

Quantitative Microeconomics

Organización

The course is spread over 14 weeks, with 2 weekly sessions of 90 minutes each:

- One theory session.
- One class session.

Classes will consist of 6 practice sessions, four sessions for solving exercises, and four midterm exams:

- Practice sessions: The teacher in charge will illustrate the econometric techniques presented in the theory sessions.
- Solving exercises: At the beginning of the session, students will hand in the solution of the session exercise. During the session, students, assisted by the teacher, will solve the session exercise. The teacher will not take solutions from students not attending the session.
- Midterm exams: Students will carry-out 75-minute, 15-question multiple choice tests (with no penalty) to show their knowledge on the topic of the exam. The first midterm will be open book.

All the material (program, notes, exercises) will be available at the class webpage in advance so that students will be able to read the material beforehand.

Software: gretl - program freeware

A basic knowledge of gretl (or similar econometric software such as Eviews or Stata) is recommended.

Textbooks:

Wooldridge, J.M. Introduction to Econometrics: A Modern Approach. Paraninfo Thompson Learning

Damodar N. Gujarati, Dawn C. Porter. Basic Econometrics. Mc Graw Hill. 2004

Students' work:

- read the notes, even if the material is not covered in class
- solve all the exercises, even those that are not solved in class
- prove in the class that you know how to solve the exercises
- prove in the midterm exams that you understand the course

Assesment:

The course's workload will consist of four midterm exams and four exercises sets. There will additionally be a final examination and an extra assessment examination.

(a) Regular Assessment:

Evaluation by the course's workload: Students who complete the course's workload may skip the final examination and have their final grade based solely on the course's workload. Completing the course's workload means obtaining an overall average in the four midterm exams of four out of ten. All grades will range between 0 and 10. Exercise sets not submitted and exams not attended will be graded with zero. For the final grade the midterm exam with the lowest grade will not be taken into account. The final grade will then result from the weighted average of all evaluations, the weights being: 20% for each of the best midterm exams and 10% for each exercise sets and solving the exercises in class.

Evaluation by a final examination: The final grade for students who sit the final examination will be a weighted average of the course's workload (40%) and the final examination (60%). The final examination will last 120 minutes and will consist of 40 multiple choice questions without penalty.

(b) Extra Assessment: The final grade for students who sit the June exam will be based on this examination. This examination will last 120 minutes and will consist of 40 multiple choice questions without penalty.



DENOMINACIÓN ASIGNATURA: Cuantitative Microeconomics

GRADO: Economics; Economics & Law.

CURSO:

CUATRIMESTRE: 1

| Semana | Sesión | Descripción | Magistral | Reducido | Contenido | Horas clase | Horas trabajo |
|--------|--------|---|-----------|----------|---|-------------|---------------|
| 1 | 1 | Topic 1.1: Maximum Likelihood Estimation. | X | | Maximum Likelihood Estimation. | 1.5 | 6 H |
| 1 | 2 | Practice 1.1: <i>gretl</i> | | X | Introduction to scripts in <i>gretl</i> | 1.5 | |
| 2 | 3 | Topic 1.2: The Probit Model. Estimation. | | | Motivation. The Probit model. MLE. | 1.5 | 6 H |
| 2 | 4 | Practice 1.2: Probit Estimation with <i>gretl</i> | | X | Probit in <i>gretl</i> . | 1.5 | |
| 3 | 5 | Topic 1.3: Tests with Probit. | X | | Wald. Likelihood ratio. | 1.5 | 6 H |
| 3 | 6 | Exercise 1. | | X | Solving Exercise 1. | 1.5 | |
| 4 | 7 | Topic 2.1: Ordinal and Multivariate models. | X | | Ordinal Probit. Ordinal Logit. Multivariate Logit. | 1.5 | 6 H |
| 4 | 8 | Control 1. | | X | Control 1: Topic 1. | 1.5 | |
| 5 | 9 | Topic 2.2: Estimation of Ordinal and Multivariate models. | X | | MLE of Ordinal and Multivariate models in <i>gretl</i> . | 1.5 | 6 H |
| 5 | 10 | Practice 2.1: Ordinal model: marginal effects. | | X | Ordinal model: marginal effects. | 1.5 | |
| 6 | 11 | Topic 3.3: Poisson regression. | X | | Motivation. Interpretation of coefficients. MLE in <i>gretl</i> . | 1.5 | 6 H |
| 6 | 12 | Exercise 2. | | X | Solving Exercise 2. | 1.5 | |
| 7 | 13 | Topic 3.1: The Tobit model. | X | | Motivation. Conditional expectation in Tobit. | 1.5 | 6 H |
| 7 | 14 | Control 2. | | X | Control 2: Topic 2. | 1.5 | |
| 8 | 15 | Topic 3.2: Truncation and Selection. | X | | Truncated regression model. Heckman model. Roy Model. | 1.5 | 6 H |
| 8 | 16 | Practice 3.1: Tobit estimation in <i>gretl</i> . | | X | Tobit estimation in <i>gretl</i> . Marginal effects. | 1.5 | |
| 9 | 17 | Topic 3.3: Heckman. Estimation in <i>gretl</i> . | X | | Heckman. MLE and Two-stage estimator. | 1.5 | 6 H |
| 9 | 18 | Exercise 3. | | X | Solving Exercise 3. | 1.5 | |
| 10 | 19 | Topic 4.1: Asymptotic Properties. | X | | Probability in the limit. Law of large numbers. Central Limit Theorem. | 1.5 | 6 H |
| 10 | 20 | Control 2. | | X | Control 2: Topic 2. | 1.5 | |
| 11 | 21 | Topic 4.2: Monte Carlo. | X | | Estimation of estimators properties via Monte Carlo. | 1.5 | 6 H |
| 11 | 22 | Practice 4.2: Covariance estimator. | | X | Pseudo-random numbers. Estimation of covariance properties via Monte Carlo. | 1.5 | |
| 12 | 23 | Topic 4.3: OLS and IV: Asymptotics. | X | | Asymptotic properties of OLS and IV estimators. | 1.5 | 6 H |
| 12 | 24 | Practice 4.2: Simulation of regression model. | | X | Monte Carlo for OLS and IV. | 1.5 | |
| 13 | 25 | Topic 4.4: Selection bias and Simulation. | X | | Tobit Monte Carlo. | 1.5 | 6 H |
| 13 | 26 | Exercise 4. | | X | Solving Exercise 4. | 1.5 | |
| 14 | 27 | Revisions and questions. | X | | Revisions and questions. | 1.5 | 6 H |
| 14 | 28 | Control 4. | | X | Control 4: Topic 3. | 1.5 | |