UNIVERSITY COLLEGE of the FRASER VALLEY

COURSE IMPLEMENTATION DATE: January 1994
COURSE REVISED IMPLEMENTATION DATE: September 2005
COURSE TO BE REVIEWED: September 2009
(Four years after implementation date) (MONTH YEAR)

OFFICIAL COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department and the material will vary - see course syllabus available from instructor

FACULTY/DEPARTMENT: **Science, Health & Human Services / Mathematics & Statistics**

MATH 322		**3**
COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS

Complex Variables
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course provides an introduction to complex analysis and its applications. Topics include the algebra of complex numbers, geometry of the complex plane, analytic functions, contour integration, complex power series, residue theory, and an introduction to conformal mapping.

PREREQUISITES: **MATH 211**
COREQUISITES:

SYNONYMOUS COURSE(S)
(a) Replaces: _____ *(Course #)*
(b) Cannot take: _____ *(Course #)* for further credit.

SERVICE COURSE TO: _____ *(Department/Program)* _____ *(Department/Program)*

TOTAL HOURS PER TERM: **60**
STRUCTURE OF HOURS:

Lectures:	**60**	Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field Experience:		Hrs
Student Directed Learning:		Hrs
Other (Specify):		Hrs

TRAINING DAY-BASED INSTRUCTION
LENGTH OF COURSE:
HOURS PER DAY:

MAXIMUM ENROLLMENT: **36**
EXPECTED FREQUENCY OF COURSE OFFERINGS: **Every other year**
WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only) ☐ Yes ☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department) ☐ Yes ☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE: ☐ Yes ☒ No

AUTHORIZATION SIGNATURES:

Course Designer(s): Math Curriculum Committee
Chairperson: Gillian Mimmack *(Curriculum Committee)*
Department Head: Gillian Mimmack
Dean: Jacalyn Snodgrass
PAC Approval in Principle Date:
PAC Final Approval Date: December 10, 2004

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

Successful students will:
1. become proficient with the basic concepts and language of complex variables, including definitions and major theorems.
2. learn to use appropriate techniques to carry out calculations.
3. develop their ability to understand and create formal mathematical proofs.

METHODS:

Lectures are interspersed with in-class problem sessions. Evaluation includes assignments, term tests, and a three-hour final exam. Mathematical software may be used to help students explore concepts.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

Credit can be awarded for this course through PLAR (Please check:) ☒ Yes ☐ No

METHODS OF OBTAINING PLAR:

Course challenge. Please check online at http://www.ucfv.ca/math/challenge.htm for the departmental challenge policy.

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

The text is chosen by departmental curriculum committee. Recent text used:
Saff & Snider. Complex Analysis for Mathematics, Science and Engineering.

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Assingments	20%
Term Tests	40%
Final Exam	40%

Students must achieve at least 40% on the final exam to pass the course.

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

1. Complex numbers: algebra, modulus and complex conjugate, vector and polar forms, powers and roots.
2. Elementary functions of a complex variable: the exponential, trigonometric, hyperbolic and logarithmic functions.
3. Analytic functions: limits, continuity, derivatives, the Cauchy-Riemann equations, harmonic functions.
4. Complex integration: contour integrals, Cauchy's integral theorem, Cauchy's integral formula, the maximal principle.
5. Complex series: properties of power series. Taylor and Laurent series, differentiation and integration of power series, singularities.
6. Residue theory: residues and poles, the residue theorem and applications.
7. Conformal mapping: an introduction to elementary properties.