

University of Missouri - St. Louis
Course Syllabus
FIN 3586 Essentials of FinTech
Spring 2019 (8W2: March 18 - May 18)
T R 6:00 - 8:30 p.m. Anheuser-Busch Hall 001

Professor Yiuman Tse
Office: AB Hall 229
Phone: 314 516 6828
Email: tseyi@umsl.edu
Office Hours: Mon to Thu 5:30 - 6:00 pm

Course Description: Fintech (or financial technology) is one of the most fast-moving industries. The applications of fintech go over different areas in investments and financial institutions. The course introduces students to the major topics of Fintech, including Blockchain, Cryptocurrencies, FinTech Credit, Big Data, Machine Learning, Neural Network, Robo Advisers, and Algorithmic Trading.

Prerequisites: A minimum campus GPA of 2.0 and Finance 3500

Class Attributes: Junior & Senior Level, College of Business

Credits: 3

Text: Lecture notes posted online

References: *Bitcoin and Cryptocurrency Technologies* bitcoinbook.cs.princeton.edu
An Introduction to Statistical Learning www-bcf.usc.edu/~gareth/ISL/

Programming Languages: Python www.python.org/downloads and R www.r-project.org
www.anaconda.com/distribution
Knowing how to code can help, but previous knowledge in coding is not required.

Grade:	Exam I (April 11 Thu)	.25
	Exam II (May 2 Thu)	.25
	Exam III (May 14 Tue)	.30
	Final Project (May 16 Thu)	.10
	Class Participation, homework, quizzes etc.	.10+

No make-up exams will be given and late assignments are not accepted. All exams are closed book. Students at the University of Missouri-St. Louis are expected to exhibit the highest standards of academic integrity. Any form of cheating and plagiarism in the exams, quizzes, and final project will earn you a failing grade for the entire course.

Class Schedule (Subject to Change):

Weeks 1 to 3

- Introduction to Blockchain, Digital Signature, and Cryptography
- Crypto-currencies and Smart Contracts
- Crowdfunding and P2P lending
- Exam I

Weeks 4 to 6

- Linear Regression and Logistic Regression
- Introduction to Machine Learning and Neural Net
- Robo Advisor
- Market Microstructure
- Algorithmic Trading and High-Frequency Trading
- Exam II

Weeks 7 to 8

- Overview of FinTech topics covered in the CFA (Chartered Financial Analyst) and FRM (Financial Risk Manager) exams
 - ◆ Fintech in Investment Management (CFA Level I)*: Big Data, Artificial Intelligence, and Machine Learning; Fintech Applications to Investment Management and Distributed Ledger Technology
 - ◆ Algorithmic Trading and High Frequency Trading (CFA Level II): Types of execution algorithms and high-frequency trading algorithms; market fragmentation and its effects on how trades are placed; the use of technology in risk management and regulatory oversight; issues and concerns related to the impact of algorithmic and high-frequency trading on securities markets
 - ◆ Machine Learning (CFA Level II): supervised and unsupervised machine learning; machine learning algorithms used in prediction, classification, clustering, and dimension reductions; steps in model training
 - ◆ FinTech credit: Market structure, business models and financial stability implications.” BIS—Committee on Global Financial Systems, May 2017 (FRM)
- Exam III (cumulative) and Final Project

*Fintech in Investment Management may be covered in FIN 3524.