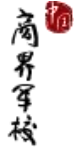




# PHBS

北京大学汇丰商学院



## Course Code Math II Module 3, 2026

### Course Information

---

**Instructor: Fan Wu**

Office: PHBS Building, Room 749

Phone: 86-755-2603-2740

Email: fanwu@phbs.pku.edu.cn

Office Hour:

**Teaching Assistant:**

Phone:

Email:

**Classes:**

Lectures: Tue & Fri 10:30-12:20

Mar.3,6,10,13,17,20,24,27,31, Apr.3,7,10,14,17,21,22,24,28

Venue: PHBS Building, Room

## 1. Course Description

### 1.1 Context

Course overview: This is an evolving course that is designed to introduce you to some fundamental theorems that are useful in economics. It is still under development. I shall adjust the content according to the feedback from students.

The first half of the course includes Lagrange multiplier theory, Implicit function Theorem, Envelop Theorem, increasing difference and comparative statics, lattice and comparative statics, Fenchel duality, fixed point theory, correspondence and Berge Maximum Theorem.

The second half is on real analysis. The focus is on the development of measure and integration theory, differentiation and integration, Hilbert spaces.

Prerequisites: Calculus, linear algebra

### 1.2 Textbooks and Reading Materials

Most lecture notes are from Kim Border's notes:

<https://healy.econ.ohio-state.edu/kcb/Notes/>

Real Analysis by Elias M. Stein / Rami Shakarchi

## 2. Learning Outcomes

### 2.1 Intended Learning Outcomes

<b>Learning Goals</b>	<b>Objectives</b>	<b>Assessment (YES with details or NO)</b>
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.	Yes. There will be a lot of proofs in this course, and you will be expected to prove things.
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.	No
	2.2. Students will be able to apply leadership theories and related skills.	No
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. The goal of this course is to present the useful results from analysis in a way that you understand their proofs and can use them in economics.
	5.2. Our students will be prepared to face problems in various business settings and find solutions.	No
	5.3. Our students will demonstrate competency in critical thinking.	Yes. There will be a lot of proofs in this course, and you will be expected to prove things.

## **2.2 Course specific objectives**

The goal of this course is to present the useful results from real analysis in a way that you understand their proofs and can use them in economics. There will be a lot of proofs in this course, and you will be expected to prove things. If you do not like proving theorems, you might not want to take this course.

## **2.3 Assessment/Grading Details**

The grade will be based on participation (30%), homework (10%), 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**

The first half of the course includes Lagrange multiplier theory, Implicit function Theorem, Envelop Theorem, increasing difference and comparative statics, lattice and comparative statics, Fenchel duality, fixed point theory, correspondence and Berge Maximum Theorem.

The second half is on real analysis. The focus is on the development of measure and integration theory, differentiation and integration, Hilbert spaces.

### **4. Miscellaneous**

**Any remarks that incite national division or propagate religion are strictly prohibited. Such violations will be treated with the utmost severity and constitute grounds for an immediate failing grade and potential expulsion from the university.**