# COURSE DETAIL

| FUNDAMENTALS OF PROBABILITY THEORY |
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| **Country**<br>United Kingdom - England |
| **Host Institution**<br>King's College London |
| **Program(s)**<br>King's College London |
| **UCEAP Course Level**<br>Upper Division |
| **UCEAP Subject Area(s)**<br>Statistics Mathematics |
| **UCEAP Course Number**<br>158 |
| **UCEAP Course Suffix** |
| **UCEAP Official Title**<br>FUNDAMENTALS OF PROBABILITY THEORY |
| **UCEAP Transcript Title**<br>PROBABLITY THEORY |
| **UCEAP Quarter Units**<br>6.00 |
| **UCEAP Semester Units**<br>4.00 |

**Course Description**

The course covers: Countability, measure spaces, σ-algebras, π-systems and uniqueness of extension. Construction of Lebesgue measure on R (proof non-examinable), Independence. The Borel-Cantelli lemmas, measurable functions and random variables, independence of random variables. Notions of probabilistic convergence. Construction of integral and expectation. Integration and limits. Density functions. Product measure and Fubini's theorem. Laws of large numbers. Characteristic functions and weak convergence, Gaussian random variables. The central limit theorem. Conditional probability and expectation.

**Language(s) of Instruction**
English

**Host Institution Course Number**
6CCM341A

**Host Institution Course Title**
FUNDAMENTALS OF PROBABILITY THEORY

**Host Institution Course Details**
https://www.kcl.ac.uk/abroad/module-options/fundamentals-of-probability-theory

**Host Institution Campus**
King's College London

**Host Institution Faculty**

**Host Institution Degree**

**Host Institution Department**
Mathematics

**Course Last Reviewed**
2023-2024

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