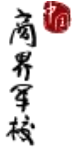




PHBS
北京大学汇丰商学院



Principles of Machine Learning

Module III, Academic Year 2025-26

Course Information

Instructor: Jian FENG, PhD, Assistant Professor of Finance, Peking University HSBC Business School

Office: PHBS Building, Room 649

Phone: 86-755-2603-4026

Email: jianfeng95@phbs.pku.edu.cn

Office Hour: TBA

Teaching Assistant: Haoxi Liang

Phone: 86-139-0282-2293

Email: haoxi.liang@stu.pku.edu.cn

Classes: Mar.2,5,9,12,16,19,23,26,30, Apr.2,8,9,13,15,16,20,23,27

Lectures: Mon & Thur 15:30-17:20

Venue: PHBS Building, Room TBA

Course Website:

No course website.

1. Course Description

1.1 Context

Course overview: This course introduces core principles and methods in statistical machine learning. Topics will include linear models, classification methods, resampling methods, model selection and regularization, tree-based models, etc. Students will learn the main algorithms, including the basic idea and underlying logic / mathematics, and discover their applications in Python.

Prerequisites: A preliminary understanding of Python programming and basic probability/statistics is recommended. Familiarity with linear algebra and basic calculus is helpful.

1.2 Textbooks and Reading Materials

Textbook

Gareth, J., Witten, D., Hastie, T., Tibshirani, R., & Taylor, J. (2023). *An introduction to statistical learning: With applications in python.*

Reference books, Reading Materials and Research Papers will be provided in class.

2. Learning Outcomes

2.1 Intended Learning Outcomes

Learning Goals	Objectives	Assessment (YES with details or NO)
1. Our graduates will be effective communicators.	1.1. Our students will produce quality business and research-oriented documents.	NO
	1.2. Students are able to professionally present their ideas and also logically explain and defend their argument.	NO
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. Performance of group projects will be evaluated by other groups and the course instructor.
	2.2. Students will be able to apply leadership theories and related skills.	
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.	NO
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. Understanding of machine learning algorithms and
	5.2. Our students will be prepared to face	

	problems in various business settings and find solutions.	ability to apply them in data work will be trained and evaluated.
	5.3. Our students will demonstrate competency in critical thinking.	

2.2 Course specific objectives

2.3 Assessment/Grading Details

Quizzes: 50%.

Take-home Coding Assignments: 20%.

Class Project: 30%.

Final grades will be awarded in letter grades (e. g. A+, A-, ..., D+, D, F). Percentage of the distribution of each letter grade is limited:

- (1) No more than 30% can receive A+, A and A minus;
- (2) No more than 90% can receive B and above.

Grade	GPA	Note
A+	4.0	优秀/ Excellent
A		
A-	3.7	
B+	3.3	良好/ Good
B	3.0	
B-	2.7	
C+	2.3	一般/ Average
C	2.0	
C-	1.7	
D+	1.3	及格/ Fair
D	1.0	
F	0	不及格/ Fail

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

Course arrangements are tentative and depend on progress.

Week 1: Introduction of statistical learning, including Python language and basic data work.

Weeks 2: Linear regression models, classification methods.

Weeks 3-4: Resampling, model selection, and regularization.

Weeks 5-6: Generalized linear models and tree models

Weeks 7-8: Introduction of NN; advanced topics.

Week 9: Summary.