LTCC Basic Pure Mathematics Course

- Title: **C^*-algebras**

- Basic Details:

  - Core Audience: Pure
  - Course Format: Basic/core (10 hours)

- Course Description:

  - Keywords: Operators and C^*-algebras. Spectral theory. Ideals and quotients. States and representations. GNS construction. Spectrum of a C^*-algebra. Type I C^*-algebras. Von Neumann algebras. Kaplansky's density theorem. Factors. Murray–von Neumann classification.

  - Synopsis: C^*-algebras play a fundamental role in many branches of mathematics such as functional analysis, representation theory, non-commutative geometry and quantum theory. This course gives an introduction to C^*-algebras and their representations on Hilbert spaces, as well as the classification of von Neumann algebras. It presents the most basic ideas as simply and concretely as possible, and should be appropriate for graduate students who have a knowledge of general topology, real and complex analysis.

  - Recommended reading:

    1. W. Arveson, *An invitation to C^*-algebras*, Springer-Verlag, Heidelberg, 1976.
    2. M. Takesaki, *Theory of operator algebras I*, Springer-Verlag, Heidelberg, 1979.

  - Additional Optional reading:

    1. J. Dixmier, *C*-algebras*, North-Holland, Amsterdam, 1977.
    2. R.V. Kadison and J.R. Ringrose, *Fundamentals of the theory of operator algebras, I, II*, Academic Press, New York, 1983, 1986.

  - Prerequisites:

- Format:

  - No of problem sheets:
  - Electronic lecture notes:
  - Necessary support facilities:
  - necessary software requirements for computing facilities:
  - Timetable: Mondays, 25 February to 24 March 2008, 1.15–3.15
  - Lecture/computer session/tutorial/discussion h split:

- Lecturer Details:

  - Lecturer: Prof Cho-Ho Chu
  - Lecturer home institution: QMUL