

Mathematics 415

Mathematical Methods

(see Course Descriptions for the applicable academic year: <http://www.ucalgary.ca/pubs/calendar/>)

Syllabus

<u>Topics</u>	<u>Number of Hours</u>
Complex numbers. Limits. Continuity. Differentiability. Analytic functions. Elementary functions. Real integrals of complex functions.	4
Trigonometric polynomials. Approximation by trigonometric polynomials. Fourier series. Discrete Fourier transform	8
Complex integrals. Cauchy's integral theorem. Cauchy's integral formula.	4
Series of real and complex functions. Convergence tests. Taylor, McLaurin, Laurent series. Properties of zeros and poles.	5
Sequence spaces. The z-transform and its inverse. Discrete linear systems and filters. Convolution. Frequency analysis. Special purpose filters.	7
Improper integrals. Continuous linear systems and filters. Integration by the method of residues. Laplace and Fourier transforms and their inverses. Frequency analysis. Special purpose filters.	8
TOTAL HOURS	36
