

Econ 609 Discrete Choice Models 2022-2023

COURSE AIMS & OBJECTIVES, KEY SKILLS AND LEARNING OUTCOMES

Course Aims & Objectives: The course covers the estimation and usage of discrete choice models that are increasingly estimated using simulation methods. Discrete choice models are used to examine the choices of individual consumers, households, firms and other agents. The course will cover the main discrete choice models and a variety of specifications that build on these models, as well as standard maximum likelihood and simulation-based estimation techniques. Discrete choice models are applicable in many fields, including energy, environmental studies, health, labor, marketing, urban economics and transportation.

Key Skills: By the end of this course, students should have some knowledge and understanding of:

- Non-linear binary models
- Probit models and estimation
- Logit Models and estimation

Desired Outcomes: By the end of this course, students should be able to:

- Use automatic model selection to build econometric models
- Use saturation estimation
- Present, interpret and analyse the results of automatic model selection
- Utilise effectively PcGive and the R gets package packages

COURSE STRUCTURE

Econ 609 is a 10 credits course and therefore students are expected to input approximately 100 hours of study into the course. The total number of contact hours on Econ 609 is 15 hours. This leaves 85 hours for private study. Course Delivery comes in the form of Lectures with 15 hours delivered over the first 3 weeks of the term (10 hours of lectures and 5 hours of tutorials). There will be optional clinics on the last day of the course.

During your private study you should strike a balance between reading the course material (which is the primary source of information) and the recommended textbooks, thinking critically about how these fit in to the body of knowledge on the subject and

about how our level of knowledge can be improved, performing exercises, completing coursework and revising for examinations. You can expect to perform well on this course only if you work consistently through the year.

COURSE CONVENOR

Dr Anthony Murphy

LECTURERS CONTACT INFORMATION (Including Office Hours)

Email: Anthony.murphy@dal.frb.org

Available by appointment (please email to arrange a convenient time)

COURSEWORK ASSESSMENT

The final mark for the course will depend on a written exam. Timetable for details of time and venues will be communicated via Moodle and by Timberlake well in advance.

The CWA mark will be calculated as 100% coursework. The coursework will be assigned at the beginning of the module.

Coursework must be submitted electronically through the Moodle site for this course: <https://mle.lancs.ac.uk/course>. Login using your regular Lancaster University access details. This opens a page headed MLE: My home.

The format of the submission is as follows.

- The submitted file must be in pdf format with the following name

stud#_studname_cw_cw#.pdf

where: **stud#** is your student number, **studname** is your name in the format *surname_name*, **cw#** is either 1 or 2 according to the piece of coursework submitted. Eg a student with student number 111 would submit a file named *111_surname_firstname_cw_1.pdf*.

- Maximum file size is 2MB: figures resolution must be adjusted accordingly.

Note that your work will be screened using software designed to detect plagiarism.

Do not rely upon someone else to submit your coursework.

*Word counts are inclusive of all material submitted apart from the Bibliography.

FEEDBACK ON COURSEWORK:

The coursework will be marked and returned to students within 4 weeks of the submission deadline. Feedback will consist of marker's notes appended to the pdf of your coursework.

MARKING CRITERIA AND PENALTIES

Marking criteria can be found in the Economics Undergraduate Handbook and the general course information paper. An electronic copy of this can be found via the Current Student page of the university website then follow the Academic Regulations link

<https://gap.lancs.ac.uk/ASQ/QAE/MARP/Documents/UG-Assess-Regs.pdf>

FINAL MARK INFORMATION

This course is assessed 100% by means of coursework. The final mark is the average of the marks obtained in the two pieces of coursework.

COURSE TEXT AND RECOMMENDED READING

The main recommended textbook is:

The main textbook is Train (2009), Discrete Choice Models with Simulation. A complete on-line course with textbook, videotaped lectures for web-viewing, problem sets, and links to relevant articles is available here: <https://eml.berkeley.edu/~train/distant.html> .

- Hensher, David A., Rose, John M., Greene, William H. (2015), Applied Choice Analysis, 2nd Edition, Cambridge University Press.
- Train, Kenneth E. (2009), Discrete Choice Models with Simulation, 2nd Edition, Cambridge University Press.

*Additional readings will be provided in advance of the lectures.

COURSE OUTLINE/LECTURE SCHEDULE

- Lecture 1: Properties of Discrete Choice Models (Train, Chap. 2), Conditional Logit Models (Chap. 3), Estimation (Chap 8)
- Lecture 2: Generalized Extreme Value / Nested Logit Models (Chap 4)
- Lecture 3: Probit Models (Chap. 5), Drawing from Densities (Chap 9), Simulation Assisted Estimation (Chap 10)
- Lecture 4: Mixed Logit Models (Chap 6), Individual-Level Parameters (Chap 11), EM Algorithm (Chap 14)
- Lecture 5: Other Issues - Stated vs Revealed Preferences, Ranked Data, Ordered Responses, Contingent Valuation, Dynamic Optimization (Chap 7), Endogeneity (Chap 13)