

## Statistical Tools for Applied Economics Research (ECON 4660)

Prerequisites: Economics 4650

### Course description:

The field of economic statistics and econometrics is rapidly changing. Increasing data availability combined with powerful computing and advanced software allows research to address issues of statistical inference and analysis in innovative ways. This course provides students with practical knowledge and skills to take advantage of these new developments. The course is a prerequisite for Economics 4670, Economic Research in the Community.

### Course learning outcomes:

- Develop skills related to modern multivariate statistical analysis
- Provide practical experience related to data analysis
- Develop skills in using advanced statistical software
- Develop skills in summarizing information directed to practical decision making

### Course overview:

This course extends traditional econometrics by introducing modern multivariate statistical tools via real-world applications. Over the course of the semester, students will learn how to use computing software to address issues of large data, non-experimental methods, exploratory data analysis, and visualization. Special topics in the class include survey design, factor analysis, causality, nonlinear system modeling, multivariate time series, and Bayesian statistics. All topics are presented in a hands-on manner and students will work through sets of examples using topic templates. The suggested text is: *Data Science for Business* (Provost and Fawcett, ISBN: 978-1-449-36132-7 / <http://www.data-science-for-biz.com/> <sup>et</sup> ).

During the semester the class will be involved in:

- Lectures and discussions
- Practical data analysis using real-world data
- Learning advanced statistical software and programming
- Learning how to generate publication quality output from statistical software (R)

### Grading (1st term)

In class assignments	50%
End of term assignment	50%

### Grading (2nd term):

Project conceptualization:	15%
Progress reports and presentations:	20%
Final report:	25%
Final presentation:	25%
Team evaluations:	15%