

Dear Course Participant,

Welcome to **EC212 Introduction to Econometrics**. We are going to have a very busy and, I hope, productive three weeks. Some quantitative courses are described as ‘methods’, some as ‘theory’. EC212 aims to be both. The objective of the course is to deliver hands-on, practical skills accompanied by the theory necessary for their appropriate application. Above all, we want you to develop a sound intuitive understanding of the material that will serve as a solid foundation for further study, whether in a specialist area, as a practitioner, or at a higher level, as a student. We want you to emerge from the three weeks confident and happy.

With regard to happiness, we aim to keep the work-rate humane, but given the ambitions of EC212 and the three weeks’ time constraint, the work-rate is higher than for a typical summer school course. It is therefore very important that you are fully prepared before you come. In particular, you should be up to speed on the basic statistical theory that forms the bedrock of econometrics. You have already taken a course in statistics—this was a requirement for being accepted for EC212—but it may have been some time ago and it may not have given as much attention as is desirable to some topics that will be important to us.

Here is a set of example questions to which you should be able to give clear answers:

- (1) *What is meant by the power of a test? Why is the power of a test inversely related to its significance level? What is the advantage of performing a one-sided test instead of a two-sided test, if you are in a position to do so?*
- (2) *What is meant by efficiency? What is meant by consistency?*
- (3) *Why are we sometimes interested in the asymptotic properties of estimators, when in practice we work with finite samples? How can we talk about the properties of the limiting distribution of an estimator, if the distribution degenerates to a spike as the sample size becomes large?*

If you can answer all of these questions, particularly the last, you are in (exceptionally) good shape. Otherwise (which means nearly all of you, especially those who have had only one semester of college-level statistics), you should download a copy of the initial chapter, *Review: Random Variables, Sampling, and Estimation*, in my text *Introduction to Econometrics*, fourth edition 2011, Oxford University Press, from the Summer School accepted page and work your way through it. It may take you a weekend, but I am sure that it will be worth it. It will enable you to benefit more from EC212 with less effort, less stress, better understanding, and greater satisfaction.

Apart from the last two sections, much of the *Review* chapter should be straightforward revision. Among the more familiar topics, hypothesis testing is very important. I want you to be sure that you really understand the *logic* behind hypothesis testing. It is easy enough to perform a  $t$  test, but a little more difficult to explain what is meant by a significance level. You may need to pay particular attention to Section R.5, with its discussion of the double structure of a sampled random variable and the distinction between potential distributions and realizations, and Section R.10 on Type II error and the power of a test.

The last two sections of the *Review* chapter are on asymptotics and may be completely new to you. They will be very important to us in the second half of the course. Generic statistics courses usually give these topics minimal attention, if they cover them at all.

The *Review* chapter is over 70 pages long, but do not be discouraged. Much of it is taken up by pictures and you should be able to skim the first few sections.

If you have any questions relating to academic aspects of the course, please send an email to [c.dougherty@lse.ac.uk](mailto:c.dougherty@lse.ac.uk). Please put 'EC212 query' in the subject box. (I delete unread all emails that are not obviously intended for me.) Questions relating to administrative matters or to other courses should be referred to the Summer School Office.

With best wishes,

A handwritten signature in black ink, appearing to read 'Chris Dougherty', with a long, sweeping horizontal line extending to the right.

pp Christopher Dougherty