UNIVERSITY COLLEGE of the FRASER VALLEY

PAC FORM #2 (Page 1)

COURSE IMPLEMENTATION DATE: September 1994
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: September 1998
(Four years after implementation date) (MONTH YEAR format)

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: **MATHEMATICS**

MATH 320		**3**
COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS

ADVANCED CALCULUS
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

An introduction to some techniques of real analysis. Topics include infinite series, uniform convergence, Taylor series, improper integrals, and Fourier Series.

PREREQUISITES: **Math 214**
COREQUISITES: **None**

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: _____
EXPECTED FREQUENCY OF COURSE OFFERINGS: _____

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): _____ Chairperson: _____ *(Curriculum Committee)*

Department Head: Barry Garner Dean: _____

PAC Approval in Principle Date: PAC Final Approval Date: October 27, 1993

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

To introduce the students to some of the series-based methods of analysis, as they are used within physics, engineering and mathematics.

METHODS:

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

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

METHODS OF OBTAINING PLAR:

TEXTBOOKS, REFERENCES, MATERIALS:

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

Methods of Real Analysis, R. Goldberg, Wiley & Sons.

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

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

The students will be evaluated on the basis of assignments (approx. 20%), 2 or 3 midterm exams (approx. 40%) and a final exam (approx. 40%).

COURSE CONTENT:

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

1. Infinite Series
    a. Convergence, absolute and conditional.
    b. Series with non-negative terms, comparison tests.
    c. Ratio and root tests. Remainders.
    d. Series with variable signs.
    e. Other tests for convergence.

2. Sequences and series of functions, Uniform convergence.
    a. Uniform convergence.
    b. Consequences of uniform convergence
    c. Abel's and Dirichlet's tests.

3. Taylor Series
    a. Power series, Interval of convergence.
    b. Properties of power series.
    c. Taylor and Maclaurin series.
    d. The arithmetic of power series.

4. Improper Integrals.
    a. Conditional and absolute convergence.
    b. Improper integrals with non-negative integrands.
    c. The Cauchy principal value.
    d. Uniform convergence and consequences.

5. Fourier Series
    a. Criterion of approximations.
    b. Fourier coefficients.

c. Dirichlet conditions.
d. Orthogonal functions.
e. Expansion of functions.
f. Change of interval.