

ECU33091 — Econometrics A

Module Information	
Module Code	ECU33091
Module Title	Econometrics A
Department	Economics
Year Group	Junior Sophister
Module Personnel	Barra Roantree
Academic Year	2026-27
Credit Weighting	5 ECTS
Semester	Semester 1
Contact Hours	2 lectures per week + labs

Module Content	
Module Description	This module introduces the theory and methods of modern econometrics: the toolkit economists use to answer economic questions with data. Building on the probability and statistics covered in the senior freshman year, the module opens with the potential outcomes framework, which provides a language for defining causal effects and clarifying when they can and cannot be recovered from data. It then develops linear regression as the workhorse tool for estimating such effects, before extending this to non-linear specifications, binary outcome models, and panel data methods. Throughout, theoretical material is paired with an extensive applied component in Stata, so that by the end of the module students are equipped to design, execute, and critically evaluate an independent piece of applied econometric research.
Module Learning Aims	• Introduce the causal inference framework that underpins modern empirical economics • Develop a rigorous understanding of regression-based methods for estimating causal effects using both experimental and observational data

Module Content

	• Build practical proficiency in applying econometric techniques to real datasets using statistical software (Stata) • Equip students with the critical skills needed to evaluate econometric evidence and conduct independent applied research
Learning Outcomes	• Distinguish correlation from causation, and use the potential outcomes framework to define causal effects and the conditions under which they can be identified (e.g. random assignment) • Apply and interpret core tools of statistical inference (estimation, hypothesis testing, confidence intervals) in an econometric setting • Derive the OLS estimator and evaluate whether the Gauss-Markov / least squares assumptions hold in a given application • Specify, estimate and interpret multiple regression models, incl. the use of control variables to address omitted variable bias • Extend linear models to accommodate non-linearities (e.g. logarithms, polynomials, interactions) and correctly interpret the resulting estimates • Critically assess the internal and external validity of a regression analysis, including issues of measurement error, heteroskedasticity, and functional form • Model binary outcome variables using the linear probability, probit and logit models, and compare their strengths and limitations • Use panel data methods to control for unobserved, time-invariant confounders • Implement each of the above techniques in Stata, and communicate the results of an applied econometric analysis in written form
Indicative Reading / Resources	• Stock, J.H. and M.W. Watson. Introduction to Econometrics, Pearson (4e), 2019. • Angrist, J.D. and J. Pischke. Mastering Metrics, Princeton University Press, 2015.



Assessment	
Assessment Components	Problem Sets (20%); Exam (80%)
Assessment Details	n/a

Additional Information	
Prerequisites	ECU22031 & ECU22032 Mathematical and Statistical Methods
Co-requisites	ECU33092 Econometrics B
Any other information	n/a