THE OHIO STATE UNIVERSITY

# Instructor:

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Please email to arrange an appointment

# Class Meeting Schedule:

**Nov-2, Nov-9, and Nov-16, 10AM – 6PM, Online.**

# Course Materials / Software:

The course is taught through lectures, case studies, and some selected articles. There is no required textbook, as there is not yet a comprehensive textbook available in this field. There will be required readings assigned in preparation for each class. The readings will be available for download on Carmen.

The **required HBS cases** are available online. In order to purchase the cases, the students need to access the Harvard Business Publishing website at https://hbsp.harvard.edu/import/1230871 and click the Purchase Course button.

Additional articles and other materials will be posted directly to the Carmen website.

Finally, we will have hands-on data analysis exercises using the Orange data mining software, which provides an open source machine learning and data visualization toolbox. The assignments may require using basic statistical tools, but programming skills are not required. Students will be given the opportunity to acquire required skills from online tools and supplied materials.

# Course Description:

The course provides an overview of the most recent technological advances that are radically changing the financial services industry. Technological breakthroughs offer new ways for people to save, invest, borrow, and transact. We will analyze how new technologies create value in the financial industry, from reducing unit cost, increasing transparency, increasing competition, creating network effects, leveraging economies of scales, and lowering asymmetric information. We will also study the competitive landscape and the market opportunities and threats for incumbents and new entrants.

The course is divided into three modules. Module 1 will provide an overview of the FinTech industry; Module 2 will focus on distributed ledgers, blockchains, initial coin offerings (ICOs), and cryptocurrencies; Module 3 will analyze application of artificial intelligence and machine learning to

the finance industry, from credit scoring models in marketplace lending and crowdfunding, to algorithmic trading and robo-advising. Finally, module 4 will concentrate on other topics in Fintech.

# Course Learning Outcomes:

By the end of this course, students should successfully be able to:

- Have a deep understanding of the FinTech space and technological advances in the financial sector.
- Understand the blockchain technology and its applications, including cryptocurrencies.
- Develop a high-level understanding of big data analyses and machine learning and their applications in finance.

# How This Course Works:

**Credit hours and work expectations:** This is a one-and-a-half credit hour course taught in half a semester. According to Ohio State policy, students should expect around an average of 3 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 6 hours of homework (reading and assignment preparation, for example).

**Attendance and participation requirements:** Your attendance is based on your in-person and online participations in our in-person and zoom meetings.

Anything mentioned in lecture videos or live classes, assignments, data analysis exercises, during cases, or by guest speakers is "fair game" for exams. All exams are the property of the instructor. The exams should be taken individually without any assistance.

# Course technology:

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the Ohio State IT Service Desk. Standard support hours are available at ocio.osu.edu/help/hours, and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** ocio.osu.edu/help
- **Phone:** 614-688-4357(HELP)
- **Email:** servicedesk@osu.edu
- **TDD:** 614-688-8743

**Baseline technical skills for online courses**

- Basic computer and web-browsing skills
- Navigating Carmen: for questions about specific functionality, see the Canvas Student Guide.

**Required Technology skills specific to this course**

- CarmenZoom virtrual meetings
- Recording a slide presentation with audio narration
- Recording, editing, and uploading video

**Required equipment**

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed and tested
- Microphone: built-in laptop or tablet mic or external microphone
- Other: a mobile device (smartphone or tablet) or landline to use for BuckeyePass authentication

**Required software**
- [Microsoft Office 365:](#) All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Full instructions for downloading and installation can be found [at go.osu.edu/office365help.](#)

**Carmen access**

You will need to use [BuckeyePass](#) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:
- Register multiple devices in case something happens to your primary device. Visit the [BuckeyePass - Adding a Device](#) help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the [Duo Mobile application](#) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and IT support staff will work out a solution with you.

# Grading and Evaluation:

- **Independent Work ( 🛉 ):** Strictly non-collaborative, original-individual work.  You may discuss this assignment only with your instructor. Discussions with other individuals, either in person or electronically, are strictly prohibited.
- **Collaboration Required (🛉🛉):** An explicit expectation for collaboration among students either in-class or outside (i.e. group work).

The final course grade will be computed according to the following:

| Assignment Name | Points / Weight | Assignment Type |
|---|---|---|
| Homework Assignments | 40 | 🛉🛉 |
| Class Preparation and Participation | 10 | 🛉 |
| Final Exam | 50 | 🛉 |
| **TOTAL COURSE POINTS** | 100 | |

# Course Assignments and Exams:

The assignments may be done in groups of up to three students (but no more than three students). Assignments are due at the beginning of the denoted class, with a 15% penalty for each calendar day turned in late.

Case material is "fair game." All students are required to read the cases individually, even those that are used in group assignments. You should be prepared to answer reasonable questions from case studies in class and on the exam.

The final exam is cumulative and covers all material included in the course. The exam will be 80 minutes, online, and the exact time is TBD.

The final exam cannot be rescheduled except under cases of extreme hardship. In such a case you should notify me in advance of the date of the final exam. All grade appeals must be made within one week of the return of the assignment or exam. Grade appeals will not be permitted after this one-week deadline has passed.

# Tentative Course Schedule:

| Financial Technology | | | |
|---|---|---|---|
| **Section** | **Module** | **Topic** | **Assignments** |
| 1 | Fintech Overview | The Past, Present, and Future of Technology and Finance | |
| 2 | Blockchain, Cryptocurrencies, and Decentralized Finance (DeFi) | Cryptography and Distributed Ledger Technology | |
| 3 | | Mechanics of Bitcoin | |
| 4 | | Blockchain Applications and Cryptocurrencies | |
| 5 | | Cryptocurrency Market, Trading Environment, and Other Topics | HW #1 |
| 6 | | Class Presentation on Cryptocurrencies and DeFi platforms | |
| 7 | Machine Learning and Finance | Intro to Machine Learning and Its Applications in Finance | HW #2 |
| 8 | | Linear Machine Learning and Intro to Orange3 | |
| 9 | | Credit Modeling, Logistic Regression, and Random Forests | HW #3 |
| 10 | | Accuracy of Classification Models; Marketplace Lending | |
| 11 | | Quantitative Investing, Reducing Complexity | HW #4 |
| 12 | | Textual Analysis | |

# Safety and health requirements:

All teaching staff and students are required to comply with and stay up to date on all University safety and health guidance, which includes wearing a face mask in any indoor space and maintaining a safe physical distance at all times. Non-compliance will be warned first and disciplinary actions will be taken for repeated offenses.

# Academic integrity:

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's Code of Student Conduct (https://trustees.osu.edu/bylaws-and-rules/code) and this syllabus may constitute Academic Misconduct (https://oaa.osu.edu/academic-integrity-and-misconduct)

The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: Any activity that tends to compromise the academic integrity of the University, or subvert the educational process. Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's Code of Student Conduct is never considered an excuse for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's Code of Student Conduct (i.e., committed academic misconduct), the

sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

## <u>Disability Services</u>:

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue

## <u>Copyright</u>:

© The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.