MAS205 Complex Variables 2004-2005

Level 2: Semester 3

Lecturer: Dr T. Prellberg (Mathematics)

Lecture times: Monday 11-12 (MLT), Friday 11-12 (PP1) and Friday 2-3 (BLT)

Exercise class: Friday 4-5 (Eng 324, MLT), starting Friday, October 8

Office hours: Monday 1-2, Tuesday 3-4, Friday 1-2 (Room 113 Maths)

Weekly exercise routine: Exercise sheet available by Monday of week n from the web page
<p style="text-align:center">http://www.maths.qmul.ac.uk/~tp/MAS205/</p>
Hand in work to the Complex Variables box (yellow box, on the ground floor) by 11am on Tuesday of week $n+1$; marked script returned at Friday exercise class of week $n+1$, or left in the rack (upper orange rack, in the basement) subsequently. Include your **name** and **student number** on each sheet handed in.

Barring: You are required to score at least 15% in at least 6 of the weekly exercise sheets. If you fail to do this then you will be barred from sitting the final examination.

Calculators: Calculators may NOT be used in the final examination. However they can be used in the in-course open-book test.

Assessment: 80% final examination (May 2005) + 10% for an in-course open-book test + 10% for coursework (based on best 6 weekly exercises).

Syllabus

1. Complex numbers, functions, limits and continuity.

2. Complex differentiation, Cauchy-Riemann equations.

3. Sequences and series, Taylor and Laurent series, singularities.

4. Complex integration, Cauchy's theorem and consequences, Cauchy's integral formulae and related theorems.

5. The residue theorem and applications to evaluation of integrals and summation of series.

Books

M.R.Spiegel, Complex Variables (Schaum Outline)
    R.V.Churchill and J.W.Brown, Complex Variables and Applications (McGraw Hill)
    I.N.Stewart and D.O.Tall, Complex Analysis (Cambridge University Press)
    H.A.Priestley, Introduction to Complex Analysis (Oxford University Press)
    G. Cain, Complex Analysis, http://www.math.gatech.edu/~cain/winter99/complex.html

Comments:
All five books cover the whole course and quite a lot of other material. The first two are directed towards scientists and engineers and emphasise practicalities and applications rather than rigorous proof and formal development of theory. The next three are good texts for pure mathematicians. Cain's book is freely downloadable from the internet.

<div style="text-align:right">Thomas Prellberg, September 2004</div>