

ECON4110: INTRODUCTORY MATHEMATICAL ECONOMICS

Fall 2021

Department of Economics
The Chinese University of Hong Kong

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- Lectures: Tue 2:30pm-5:15pm @ HYS G05
- Office Hour: TBA

Course Description: This course discusses useful tools in mathematical analysis and their applications to economics. Mathematical topics include tools that are widely used in economic theory, such as sets, functions, sequences, continuity, open sets, closed sets, compact sets, maximum existence theorem, separating hyperplanes, and fixed points. Economic topics include basic problems in the general equilibrium theory, such as preference, utility, demand, and competitive equilibrium. Student are assumed to be familiar with basic calculus and linear algebra.

Learning Outcomes: After completing this course, the students are expected to:

1. be familiar with basic results in mathematical economics;
2. be able to read papers in academic journals.

Textbook There is no required textbook for this course. The lecture is mainly based on lecture notes.

Assessment

- 20% Four Assignments
- 30% Midterm Examination
- 50% Final Examination

Exam Schedule There is NO make-up exam for the midterm (date TBA). For those who miss the midterm exam due to medical reasons, they need to present a Doctor's note, upon which the weight of midterm exam will be transferred to the final exam (date TBA).

Grade Descriptor:

- A Outstanding/Generally outstanding performance on all learning outcomes.
- A- Generally outstanding performance on all learning outcomes.
- B+ Substantial performance on all learning outcomes, OR high performance on some learning outcomes which compensates for less satisfactory performance on others, resulting in overall substantial performance.
- B Substantial performance on all learning outcomes, OR high performance on some learning outcomes which compensates for less satisfactory performance on others, resulting in overall substantial performance.
- B- Substantial performance on all learning outcomes, OR high performance on some learning outcomes which compensates for less satisfactory performance on others, resulting in overall substantial performance.
- C+ Satisfactory performance on the majority of learning outcomes, possibly with a few weaknesses.
- C Satisfactory performance on the majority of learning outcomes, possibly with a few weaknesses.
- C- Satisfactory performance on the majority of learning outcomes, possibly with a few weaknesses.
- D+ Barely satisfactory performance on a number of learning outcomes.
- D Barely satisfactory performance on a number of learning outcomes.
- F Unsatisfactory performance on a number of learning outcomes, OR failure to meet specified assessment requirements.

Course Outline:

1. Set, function, & preference
2. Sequence, limit, continuity, & utility representation
3. Consumer demand, exchange economy, & Walrasian equilibrium
4. Convex analysis, separating hyperplane theorem, & convex programming
5. Pareto efficiency, first welfare theorem, & second welfare theorem
6. Correspondence, maximum theorem, & existence of equilibrium
7. Quasi-linear model, uniqueness of equilibrium, & computation of equilibrium (if time permits)

Academic Honesty and Related Procedures:

Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at <http://www.cuhk.edu.hk/policy/academichonesty/>.

With each assignment, students will be required to submit a signed declaration that they are aware of these policies, regulations, guidelines and procedures.

- In the case of group projects, all students of the same group should be asked to sign the declaration, each of whom is responsible and liable to disciplinary actions should there be any plagiarized contents in the group project, irrespective of whether he/she has signed the declaration and whether he/she has contributed directly or indirectly to the plagiarized contents.
- For assignments in the form of a computer-generated document that is principally text-based and submitted via VeriGuide, the statement, in the form of a receipt, will be issued by the system upon students' uploading of the soft copy of the assignment.

Assignments without the properly signed declaration will not be graded by teachers.

Only the final version of the assignment should be submitted via VeriGuide.

The submission of a piece of work, or a part of a piece of work, for more than one purpose (e.g. to satisfy the requirements in two different courses) without declaration to this effect, shall be regarded as having committed undeclared multiple submission. It is common and acceptable to reuse a turn of phrase or a sentence or two from one's own work; but wholesale reuse is problematic. In any case, agreement from the course teacher(s) concerned should be obtained prior to the submission of the piece of work.