Expected Background

January 8, 2018

Formal entry requirements are listed here but since applicants come from many different backgrounds, it will be useful to consider yourself whether you feel as if you have the right background for the course. Some general expectations are listed below, with references to existing courses on that material in Manchester. It should hopefully give you a feel for the course and what is expected of the incoming student. We would only consider a few of these courses as absolutely essential, but some additional background is desirable and will certainly assist you greatly for course preparation. If in doubt then please contact us.

A good background in Probability Theory is essential; see for example two courses in Probability [Probability 1] and [Probability 2]. Knowledge of Statistics is highly desirable, see for example Introduction to Statistics. More advanced courses in Probability are highly desirable, see for example Foundations of Modern Probability. Knowledge of measure-theoretical Probability and/or measure theory is desirable as well. An introduction to Markov processes is desirable, see for example Random models or Markov processes but not essential.

Knowledge of real analysis is essential and of complex analysis is desirable, see for example Real and Complex Analysis. Knowledge of basic calculus, see for example Calculus and Vectors A and ordinary differential equations, see Calculus and Applications A is essential.

Knowledge of partial differential equations is highly desirable, see for example Partial Differential Equations and Vector Calculus. Knowledge of solving partial differential equations numerically is desirable but not essential. Although there is no formal requirement for previous programming experience, a familiarity with writing computer programs (for example, in Python, MATLAB, C/C++ or Java) is desirable.