

FINTECH (FTEC)

FTEC 403. Corporate Financial Technology. 3 Units.

This course is focused on the many aspects of the development in Financial Technology from recent notable successes to the current edge and thoughts about the future. Topics covered will include "FinTech" Applications, Incubators and Angels, Block Chains, Crypto-currencies, Crowdfunding, and Payment Schemes. Topics can change from semester to semester, in tune with changing technology. Offered as BAFI 403, FNCE 403 and FTEC 403.

FTEC 411. Handling Financial Big Data with Python. 1.5 Unit.

Python has emerged as the preferred language for building Artificial Intelligence models, a key enabler technology in Fin Tech. Accordingly, Python will also be the language that relevant FinTech courses in our program may employ. This preparatory course introduces participants to the basics of the Python programming language. By carefully choosing examples and case studies from the field of Finance, this course also provides students an early experience of how Python is used in the Finance industry. Offered as FNCE 411 and FTEC 411.

FTEC 412. Algorithmic Trading. 3 Units.

Finding the right algorithm to automatically and successfully trade in financial markets is the holy grail in finance. Not too long ago, Algorithmic Trading was only available for institutional players with deep pockets and lots of assets under management. Recent developments in the areas of open source, open data, cloud computing and storage, as well as online trading platforms, have leveled the playing field for smaller institutions and individual traders - making it possible to get started in this fascinating discipline being equipped with a modern notebook and an Internet connection only. Coding experience required or consent of instructor required. This course aims to: - Trace the evolution of quantitative trading strategies, - Expose students to the landscape of different market datasets (e.g., Alpha Vantage), - Discuss linear regression models and logistic regression models, - Introduce select machine learning techniques, - Evaluate the performance of these trading strategies, - Provide an introduction to textual analysis Offered as BTEC 412, FNCE 412, and FTEC 412.

FTEC 414. Banking and RegTech. 3 Units.

The FinTech revolution is creating significant disruption to the traditional processes of managing and regulating banks. FinTech is also changing the way financial services and products are delivered. Investors still pour billions of dollars into new FinTech startups each year. Some commentators foresee a revolution in finance, where there will be no need for brick and mortar banks, or even physical money itself. The reality is likely to be a more gradual adoption and integration of innovative technology and mobile applications into the existing financial system. The big financial institutions are not going to go away. They will adapt. This course will: -Enable students to critically examine new Fin Tech services within the context and framework of traditional money, banks, and regulation. -Understand, assess and forecast FinTech's impact on banking. This is particularly important because proper management and oversight of financial institutions is essential to the efficient operation of the economy. -Explore RegTech and the various channels through which RegTech adds value to financial institutions. Offered as FNCE 414 and FTEC 414. Prereq: For FinTech Certificate students only.

FTEC 415. FinTech and Entrepreneurship. 3 Units.

Globally, the number of FinTech unicorns is growing. FinTech unicorns are start-ups that are privately owned and whose valuation exceeds \$1 bn. In this course, students will take on the role of a FinTech entrepreneur and learn how to: -Identify new opportunities, -Design new products, and -Evaluate the product-market fit. The course also introduces the various financing options that are available to a Fin Tech start-up at various stages of its lifecycle. Offered as FNCE 415 and FTEC 415.

FTEC 416. Managing Massive Financial Datasets. 1.5 Unit.

Several key breakthroughs in the field of banking and finance have been made on the basis of analyzing massive data sets. The goals of this course are to: - Familiarize students with key technologies used in organizing, accessing and manipulating big data in finance. - Expose students to basic platforms such as Hadoop, and to data storage techniques. - Demonstrate the power of data visualization for financial problems. Offered as FNCE 416 and FTEC 416.

FTEC 433. Quantitative Risk Modeling. 3 Units.

This course is designed to help students learn quantitative models for estimating risk in various financial settings for different types of financial institutions (banks, hedge funds, and others). It is a very hands-on course where students will become familiar with several state-of-the-art quantitative risk models as well as their detailed implementation procedure in the real world. The course uses several in-class Excel exercises to illustrate the models as well as their practical implementation using real financial data. Offered as BAFI 433 and FNCE 433 and FTEC 433 Prereq: Full time MBA STEM track and MBAC 504 and MBAC 505.

FTEC 460. Investment Strategies. 3 Units.

This course provides a broad survey of some of the main strategies used by hedge funds today. Through exercises and projects, the hedge fund strategies will be presented using real data. Students will learn to use a methodology referred to as "back testing" in order to evaluate hedge fund strategies. The course will also cover institutional details related to short selling, liquidity, margin requirements, risk management, and performance measurement. Since hedge funds today use advanced modeling techniques, the course will require students to analyze and manipulate real data using mathematical modeling. The objective of the course is for students to gain practical knowledge about creating, back-testing, and implementing hedge fund trading strategies. Offered as BAFI 460 and FNCE 460. Prereq: Full time MBA STEM track and MBAC 504 and MBAC 505.

FTEC 493. Blockchains, Cryptocurrencies, and Cryptoventures. 3 Units.

It behooves today's business leaders to be well acquainted with blockchain technologies and AI, two seemingly disparate technologies that have the potential to fundamentally disrupt a wide range of businesses. The popularity of blockchain technologies has increased exponentially since the release of bitcoin in 2009. While bitcoins garnered a lot of attention during the initial days, the focus has shifted over time to the underlying technology: blockchain. This wildly innovative technology has made possible tasks that were hitherto deemed implausible: validate ownership in a digital asset, verify the true state of a transaction without relying on a costly intermediary etc. Accurate predictions and sound judgements are two critical ingredients of any decision making process. While the jury is still out on whether algorithms can make sound judgements, recent developments in a field called machine learning (and its sub-field, deep learning) have led to dramatic improvements in the accuracy of predictions made by these algorithms. Significantly, this gain in accuracy has been accompanied by a reduction in overall costs. These in turn have spurred the recent interest in AI. Organizations that have enabled AI at the enterprise level appear to be making more informed decisions and innovating new products. In this course, we will unpack these technologies and examine a wide range of relevant business use cases. Our objective is to provide a practical introduction to these key technologies and their business implications. We focus on business perspectives, rather than on the technical dimensions. Fittingly, this course is open to all graduate students of Weatherhead School (MBA and all specialty Masters). Students are not expected to have any specific programming background; however, a basic understanding of statistics is required to better appreciate the discourse on Artificial Intelligence. Offered as BTEC 493, FNCE 493 and FTEC 493. Prereq: For FinTech certificate students only.

FTEC 494. Artificial Intelligence for Financial Modeling. 3 Units.

This is a hands-on course on Artificial Intelligence (A.I.) where the emphasis is not only on understanding the theoretical underpinnings of various AI models but also on building, evaluating, and critiquing A.I. models as they apply to the finance industry. This course begins with an introduction of Machine Learning models; various key ideas such as bias-variance tradeoff, cross-validation, regularization techniques are introduced with relevant examples from Finance. The course then proceeds to discuss Artificial Neural Networks and its relevance to Deep Learning. Foundational ideas such as back-propagation are discussed in sufficient detail; we also lay a lot of emphasis on evaluating the performance of all these models. A key objective of this course is help students build cutting-edge A.I. models that are ready for prime time, i.e., real-life applications. Fittingly, we work with several real-life datasets and case studies from banking and finance. We will work with three case studies, each of which span multiple sessions. -In the first case study, students use Machine Learning algorithms to understand how imbalanced datasets are handled in real-life. -In the second study, students use time series data and learn not only about the power of regularization techniques but also to highlight the prominence of A.I. in financial markets. -In the third case study, students learn how to use cutting-edge Deep Learning models to extract sentiments from disparate news sources; these are in turn used to generate trading strategies. By contrasting the effort that goes into and the payoff obtained from Machine Learning and Deep Learning models, students gain an intuitive appreciation of both these classes of models. Offered as BTEC 494, FNCE 494 and FTEC 494.