

**Paris School of Economics**  
**APE Master – M1**

Mathematical Prerequisites

1. To succeed on the APE Master programme you need to prove that you can work to a high standard and have excellent analytical ability; all core economics and econometrics courses assume a deep prior knowledge of calculus techniques, matrix algebra, constrained optimisation, and basic statistics. As a consequence, you should have a solid quantitative background *prior to* joining the M1.

**The minimum entry requirements correspond to the following textbooks:**

- (i) Calculus techniques: *Essential mathematics for economic analysis*, by K. Sydsaeter and P. Hammond, Financial Times / Prentice Hall, 2008 (3<sup>rd</sup> edition) or 2005 (2<sup>nd</sup> edition);
- (ii) Optimisation: *Optimization in Economic Theory*, by A. Dixit, Oxford University Press, 1990;
- (iii) Statistics: *Introductory Statistics*, by T. Wonnacott and R. Wonnacott, Wiley, 1990 (5<sup>th</sup> edition).

**It will be assumed in all classes that you have already covered the material developed in these textbooks.** In order to evaluate yourself, you are strongly advised to try doing the exercises in (i) whose solutions are given at the end of the book. You should also try solving the examples in (ii) and (iii).

2. It should be noted that the core M1 course “Mathematics and Statistics for Economic Analysis” is *not* intended for fixing your knowledge of basic mathematics and statistics. It is taught at the level of:

*Further Mathematics for Economic Analysis*, by K. Sydsaeter, P. Hammond, A. Seierstad and A. Strom, Financial Times Prentice Hall, 2008 (2<sup>nd</sup> edition) or 2005 (1<sup>st</sup> edition).

The course will deal with analysis in metric spaces, differential calculus, comparative statics, convexity, static optimization, dynamical systems, dynamic optimization, probability and statistics, and OLS. Special emphasis will be placed on applications.

**Given the aims of this course, all students are strongly advised to prepare themselves for it during the summer break.**