Mathematics (MATH) 366

Complex Variables I (Revision 2)

Status:	Replaced with new revision, see the **course listing** ⤤ for the current revision ✖
Delivery mode:	**Individualized study** ⤤
Credits:	3
Area of study:	Science
Prerequisites:	**MATH 365** ⤤ or an equivalent course from another institution.
Precluded:	None
Challenge:	MATH 366 is not available for challenge.
Faculty:	**Faculty of Science and Technology** ⤤

Overview

MATH 366 is an introductory complex variable course covering complex numbers, complex variables function, continuity, limits, derivatives, transcendental functions, integration on the complex plane, infinite series with complex variables, and the residue theorem with some of its applications.

Outline

MATH 366 consists of the six units listed below:

- Unit 1: Complex Numbers

- Unit 2: The Complex Function and Its Derivative

- Unit 3: The Basic Transcendental Functions

- Unit 4: Integration in the Complex Plane

- Unit 5: Infinite Series Involving a Complex Variable

- Unit 6: Residues and Their Use in Integration

Learning outcomes

Upon successful completion of this course, you should be able to

- demonstrate understanding of the concept of complex numbers and the complex or Argand plane, and carry out basic mathematical operations with complex numbers expressed in either plane notation or polar notation.

- determine if a complex function is continuous, differentiable, analytic and harmonic, and find its derivative.

- work with basic complex transcendental functions such as the exponential, logarithmic, trigonometric and hyperbolic function.

- evaluate contour integrals of complex functions to solve practical problems by applying the fundamental theorem of calculus for analytic functions, Cauchy's integral formula, and the theory of complex integration.

- determine the power series of elementary analytic functions and their convergence.

- demonstrate understanding of the concept of residue and apply this concept to evaluate certain real integrals.

Evaluation

To **receive credit** ☑ for MATH 366, you must submit all of the course assignments and complete them to the satisfaction of your tutor. You must also achieve a grade of at least 50 percent on each examination, and a course composite grade of at least **D (50 percent)** 🄿 . The weighting of the composite grade is as follows:

Activity	Weight
Assignment 1	10%
Assignment 2	10%
Assignment 3	10%
Assignment 4	10%
Midterm Exam	30%
Final Exam	30%
Total	**100%**

To learn more about assignments and examinations, please refer to Athabasca University's **online Calendar** ☑ .

Materials

Wunsch, A. David Wunsch. *Complex Variables with Applications*. 3d ed. Boston: Pearson Education, Inc. 2005. 📖 (Print)

Other materials

The course materials also include an online study guide and an online course orientation.

Important links

> **Academic advising** 🗗

> **Program planning** 🗗

> **Request assistance** 🗗

> **Support services** 🗗

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

Opened in Revision 2, June 14, 2018

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View **previous revision** 🗗