UNIVERSITY OF CALGARY

FACULTY OF SCIENCE
Department of Mathematics and Statistics

Mathematics 421 / 423 Complex Analysis I / Honours Complex Analysis I

(see Section 3.5C of Faculty of Science www.ucalgary.ca/pubs/calendar/current/sc-3-5.html and Course Descriptions: http://www.ucalgary.ca/pubs/calendar/current/course-main.html)

Syllabus

Topics	**Number of Hours**
Complex Numbers	3
Analytic Functions	4
Elementary Functions	3
Line Integrals	2
The Cauchy Theorem	4
The Cauchy Integral Formula	3
Taylor-Series and Laurent Series	4
Singularities	3
The Residue Theorem	3
Evaluation of Improper Real Integrals	4
Elementary Conformal Mapping, Linear Fractional Transformation	3
TOTAL HOURS	**36**

Mathematics 421/423 Complex Analysis I /Honours Complex Analysis I
Course Outcomes:

Overview: The course studies the consequences of analyticity for complex valued functions. This is done via the study of power series, integration, conformal mapping and the Riemann surfaces for simple analytic functions.

1. Calculational skills: The student will be able to compute integrals using the residue calculus as well as fundamental calculations with power series.

2. Theoretical skills: Students will start being able to develop simple estimates for analytic inequalities useful in the development of integral bounds, arguments involving the argument principle and the behaviour of singularities of meromorphic functions.

The mathematical sophistication is at the level of the book `Introductory complex analysis' by Silverman. Honours students taking mathematics 423 would be advised to work towards the level of `Theory of functions' by Markushevich.

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16:11:03 (as PMAT 421)
Prerequisite change: 2009:07:01 (as PMAT 421)
Name change/Description change/combined with Math 423 2012:07:01
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