

# MATH0099 (Statistical Methods and Data Analytics)

*Year:* 2024{2025  
*Code:* MATH0099  
*Level:* Masters  
*Value:* 15 UCL credits (= 7.5 ECTS credits)  
*Term:* 1  
*Structure:* 3 hours lectures per week  
*Assessment:* 100% examination.  
*Lecturer:* Dr D C Schwarz

## *Course Description and Objectives*

This is a course about statistical inference and its applications to problems from finance. It consists of theory based lectures and homework problem sheets.

## *Recommended Texts*

Erich L. Lehmann, George Casella, *Theory of Point Estimation*, Springer, 1998.

Larry Wassermann, *All of Statistics: a Concise Course in Statistical Inference*, Springer, 2004.

A.W. van der Vaart, *Asymptotic Statistics*, CUP, 2000.

Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, *An Introduction to Statistical Learning with Applications in R*, Springer, 2013.

## *Detailed Syllabus*

The course covers classical topics from statistical inference such as point estimation, confidence sets and hypothesis testing. Subsequently parametric and non-parametric statistical models will be discussed, as well as the Bayesian approach to inference. Time permitting we will also cover some elements of modern machine learning techniques. Examples from finance will be given throughout the course.