

LTCC Basic Pure Mathematics Course

- **Title:** p -adic numbers
- **Basic details:** This is a 10 hours lecture course for PhD students in (pure) mathematics. It will be taught on Mondays, 18 January to 15 February 2010, 10.30–12.30, in De Morgan House (Russell Square).
- **Course description:** The aim of this course is to explain the construction and basic properties of p -adic numbers and to give an introduction to some elementary aspects of p -adic analysis.
- **Syllabus:** absolute values, completions, the fields \mathbb{Q}_p and \mathbb{C}_p , continuous functions, Mahler's expansion, differentiable functions, power series, p -adic versions of some classical functions ($\exp_p, \log_p, \Gamma_p, \dots$)
- **Prerequisites:** undergraduate algebra and analysis, including some basic knowledge of metric and topological spaces
- **Literature:**
 1. F.Q. Gouvêa: p -adic numbers. 2nd edition, Springer, 1997.
 2. N. Koblitz: p -adic numbers, p -adic analysis, and zeta-functions. 2nd edition, Springer, 1984.
 3. A.M. Robert: A course in p -adic analysis. Springer, 2000.
 4. W.H. Schikhof: Ultrametric calculus. Cambridge University Press, 1984.
- **Lecturer:** Dr Manuel Breuning (King's College London)