

# LTCC Basic Pure Mathematics Course

- Title: Algebraic number theory
- Basic Details:
  - Core Audience: Pure
  - Course Format: Basic/core (10 hours)
- Course Description:
  - Keywords: algebraic integers, ideal class groups, units,  $p$ -adic numbers, zeta functions, class number formulas, cyclotomic fields
  - Syllabus: This course gives a non-technical introduction to some important topics in algebraic number theory. After introducing the basic objects (algebraic integers, ideals and ideal class groups, units) we will discuss  $p$ -adic numbers and local-global principles, zeta functions and class number formulas, and cyclotomic fields. The only prerequisite is some knowledge of basic ring theory.
  - Recommended reading:
    1. J. Neukirch, *Algebraic number theory*, Springer, 1999.
    2. H. P. F. Swinnerton-Dyer, *A brief guide to algebraic number theory*, CUP, 2001.
  - Additional Optional reading:
    1. J. P. Serre, *A course in arithmetic*, Springer, 1973.
    2. L. C. Washington, *Introduction to cyclotomic fields*, Springer, 1982.
  - Prerequisites: Basic knowledge of ring theory.
- Format:
  - No of problem sheets:
  - Electronic lecture notes:
  - Necessary support facilities:
  - necessary software requirements for computing facilities:
  - Timetable: Mondays, 21 January to 18 February 2008, 10.30–12.30
  - Lecture/computer session/tutorial/discussion h split:
- Lecturer Details:
  - Lecturer: Dr Manuel Breuning
  - Lecturer home institution: KCL