The Hong Kong University of Science and Technology

Department of Economics

UG Course Syllabus

Fall 2026-27

Introduction to Econometrics

ECON3334

4 credits

Prerequisite: one of ISOM 2500, MATH 2411, or MATH 3423

Teaching team

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Meeting times

Lectures: Wednesday and Friday, 16:30-17:50, CYG009B
Tutorial: Friday, 10:30-11:20, LSK1011

Course Description

This is an introductory course in econometrics. Econometrics combines economic questions, statistical models, and data. The semester goal is to acquire enough knowledge and skills to understand Burlig, Jina, and Sudarshan, The Value of Clean Water: Experimental Evidence from Rural India, American Economic Review 116 (3), 2026, 1148-1187, and to reason about a given replication of that paper. The first lectures present the paper's question, design, and findings without estimators or other technical detail. The rest of the course builds the methods needed for that goal: probability, statistics, linear regression, and instrumental variables, with applications to experimental design and instruments.

Instruction uses lectures, a weekly tutorial with quizzes, in-class questions, and an individual replication project. The project uses a given Python pipeline that reproduces selected tables and figures from the paper. Students implement additional tasks in each iteration beyond replication. They submit that work as a pull request on GitHub. The teaching team supplies the pipeline.

School Intended Learning Outcomes

This course uses the School of Business and Management undergraduate program learning goals and objectives. The goals and objectives below are those published by the School.

Goal 1: Graduates will be critical and creative thinkers who make effective decisions supported by appropriate analytical techniques.

Graduates will:

1.1 Analyze and solve problems using appropriate analytical techniques.

1.2 Demonstrate proficiency in using IT applications in business and management.

1.3 Locate, gather, organize and evaluate information using appropriate information technology and systems.

Goal 2: Graduates will demonstrate effective leadership and English communication skills when solving business problems.

Graduates will:

2.1 Collaborate and lead positively by actively seeking and engaging in discussion of the views of others.

2.2 Deliver business problems analyses and ideas to stakeholders in English effectively.

Goal 3: Graduates will demonstrate a broad understanding of business functions and in-depth knowledge of their major.

Graduates will:

3.1 Demonstrate a broad understanding of different business functions and domains to formulate integrated solutions.

3.2 Demonstrate substantial knowledge of their business major to solve business problems.

Goal 4: Graduates will understand their ethical and social responsibilities in local and global contexts.

Graduates will:

4.1 Identify ethical and social considerations in business issues and decisions.

4.2 Apply business knowledge to deliver positive business and social impacts at local and international levels.

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessments:

The final examination, worth 50 points, is a written paper scheduled by the University during the Fall Term examination period, 7-19 December 2026. Students can bring an A4-size handwritten cheat sheet. There are 12 quizzes in total. Each quiz is a short-answer paper held in a Friday tutorial and is worth 5 points. The quiz score is the sum of the best 6 quiz scores, for a maximum of 30 points. Quizzes check definitions and methods, and the application of those ideas to a concrete setting. The project, worth 10 points, is individual work on the given replication pipeline, submitted in four iterations as a pull request on GitHub. In-class questions contribute at most 10 points.

Each in-class question asked in lecture (not in tutorial) is awarded 1 point. A student may earn at most one point per lecture and at most 10 points in total. To claim a point, the student posts their name, student ID, the question, and the lecturer's answer on the course Discord server after that lecture and before the next lecture. The Discord link is given on Canvas. A question that is not posted in that window does not receive a point. Fabricating a question that is not asked during lecture is severely penalized.

Assessment Task	Contribution to Overall Course Grade (%)	Due date
Final examination	50%	7-19 December 2026, University timetable
Tutorial quizzes	30%	12 quizzes; sum of the best 6
Individual replication project	10%	Four iteration pull requests,

		dates on Canvas
In-class questions	10%	Claimed on Discord before the next lecture

* Assessment marks for individual assessed tasks will be released within two weeks of the due date.

Mapping of School Learning Goals to Assessment Tasks

Assessed Task	Mapped goals	Explanation
Final examination	Goal 1, Goal 3	The examination tests whether students can analyze an empirical problem with the course methods and show knowledge of econometrics as part of the major.
Tutorial quizzes	Goal 1, Goal 3	Each quiz checks whether students can apply analytical techniques from recent lectures and use major knowledge of regression and instruments.
Individual replication project	Goal 1, Goal 2, Goal 3, Goal 4	The project uses Python and source evidence to organize data, write an interpretation in English, apply major methods, and treat data and claims with care.
In-class questions	Goal 2	A lecture question assesses whether the student can discuss a point in English and record the lecturer's answer accurately.

Grading Rubrics

Each quiz uses short-answer questions and is worth 5 points. A full-credit answer states the relevant definition or method and, when asked, applies it to the given setting with a consistent argument. A partial-credit answer has a correct starting point but a gap or an inconsistent step. A zero is given for an answer that is blank, off-topic, or internally inconsistent. The course uses the sum of the best 6 of the 12 quiz scores. A missed quiz counts as zero and can be one of the six scores that are not used.

The project is graded on the implementation and write-up of additional tasks in each iteration. A successful submission runs, is clean, is correct in substance, produces the required results, and discusses them correctly. Function definitions belong in a module under src/, and scripts under scripts/ only run those modules. Clean code writes shared work once, keeps constants in configuration, uses paths relative to the project, does not hide errors, and does not leave leftover text.

The final examination is graded on the same standard as the quizzes: a correct and consistent argument that uses the course definitions and methods. The examination paper will state the mark for each question. Making answers in the quiz and final exam readable is the student’s responsibility.

Final Grade Descriptors:

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	States assumptions and methods precisely, chooses an appropriate model, and interprets estimates in light of those assumptions. Uses Python and data with care. Written and spoken explanations are clear and supported by evidence. Score >= 80
B	Good Performance	Shows a secure command of the main regression and instrumental variable methods, conducts standard inference, and explains results with only minor gaps. Completes the project reasoning and records lecture questions as required. 80 > score >= 65.
C	Satisfactory Performance	Knows the core definitions and can carry out familiar estimation and testing tasks. Interpretation is adequate on standard questions but is weaker when assumptions fail or the setting changes. 65 > score >= 55.
D	Marginal Pass	Has threshold knowledge of linear regression and basic inference. Can complete routine quiz items and a limited project write-up, but the argument is incomplete or only loosely tied to evidence. 55 > score >= 50
F	Fail	Does not show the required command of assumptions, estimation, or interpretation. Quiz, project, question, or examination work is missing, inconsistent, or unrelated to the course methods. Score < 50

Course AI Policy

Students may use Cursor or VS Code with GitHub Copilot on the replication project to inspect code, draft notes, or check writing. The assessed product is the student's own reasoning. The student must understand every claim in the submitted write-up and must be able to defend it with source evidence. Generated text or code that the student cannot explain does not meet the project standard.

Weekly tutorial quizzes and the final examination are completed without generative artificial intelligence tools. Students write their own answers in the tutorial or examination room. Discord posts that claim an in-class question must record the question asked in lecture and the lecturer's answer. They must not be invented after the lecture with a generative tool.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Feedback will state strengths and areas for improvement. Students who have further questions about the feedback, including marks, should consult the instructor within five working days after the feedback is received.

Resubmission Policy

Quiz papers and the final examination cannot be resubmitted. Project work is revised through the later iteration pull requests named in the published instructions. A later iteration does not replace an earlier one unless the instruction for that iteration says so. A Discord claim posted after the next lecture has started is not accepted.

Required Texts and Materials

The required materials are the lecture slides, the course repository, including the replication project documents, and Burlig, Jina, and Sudarshan (2026), The Value of Clean Water: Experimental Evidence from Rural India, American Economic Review 116 (3): 1148-1187, https://doi.org/10.1257/aer.20250278. There is no required textbook. A useful reference is Stock, James H., and Mark W. Watson, Introduction to Econometrics. Students use Python with uv for the project. Install Git, a GitHub account, and either Cursor or Visual Studio Code with GitHub Copilot, as described in the repository notes.

The authors' replication package for the project paper is not stored in Git. Download it from https://doi.org/10.3886/E238281V1, or from the Replication Package link on https://www.aeaweb.org/articles?id=10.1257/aer.20250278, and extract it to replication/package/.

Course Schedule

Lectures meet on Wednesday and Friday. Tutorials meet on Friday. Quizzes start in week 2. The week 1 tutorial has no quiz. There are 12 quizzes after that, one in each remaining Friday tutorial. The outline below may be adjusted.

Week	Lecture dates	Lecture topics	Tutorial
1	2 and 4 Sep	The project paper as the semester goal, without technical detail; Module 0 Introduction	No quiz
2	9 and 11 Sep	Module 1 Review of Probability	Weekly quiz
3	16 and 18 Sep	Module 2 Review of Statistics	Weekly quiz
4	23 and 25 Sep	Module 3 Linear regression with a single regressor: estimation; Module 4 Characterization	Weekly quiz
5	30 Sep and 2 Oct	Module 5 Linear regression with a single regressor: inference	Weekly quiz
6	7 and 9 Oct	Module 6 Linear regression with multiple regressors: estimation	Weekly quiz
7	14 and 16 Oct	Module 7 Linear regression with multiple regressors: inference; Application: experimental design	Weekly quiz
8	21 and 23 Oct	Module 8 Instrumental variables with a binary instrument	Weekly quiz
9	28 and 30 Oct	Module 9 Instrumental variables with a single instrument	Weekly quiz
10	4 and 6 Nov	Application: instruments	Weekly quiz

11	11 and 13 Nov	Replication project	Weekly quiz
12	18 and 20 Nov	Replication project	Weekly quiz
13	25 and 27 Nov	Replication project	Weekly quiz

30 November 2026 is the last day of Fall Term classes. The study break is 1-5 December 2026. The final examination is in the period 7-19 December 2026.

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Academic Integrity on the HKUST Academic Registry website for the University's definition of plagiarism and ways to avoid cheating and plagiarism.

Additional Resources

Course notes on Git and GitHub, and on Cursor and GitHub Copilot, are in the course repository. Quiz files and official solutions are posted there after the relevant tutorial. Canvas is used for announcements, marks, the Discord link, and links to the repository.