



Doctoral School in Economics and Finance

Advanced Econometrics – Nonparametric Methods in Econometrics

1. Course details

Semester: 2

Credit rating: 2 ECTS

Teaching units: 30

Pre-requisite(s): A previous Master or Ph.D. level course in econometrics.

Lecturer: Prof. Gautam TRIPATHI (gautam.tripathi@uni.lu)

Administrator: Roswitha Glorieux (roswitha.glorieux@uni.lu)

Tutors: None

Lecture times and rooms: See point 3

Tutorial times and rooms: None

Communications **Students should regularly read their University e-mails, as important information will normally be communicated this way.**

Mode of assessment: Attendance and short (15 pages) term paper. The term paper is due one month after the course ends.

Examination Periods: NO

Course Webpage: Moodle.uni.lu

2. Aims and objectives

Aims

This course is intended for Ph.D. students. The objective of this short course is to familiarize students with the theoretical and practical aspects of some nonparametric methods and techniques that are used in estimating and testing a large class of econometric models.

Learning Objectives

On completion of this course unit, successful students will be able to:

1. Have a good understanding of some widely used nonparametric/semi parametric models and techniques used by economists to answer policy related questions.
2. Understand how these models are interpreted, identified, estimated, and tested, how the asymptotic distributions of the various estimators and test statistics are obtained, and the fundamental assumptions underlying these results.
3. Process and interpret empirical data using the models and methods learnt in class and test whether these data are in accordance with economic theory.
4. Read, understand, and critically evaluate the econometrics articles in peer-reviewed journals encountered during the course of their own research.

3. Plan of semester

Campus Kirchberg, Room A.16

2021	from	To	Topic of lecture	Deadline for students' work
Monday 01 March	11.30 14.00	13.00 16.30	Nonparametric estimation by the method of kernels. Density estimation. Nonparametric regression. Consistency and asymptotic normality. Statistical inference.	
Wednesday 03 March	11.30 14.00	13.00 16.30	Implementation issues. Choosing bandwidths by cross-validation. Incorporating discrete and continuous regressors. Boundary effects related to kernel estimators. Computer code.	
Monday 08 March.	11.30 14.00	13.00 16.30	Other estimation methods. Local polynomial estimators. Series estimators. Specification testing of densities and regression functions.	
Monday 10 March	11.30 14.00	13.00 16.30	Applications to semi parametric models. Estimating index models. Average derivatives.	
Monday 15 March	11.30 14.00	13.00 16.30	Sample selection models. Partially linear regression.	
Wednesday 17 March	11:30 14:00	13:00 16:30	The Bootstrap. Basic idea, when does it work? Bootstrap estimation of bias and variance. Bootstrap critical values for hypothesis tests. Bootstrap confidence intervals. Bootstrapping regression, GMM, and kernel estimators.	Term paper due April 31, 2021

4. Course details (by topics)

See attached syllabus for details.

5. Reference list/ Bibliography

See attached syllabus for details.

6. Further information about assessment

Examination(s)		
Weighting:	50%	50%
Structure:	Attendance Pass/Fail	Term paper Pass/Fail