographia](#)"  
[A] Dourado & Brito (2014), "[Cryptocurrency](#)," from the New Palgrave Dictionary of Economics  
[A] Bohme, Christin, Edelman, and Moore (2015) "[Bitcoin: Economics, Technology, and Governance](#)"  
[A] Barrdear & Kumhof (2016) "[The Macroeconomics of Central Bank Issued Digital Currencies](#)"  
[A] Mills *et. al.* (2016) "[Distributed Ledger Technology in Payments, Clearing, and Settlement](#)"  
[A] Gandal *et. al.* (2017) "[Price Manipulation in the Bitcoin Ecosystem](#)"  
[V] "[Blockchain 101 – A Visual Demo](#)"  
[P] "[Tales from the Crypto: Bitcoin, Blockchain, and the Future of Money](#)," a podcast from 1A  
[P] "[Bitcoin Losers](#)," "[The Invisible Plumbing of our Economy](#)," and "[A Giant Stone Coin at the Bottom of the Sea](#)" from the [Planet Money](#) podcast

- [P] [“Crypto 101: Everything You Need to Know about Bitcoin, Ethereum, Blockchains, ICOs, and More”](#) and [“How to Explain Cryptocurrencies and Blockchains to the Average Person”](#) and other podcasts from [Unchained](#)
- [P] [“Hash Power,”](#) from the [Invest Like the Best](#) podcast
- [P] [“The Quiet Master of Cryptocurrency – Nick Szabo,”](#) a podcast by Tim Ferriss
- [P] [“The Blockchain, in Congress,”](#) [“Banking on the Blockchain,”](#) and [“Blockchain vs./and Bitcoin,”](#) all from the [a16z](#) podcast from Andreessen Horowitz
- [N] [“What is Blockchain used for besides Bitcoin?”](#) Forbes
- [N] [“Blockchain use cases”](#) IBM
- [N] [“Bitcoin and Bubbles”](#) from John Cochrane’s *Grumpy Economist* blog

Module 2: A historical perspective on financial innovation

- [B] Goetzman [“Money Changes Everything: How Finance Made Civilization Possible”](#)
- [B] Ferguson, N [“The Ascent of Money: A Financial History of the World”](#) (*Note: you didn’t hear it from me, but there is a video based on this book available on YouTube – the book is better, but the video is adequate*)
- [B] Davies, Glyn [“A History of Money: From Ancient Times to the Present Day”](#); online [here](#)
- [N] [“The Island of Stone Money”](#) from *Planet Money*

Module 3: more fintech

- [A] Kirilenko & Lo (2013) [“Moore’s Law versus Murphy’s Law: Algorithmic Trading and Its Discontents”](#)
- [N] The Economist survey [“The disruption of banking”](#)
- [B] Schumpeter [“Capitalism, Socialism and Democracy”](#)

## Podcast project

The word “podcast” is a portmanteau formed by combining the words “iPod” (a device that is already out of date!) and “broadcast”. It refers to an episodic series of digital audio files to which users listen by downloading or streaming. Students will form groups of 3 or 4 to work collaboratively on creating a podcast episode about a particular fintech topic of their choice (approved by me). Once the term is over, I will host the series on the Global Forum’s website for the world to consume.

## Requirements:

1. Approximately 15 minutes of content.  
[NOTE: This is a lot!!!]
2. All group members must speak for a *significant amount of time*
3. Must have at least one guest – could be an entrepreneur, academic expert, business person, etc.
4. Your podcast must contain original material – i.e. it cannot consist entirely of summaries of other peoples’ work

## Intermediate assignments (dates subject to change):

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|------|--|
| 2/7  | Groups and topics determined   |
| 2/14 | One-page summary of topic – why it’s interesting, what we already know, who are the relevant actors, etc. (also, happy Valentine’s Day!) |
| 2/26 | List of 4 possible interviewees, with contact info   |
| 2/28 | List of 5 questions  |
| 4/2  | Outline of script – 2 pages max  |
| 4/11 | Interviews conducted and (roughly) edited  |
| TBA  | In-class analysis of interview recordings  |
| 4/16 | Rough draft of script  |
| 4/23 | Record a 2 minute section of script; analyze in class  |
| 5/9  | Podcasts due   |