6CCM322a and **7CCM322b Complex Analysis**

Lecturer: Prof Y Safarov (Yuri.Safarov@kcl.ac.uk ; Strand Building, Room 417)

Office hours: Mondays 10:30-11:30, Tuesdays 15:30-16:30, Fridays 13:30-14:30

Staff backup: Dr A Pushnitski, Prof S Scott

Web page: http://www.mth.kcl.ac.uk/courses/cm322.html

Teaching arrangements: Three hours of lectures each week plus occasional tutorials

Lectures: Thursdays 13:00-14:00, Room S-1.27; Fridays 11:00-13:00, Room K2.31

Tutorials: Fridays 16:00-17:00, Room S-2.23 **(not every week)**

Prerequisites: 5CCM211a and 5CCM221a

Assessment:
The course will be assessed by a two hour written examination at the end of the academic year.

Assignments:
Exercise sheets will be given out. Solutions handed in will be marked. In addition, it is essential that students work through the theory as the course progresses.

Aims and objectives:
This course will provide a detailed introduction to complex function theory which interrelates the geometric and analytic aspects. A principal goal is Cauchy's famous integral theorem and its many intriguing consequences.

Syllabus:
Möbius transformations, analytic functions, Cauchy-Riemann equations, complex trigonometric and exponential functions, complex logarithm, contour integration, Cauchy's Theorem, Cauchy's Integral Formulae, Taylor series, Identity Theorem, Liouville's Theorem, Laurent Expansion, singularities, residues, winding number, Cauchy's Residue Theorem, Argument Principle, Maximum Modulus Principle.
For 7CCM322b students only: harmonic functions

Books covering most of the course are
- I. Stewart & D. Tall, *Complex Analysis*, Cambridge 1993
- J. Bak & D. Newman, *Complex Analysis*, Springer, 1997
- H A Priestley, *Introduction to Complex Analysis*, OUP 2003

Lecture notes on the Web:
http://www.ima.umn.edu/~arnold/502.s97/complex.pdf
http://www.math.uconn.edu/~bass/ca.pdf
http://www.math.lsu.edu/~neubrand/notes.pdf