UNIVERSITY COLLEGE of the FRASER VALLEY

COURSE IMPLEMENTATION DATE:	September 1994
COURSE REVISED IMPLEMENTATION DATE:	September 2006
COURSE TO BE REVIEWED:	November 2009
(Four years after UPAC final approval 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: **Faculty of Science, Health & Human Services / Engineering**

COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS
ENGR 257		**3**

COURSE DESCRIPTIVE TITLE: **Mathematical Physics**

CALENDAR DESCRIPTION:

This course will give students a wide arsenal of mathematical techniques and tools to increase their ability in setting up and solving problems. The solution of partial differential equations with applications to many areas of physics is the biggest single theme of the course.

NOTE: Students may obtain credit for either MATH 381or ENGR 257, but not both. This course is cross-listed as PHYS 381.

PREREQUISITES: MATH 211, one of (PHYS 221, MATH 255) and either PHYS 112 or any other second year Math Course.

COREQUISITES:

SYNONYMOUS COURSE(S)
(a) Replaces: **n/a** *(Course #)*
(b) Cannot take: **MATH 381, PHYS 381** *(Course #)* for further credit.

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

TOTAL HOURS PER TERM: **75**

STRUCTURE OF HOURS:

Lectures:	**75**	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: **24**
EXPECTED FREQUENCY OF COURSE OFFERINGS: **once per 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): Tim Cooper/Peter Mulhern
Chairperson: Gillian Mimmack *(Curriculum Committee)*
Department Head: Norm Taylor
Dean: Jackie Snodgrass
UPAC Approval in Principle Date:
UPAC Final Approval Date: December 14, 2005

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

To give the student the ability to model a system, physical or otherwise, as a series of mathematical equations. To give the student the ability to solve these equations.

METHODS:

Lecture, demonstration, small group practice, discussion, audiovisual presentation, computer simulation, use of models and charts.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

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

METHODS OF OBTAINING PLAR:

Departmental Review and/or Course Challenge.

TEXTBOOKS, REFERENCES, MATERIALS:

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

C. Ray Wylie and Louis C. Barrett, Advanced Engineering Mathematics

Murray R. Spiegel, Advanced Mathematics for Scientists and Engineers

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

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

Assignments	20%
Midterm	30%
Final exam	50%

COURSE CONTENT:

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

Complex numbers: Leibnitz rule and apps to integration
Ordinary Differential Equations with constant co-efficients using operator techniques
Fourier Series
Waves on Strings, Separate Variables
One Dimensional Heat Flow, Leplace's equation in cartesian and polar co-ordinates for finite systems
Special functions of physics (delta, ei(x), erf(x),etc.)
Fourier Transforms, basic theorem, application to integration, Parseval
One dimensional heat flow and Laplace's equation for infinite systems
Laplace equation in three dimensions and solutions as expansions;Sturm Liouville systems