

CE615

Statistical and Econometric Methods II

The objective of this course is to solidify students' understanding of the material taught in CE614 (Statistical and Econometric Methods I) and to extend students' knowledge with the presentation of new model estimation techniques not covered in CE614. Specifically, we will undertake detailed assessment of simultaneous equations models (seemingly unrelated regressions and three-stage least squares), generalized extreme value models (nested logit models estimated by full information maximum likelihood), latent-class logit models, mixed logit models (to account for variations in parameters across the sample population), random parameters negative binomial and ordered probability models, bivariate ordered probability models, and zero-inflated count data models.

Time and location: Spring semester, Tuesdays 5:30-8:30, in room HAMP 2118

Website: [https://engineering.purdue.edu/~flm/CE615\(15\).htm](https://engineering.purdue.edu/~flm/CE615(15).htm). In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. These changes will be reported as soon as possible on the course website.

Course requirements:

- Empirical assignments. All involve data analysis with existing databases.
- Research critique. During the semester, each student will be asked to critique two methodological papers in any field of interest and present this critique to the class.
- Students will complete a research paper using the methods covered in the course.

Grade distribution:

Empirical assignments (30%), Research paper (30%), Final Exam (40%)

Mandatory Prerequisite:

CE614 - Statistical and Econometric Methods I

Required materials:

Text: Washington, S., M. Karlaftis, and F. Mannering (2011) Statistical and econometric methods for transportation data analysis, Second Edition, CRC Press, Boca Raton, FL.

Course contents

Lecture 1	Course introduction
Lecture 2	Random parameters ordered probit (Text chapter 14)
Lecture 3	Latent Class and Mixed logit models (Text chapters 13, 16)
Lecture 4	Seemingly unrelated regressions/3SLS (Text chapter 5)
Lecture 5	Bivariate Ordered Probit (Text chapter 14)
Lecture 6	Paper critiques I
Lecture 7	Paper critiques II
Lecture 8	Zero-inflated count models (Text chapter 11)
Lecture 9	Random parameter count models (Text chapter 16)
Lecture 10	Temporal Stability (Text chapter 5)
Lecture 11	Nested logit models with full information maximum likelihood (Text chapter 13)
Lecture 12	Tobit models (fixed and random parameters) (Text chapter 3)
Lecture 13	Paper critiques III
Lecture 14	Paper critiques IV
Lecture 15	Project discussions and issues