

## LTCC Proposed Course

### **Title: Asymptotic Methods and Statistical Applications**

#### **Basic Details:**

- Core Audience (1<sup>st</sup>yr or 2<sup>nd</sup>/3<sup>rd</sup>yr: pure, app. or stats): 1<sup>st</sup> year, Statistics
- Course Format (**Extended**: 5 x 2hr lectures or **Intensive**: 2 x 4hr lectures over 2 consecutive days): Extended

#### **Course Description:**

- Keywords:
- Syllabus: The course is intended for a statistical audience. It covers asymptotic approximations, whose approximation error becomes negligible as certain parameters become arbitrarily large or small. For example, the performance of inferential procedures is typically quantified as the sample size,  $n$ , grows large.

Traditional theory will be reviewed such as convergent, divergent and asymptotic series, limit theorems of probability, convergence rates of convergent random variables and asymptotic expansion of integrals. A large number of statistical applications will be covered.

- Recommended reading:
- Additional Optional reading:
- Prerequisites: Complex analysis

#### **Format:**

- No of discussion/problem sheets (typically 4 for extended courses, and 1 for intensive courses, with solutions): 2
- Electronic lecture notes (these are strongly encouraged, as they will form the core of the individual study of the students): Yes
- Necessary support facilities
- Necessary software requirements for computing facilities. None.
- Proposed timing:
- Lecture/computer session/tutorial/discussion split (hours of each): approximately 8 hours of lectures and 2 hours of discussion of problem sheets.

#### **Lecturer Details:**

- Lecturer: Heather Battey
- Lecturer home institution: Imperial College London
- Lecturer e-mail: h.battey@imperial.ac.uk
- Lecturer telephone number: 020 7594 2936