



# Course Code

## Quantitative Problem Solving

### Module 2, 2024-2025

#### Course Information

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**Instructor:**

Dr. Chase Coleman and Dr. Spencer Lyon

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Phone:

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Office Hour: Set up individual meetings

**Teaching Assistant:** *Xiao Dong*

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**Classes:**

Lectures: Day, Time

Venue: PHBS Building, Room

## 1. Course Description

### 1.1 Context

Course overview:

The course is open to Quantitative Finance students and students from other majors who possess necessary tools. The course will allow students to apply, and deepen their understanding of, the tools they learned in the QEF sequence and other classes by guiding them to solve a real-life problem with frontier tools.

Prerequisites:

Python programming skills and familiarity with tools in quantitative economics and finance.

(Instructors will assign QuantEcon lectures to clarify the background expected)

### 1.2 Textbooks and Reading Materials

The course will provide lectures from QuantEcon, and reading assignments given out by instructors.

## 2. Learning Outcomes

### 2.1 Intended Learning Outcomes

Learning Goals	Objectives	Assessment (YES with details or NO)
1. Our graduates will be	1.1. Our students will produce quality business and research-oriented documents.	YES via project

effective communicators.	1.2. Students are able to professionally present their ideas and also logically explain and defend their argument.	YES via project
2. Our graduates will be skilled in team work and leadership.	2.1. Students will be able to lead and participate in group for projects, discussion, and presentation.	YES via project
	2.2. Students will be able to apply leadership theories and related skills.	YES via project
3. Our graduates will be trained in ethics.	3.1. In a case setting, students will use appropriate techniques to analyze business problems and identify the ethical aspects, provide a solution and defend it.	No
	3.2. Our students will practice ethics in the duration of the program.	No
4. Our graduates will have a global perspective.	4.1. Students will have an international exposure.	YES via project
5. Our graduates will be skilled in problem-solving and critical thinking.	5.1. Our students will have a good understanding of fundamental theories in their fields.	YES via class and project
	5.2. Our students will be prepared to face problems in various business settings and find solutions.	YES via project
	5.3. Our students will demonstrate competency in critical thinking.	YES via project

## **2.2 Course specific objectives**

We aim to achieve these purposes:

1. The course will let students create products and outputs that show off their ability. It will help students' job placement on the market.
2. The course will help students start original research that embodies frontier methodology and knowledge. The projects can become the beginning and a part of their thesis.
3. The best individual projects will be put on the Sargent Institute website and will become cases in a Quantitative Economics and Finance textbook that Professor Sargent plans to write and publish with coauthors. Both students and our school will gain reputation.

## **2.3 Assessment/Grading Details**

The course is project based.

## **2.4 Academic Honesty and Plagiarism**

It is important for a student's effort and credit to be recognized through class assessment. Credits earned for a student work due to efforts done by others are clearly unfair. Deliberate dishonesty is considered academic misconducts, which include plagiarism; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; or altering, forging, or misusing a University academic record; or fabricating or falsifying of data, research procedures, or data analysis.

All assessments are subject to academic misconduct check. Misconduct check may include reproducing the assessment, providing a copy to another member of faculty, and/or communicate a copy of this assignment to the PHBS Discipline Committee. A suspected

plagiarized document/assignment submitted to a plagiarism checking service may be kept in its database for future reference purpose.

Where violation is suspected, penalties will be implemented. The penalties for academic misconduct may include: deduction of honour points, a mark of zero on the assessment, a fail grade for the whole course, and reference of the matter to the Peking University Registrar.

For more information of plagiarism, please refer to *PHBS Student Handbook*.

### **3. Topics, Teaching and Assessment Schedule**

The class will last two modules, to give students plenty of time to work on projects. At the beginning of the first module, the class will start with regular class meetings to clarify requirements and help students pin down the topics and appropriate tools. Once that is achieved, students' projects will become more individualized and therefore the class will continue with weekly individual meetings. Students will be required to submit a progress report each week before the meeting, and clarify questions they hope to ask by writing, together with slides that will become part of their presentation. Presentations will take place in the second half of the second module. Better works will be selected to be displayed in the Sargent Institute webpage.

During the first of these two modules we will give a series of lectures aimed at teaching the students how to identify, plan, execute, and deliver a great project. This will include discussions on how to frame research or project questions, some tools and techniques for effective collaboration and execution, and guidelines on how to present their output. During the module we will provide a few assignments that give students a chance to practice the concepts taught. We will also have assignments that will help the students discover and refine ideas for their project. The main deliverable at the end of the first module is a concrete proposal for a compelling project.

The second module will be dedicated to the students doing deep work on their projects, presenting progress, and receiving guidance/feedback. We will require students to present progress at a few discrete milestones during the module to make sure progress is consistent and student stay on track. These presentations will be a mixture of (1) presentations given to either Chase or Spencer in individual team meetings (2) presentations given to the entire class (3) written reports or slides prepared for Chase and Spencer and (4) recorded video demonstrations of the project. After each check in, Chase and Spencer will provide feedback and guidance for how the project should be improved. The final deliverable for this project will be a Jupyter notebook that can be showcased on a PHBS website and a short (~5 minute) video of the students demonstrating their work.