

# LTCC Advanced Course

**Title: Topics in probabilistic number theory**

**Basic Details:**

- Core Audience: PhD students, pure or applied
- Course Format: 7, 2-hour lectures

**Course Description:**

- Keywords: number theory, probability theory, analysis
- Syllabus:

Lectures 1 & 2: Classical probabilistic number theory and the Erdos-Kac central limit theorem on the distribution of the number of divisors of 'random' integers

Lectures 2-5: Selberg's theorem on the distribution of the Riemann zeta function on the critical line

Lectures 6-7: Chebyshev's bias regarding the distribution of primes in arithmetic progressions

- Recommended reading: "An introduction to probabilistic number theory", Kowalski
- Additional Optional reading: "Introduction to Analytic and Probabilistic Number Theory", Tenenbaum
- Prerequisites: A course in analytic number theory

**Format:**

- No of discussion/problem sheets (typically 4 for extended courses, and 1 for intensive courses, with solutions): 1 problem sheet
- Electronic lecture notes (these are strongly encouraged, as they will form the core of the individual study of the students): None, we will follow Kowalski's textbook so the core of the individual study of the students will be the chapters from the textbook
- Lecture/computer session/tutorial/discussion split (hours of each): 14 hours of lectures

**Lecturer Details:**

- Lecturer: Stephen Lester and Igor Wigman
- Lecturer home institution: King's
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