

# Finance 372 – Quantitative Investment Management

*Modified 2/23/21 after Winter Storm Uri - modifications in blue*

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<b>Office Hours</b>	Tuesdays 1:00–2:00pm, and by appointment, via Discord
<b>Discord Channel</b>	<a href="https://discord.gg/f3yVCEr4XA">https://discord.gg/f3yVCEr4XA</a>
<b>TAs</b>	Jangwoo Lee and Thomas Lee
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<b>Unique #</b>	03725

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## Course Objectives

Today’s asset management industry uses quantitative approaches to evaluate and implement investment strategies. This course presents the economic, statistical, and computing frameworks behind these quantitative approaches, as well as the empirical evidence on their performance in multiple asset classes. You will also learn to apply the quantitative big-data approach by developing, pitching, and backtesting an original trading strategy.

## Prerequisites

Finance 367. While we will use Python to build and analyze investment strategies, no prior knowledge of Python is required for the course. I will cover some basic Python programming in the course and provide template code for the canonical strategies to help you develop and critically analyze investment ideas.

## Hybrid Delivery

You are required to attend class from 3:30-4:45pm on Tuesdays and Thursdays. You may attend class in person in UTC 3.132 wearing a mask and sitting with appropriate spacing, or via a synchronous Zoom call occurring at the same time. Synchronous attendance is required to enable class participation for everyone.

## Course Requirements and Grading

Your grade in the course will be determined by a weighted average of your scores on homework assignments, a midterm exam, a final project, and participation. The weights I will use are:

Homework	25%
Midterm Exam	25%
Final Project	40%
Participation	10%

Letter grades for the course will be based on your ranking in the course relative to other students. Based on guidelines from the BBA Program Office for elective courses, around 65% of the grades will be As, 30% Bs, and 5% Cs or below. Plus/minus grades will be assigned.

There is no opportunity in this course to do “extra credit” work. Your grade will be determined solely by the components listed above. If you are taking the course pass/fail you must complete all assignments and take the midterm to pass the course.

## Description of Requirements

### Homework

There will be three difficult homework assignments for the course, each done individually and requiring you to program your solution in Python using Jupyter Lab. For each homework you will also be required to watch videos explaining how to use Python. You will submit your solution as a PDF output of your Jupyter Lab notebook. Each assignment will have equal weight in your grade.

**Start these assignments early.** My guess is they will take you between 10 and 20 hours each, so you will be very unhappy and unsuccessful if you try to start them the day they are due.

### Midterm

We will have a Midterm exam on **Tues 3/23** during our normal class time, delivered remotely via Canvas. Proctoring will be via Zoom. Unless you have a documented excuse, you must take the exam at this time and have your Zoom video enabled. Please put this date in your calendars now.

### Final Project

The course will culminate in a final project, to be done individually or in a group of at most three students, in which you invent, test, and present a quantitative trading strategy. Your grade will **not** depend on how successful the strategy is in your backtest, but rather on how well you applied the tools from the course to develop a plausible initial hypothesis, rigorously test that hypothesis using historical data, and present the results both verbally and in writing.

### Rules

In addition to the general Academic Integrity rules stated below, there are also course-specific rules. Homework assignments and midterm exam must be done individually. The final project can be done in groups of up to three. On all assignments, including the midterm, you are allowed to use textbooks, data sources, your computer, and your notes. For the midterm, you are not allowed to discuss the questions with or seek assistance from anyone but me or the TAs. For homework and the final project, you can seek assistance from other students and resources such as Stack Overflow as long as you or your group write the JupyterLab Notebook by yourselves and link to any web resources you used in the process.

### Major Deadlines<sup>1</sup>

Date	Time (CST)	Deliverable
Wed 2/3	11:59pm	Homework 1
Wed 3/3	11:59pm	Homework 2
Tue 3/23	In-class	Midterm
Tue 3/30	11:59pm	Final project group selection
Wed 4/7	11:59pm	Homework 3
Thu 4/15	In-class	Project hypothesis presentation
Fri 4/30	11:59pm	Final project draft
Thu 5/4	In-class	Final project presentation
Thu 5/6	In-class	Final project presentation
Fri 5/7	11:59pm	Final project writeup

<sup>1</sup>Subject to change at my discretion. I will announce any changes two weeks or more in advance.

## Participation

You are expected to attend class, arrive on time, and act in a professional manner. Phones must be left alone during class because they distract you, your neighbors, and me. Laptops and tablets are allowed but must be used only for note taking and otherwise engaging with course material. If you have to leave class early, please let me know in advance and sit near the exit so the disruption you cause is minimal. Otherwise, do not pack up until class ends. **The same rules apply if you're attending via Zoom** – have your video on if at all possible, focus on the call instead of your phone/browser, and minimize distractions around you.

Your participation grade will reflect whether you are a ‘good citizen’ who follows these rules and contributes positively to the course. Examples of good course citizenship include consistent attendance, asking questions during class or after, demonstrating passion for the course material, and contributing to the Discord channel. Examples of poor course citizenship include focusing on grading minutiae instead of learning, distracting the class by violating the above rules, using inappropriate Zoom backgrounds, spamming the Discord channel, etc.

## **Materials**

### Lecture Notes

I will provide a handout each class day with copies of the slides I use. I will also put electronic copies on the course website, but this does **not** mean attendance is optional. The lecture notes will not be nearly as valuable without my accompanying explanation.

### Textbooks

I will regularly assign readings from three different textbooks. I will provide PDF copies of the assigned portions, so purchasing copies is optional.

- *Efficiently Inefficient* by Lasse Heje Pedersen, ISBN 0691166193
  - This one will be the most-frequently assigned, and is also the cheapest
- *Alphanomics: The Informational Underpinnings of Market Efficiency* by Charles M. C. Lee and Eric C. So, ISBN 1601988923.
- *Asset Management: A Systematic Approach to Factor Investing* by Andrew Ang, ISBN 0199959323.

### Computer

You will need a laptop or desktop computer to code the assignments for the course. It can be a Windows, Mac, or Linux machine. I highly recommend a second monitor to go with your main monitor or laptop screen. This will allow you to code while simultaneously seeing tutorial videos, a video office hour, or web searches on the second monitor. A full keyboard and mouse will also likely be faster than a laptop keyboard and trackpad.

## **Communication via Discord**

Communication related to the course, including office hours, will be done via a ‘Discord Server’, a chatroom allowing text, voice, and video. This server will allow students working on their assignments – particularly when struggling with coding – to ask their questions publicly and get quick

answers from other students, TAs, and professors. It will also allow you to see what questions other students are asking and the answers they get, find partners for the final project, discuss current events related to quant investing, and pitch new ideas.

Please ask all questions about course material and assignments via Discord instead of e-mailing me or the TAs. For personal questions you'd rather not share with the class, email us or send a private Discord message.

### **Students with Disabilities**

Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 512-471-6259, <http://diversity.utexas.edu/disability/>.

### **Religious Holy Days**

By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

### **Policy on Scholastic Dishonesty**

The McCombs School of Business has no tolerance for acts of scholastic dishonesty. The responsibilities of both students and faculty with regard to scholastic dishonesty are described in detail in the BBA Program's Statement on Scholastic Dishonesty at <http://my.mcombs.utexas.edu/BBA/Code-of-Ethics>. By teaching this course, I have agreed to observe all faculty responsibilities described there. By enrolling in this class, you have agreed to observe all student responsibilities described there. If the application of the Statement on Scholastic Dishonesty to this class or its assignments is unclear in any way, it is your responsibility to ask me for clarification.

Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since dishonesty harms the individual, all students, the integrity of the University, and the value of our academic brand, policies on scholastic dishonesty will be strictly enforced. You should refer to the Student Conduct and Academic Integrity website at <http://deanofstudents.utexas.edu/conduct/> to access the official University policies and procedures on scholastic dishonesty as well as further elaboration on what constitutes scholastic dishonesty.

### **Campus Safety**

Please note the following key recommendations regarding emergency evacuation, provided by the Office of Campus Safety and Security. More info at: <https://preparedness.utexas.edu/>.

- Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings and assemble outside when a fire alarm is activated.
- Familiarize yourself with all exit doors of each classroom and building you may occupy.
- Students requiring assistance in evacuation should inform the instructor in writing during the first week of class.
- In the event of an evacuation, follow the instruction of faculty or class instructors.

- Do not re-enter a building unless given instructions by Austin or UT police or fire authorities.
- Behavior Concerns Advice Line (BCAL): 512-232-5050  
(or <https://operations.utexas.edu/units/csas/bcal.php>).
- Further information regarding emergency evacuation routes and emergency procedures can be found at: <http://www.utexas.edu/emergency>.