



Course Information

Professor: Jake Zhao

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Office Hours: Monday and Thursday, 8:30am – 10:30am, Wednesday, 8:30am – 10:30am

Classes: Tuesday and Friday, 8:30am – 10:20am, Room 417

Teaching assistant: TBD

Office Hours: TBD

1. Course Description

1.1 Context

Course overview:

This introductory course focuses on using Python for data collection, processing, and analysis. It serves as the first step in a sequence of courses that culminates in advanced topics such as machine learning, neural networks, and deep learning. The primary goal is to build a strong foundation that will support students in mastering the more complex concepts introduced later in the series.

1.2 Textbooks and Reading Materials

Lecture notes, QuantEcon

All core and supplemental materials will be provided to students through the course management system (Course name: Data Skills 2026, Password: DS2026).

2. Learning Outcomes

2.1 Intended Learning Outcomes

| Learning Goals | Objectives | Assessment |
|---|--|---------------------|
| 1. Our graduates will be effective communicators. | 1.1. Our students will produce quality business and research-oriented documents. | Problem sets |
| | 1.2. Students are able to professionally present | Problem sets, class |

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| | their ideas and also logically explain and defend their argument. | participation, exams |
| 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. | Class participation |
| 4. Our graduates will have a global perspective. | 4.1. Students will have an international exposure. | Lectures, class participation |
| 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. | Lectures, problem sets, exams |
| | 5.2. Our students will be prepared to face problems in various business settings and find solutions. | Lectures, problem sets, exams |
| | 5.3. Our students will demonstrate competency in critical thinking. | Lectures, problem sets, exams |

2.2 Course specific objectives

This course is meant to provide a solid foundation for and develop students' interest in the further study of economics and finance. In addition, the analytical and computational methods learned in this class may aid students in thesis writing and future research in various topics related to economics and finance.

2.3 Assessment/Grading Details

| Component | Weight |
|--------------|--------|
| Attendance | 10% |
| Problem sets | 30% |
| Final exam | 60% |

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.

AI tools requirements:

Using AI tools to complete assignments or assessments without the approval of the course instructor will be regarded as an act of academic dishonesty. Depending on the severity of the situation, penalties will be implemented in accordance with the provisions of the Peking University Graduate Student Handbook.

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

3. Topics, Teaching and Assessment Schedule

Week 1: Introduction, python essentials

Week 2-3: Functions, object-oriented programming, numpy, matplotlib, Markov chains

Week 4-5: Pandas, pivot tables, merging, reshaping, groupby

Week 6: Probability and statistics

Week 7: Optimization

Week 8: Linear programming

Week 9: Quadratic programming, non-linear programming