# Nonparametric and Semiparametric Methods in Economics and Finance

**Instructor:** Professor Oliver B. Linton: `obl20@cam.ac.uk`

**Time and Location:** Approximately 16.5 hours

**Software:** GAUSS and R software

**Course Description:** This course covers some major topics in nonparametric and semiparametric methods with applications in economics. The intuition behind smoothing methods, the strengths and weaknesses. Applications to finance and to economic inequality will be considered.

**Outline**

The topics covered include:

1. Background and type of estimation, inference and prediction problems

2. Kernel smoothing for density and regression estimation

3. Bandwidth choice and inference

4. Other smoothing methods including local likelihood, nearest neighbors, series methods, splines, neural networks, etc

5. Nonparametric volatility modelling and estimation

6. Nonparametric modelling for panel data

7. Inference problems for dependent data, long run variance estimation, subsampling and bootstrap

8. Nonparametric prediction and event studies

9. Stochastic Dominance testing for inequality measurement and finance

10. Estimation and inference about tail thickness with application to VAR

11. Additive Models and other dimensionality reduction

12. Large number of predictors, the selection problem

13. High frequency data