ECON 4999A Mechanism Design

Course Syllabus, Spring 2026

Department of Economics, HKUST

1. Course Information

- **Classroom:** Room 6555 (Lift 29–30)
- **Lecture Time:** Wednesdays & Fridays, 4:30–5:50 p.m.
- **Instructor:** Jinwoo Kim (jinwookim@ust.hk)
- **Office Hours:** Thursdays, 1:30–2:30 p.m.
- **TA:** Victor Yip (victory@ust.hk)
- **Class Website on Canvas:** https://canvas.ust.hk/courses/68130

2. Course Description

This course introduces the theory of mechanism design, which studies how to design new economic mechanisms—or reorganize existing ones—when competitive markets fail or are absent. We analyze how alternative mechanisms shape agents' incentives and welfare in key environments such as screening and contracting in principal–agent relationships, auctions, and matching markets.

While the course emphasizes the theoretical foundations of mechanism design, it also engages with real-world design problems in practical market settings and briefly discusses related empirical considerations.

3. Intended Course Outcomes

Upon successful completion of this course, students will be able to:

- Understand fundamental models of allocation and matching without transfers.
- Analyze incentive, efficiency, and fairness properties of allocation mechanisms.
- Compare deterministic and randomized allocation mechanisms and their welfare implications.
- Apply economic reasoning to real-world allocation problems, including matching and auction environments.

4. Lecture Materials

- There is no required textbook for this course; lecture notes will be provided through Canvas.
- As a supplementary reference, the following undergraduate-level book on mechanism (market) design may be useful: Guillaume Haeringer, *Market Design: Auctions and Matching*

5. Topics and Timeline

1. **Economics of Contracts: Screening** (4.5 weeks)
    - Week 1-2: Screening and monopolistic price discrimination
    - Week 3: Screening in regulation
    - Week 3-5: Screening in insurance markets (if time permits)
2. **Auctions** (5 weeks)
    - Week 5-6: Second-price and first-price auctions
    - Week 7-8: Revenue equivalence and optimal auction design
    - Week 9-10: Applications
3. **Matching** (3.5 weeks)
    - Week 10-11: Stable matchings
    - Week 11-12: Efficient matchings
    - Week 12-13: Applications: school choice

6. Teaching and Learning Approach

The course is lecture-based and focuses on rigorous economic modeling and analysis. Students are expected to actively engage with theoretical arguments and examples presented in class.

7. Assessment Scheme

7.1. Assessment Weightings

- Midterm Exam: 30% of final grade, 1hr and 20min (duration tentative)
- Final Exam: 70% of final grade, 2hrs (non-cumulative, duration tentative)

7.2. Grading and Exam Policy

- No make-up exams will be provided.
- Requests for grade corrections must be submitted within one week of score announcement.

7.3. Grading Rubrics

- Excellent Performance (A range): Students demonstrate a strong grasp of the course material and effective application of economic methods taught. They exhibit exceptional analytical skills and critical thinking skills. Consistently contribute to class discussion.
- Good Performance (B range): Students demonstrate a solid understanding of course materials, proficient use of economic methods taught. They show commendable analytical skills and effective critical thinking. Regular participation in class discussion.
- Satisfactory Performance (C range): Students demonstrate an adequate understanding of course material, and can apply economic methods taught to familiar problems. They display acceptable analytical skills and critical thinking in exams and participate in class discussion.
- Marginal Pass (D range): Students demonstrate basic understanding of course material, inconsistent use of economic methods taught. They show basic analytical skills and critical thinking in exams. Their participation in class discussions is inconsistent.
- Fail: Students demonstrates insufficient understanding of the course material and lacks the necessary problem-solving skills. They display limited ability to think critically or analytically and exhibits minimal effort towards achieving learning goals. Their participation in class discussion is minimal.

8. Course Policies

8.1. Academic Honesty and Integrity

Students are expected to adhere to the University's policies on academic honesty. Any form of plagiarism, cheating, or academic misconduct will be handled according to HKUST regulations.

8.2. Use of AI and Generative AI Tools

The use of AI or generative AI tools is permitted only to the extent explicitly allowed by the instructor. Students are responsible for ensuring that all submitted work reflects their own understanding and complies with academic integrity standards.