UNIVERSITY COLLEGE of the FRASER VALLEY

UPAC FORM #2 (Page 1)

COURSE IMPLEMENTATION DATE:	October 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 Sciences, Health & Human Services/Physics**

COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS
PHYSICS 485		**3**

COURSE DESCRIPTIVE TITLE: **Nonlinear Physics Laboratory**

CALENDAR DESCRIPTION:

This is a laboratory course in nonlinear physics. It is designed to provide "hands-on" experience with nonlinear topics covered in Physics 484.

PREREQUISITES: **Physics 221, Physics 381**

PRE or COREQUISITES: **Physics 484**

SYNONYMOUS COURSE(S)

(a) Replaces: **n/a** *(Course #)*

(b) Cannot take: **n/a** *(Course #)* for further credit.

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

TOTAL HOURS PER TERM: **75**

STRUCTURE OF HOURS:

Lectures:		Hrs
Seminar:		Hrs
Laboratory:	**75**	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 every two years**	
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): George McGuire

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:

This course is designed to provide students with:

1. An appreciation of the importance of nonlinear phenomena in the everyday world;
2. Symbolic computational skills that are needed for employment in a highly technical society;
3. Useful problem solving and critical thinking skills;
4. The skills needed to tackle problems in a variety of non-scientific disciplines;
5. An understanding of the capabilities and limitations of symbolic computational software;
6. A skill which makes them employable.

METHODS:

This course will be presented using demonstrations, experiments, and computer simulations. Heavy reliance will be made of the computer to simulate, model, animate, and test the text's experimental nonlinear models. The students will be introduced to models not only from the physical sciences (biology, chemistry, and physics), but from the humanities, medical and business.

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:]

TEXT: Enns, McGuire, Nonlinear Physics with Maple for Scientists and Engineers, 2nd. Ed., Birkhauser, NY (2000)

REFERENCES:

1. Jackson, E. A., Perspectives of Nonlinear Dynamics, Vol. 1 and Vol. 2, Cambridge University Press, 1989, 1991
2. Moon, F. C., Chaotic and Fractal Dynamics, An Introduction for Applied Scientists and Engineers, Wiley, 1992
3. Hilborn, R. C., Chaos and Nonlinear Dynamics, Oxford University Press, 1994TEXT: Enns, McGuire, Nonlinear Physics with Scientists and Engineers, 2nd. Ed., Birkhauser, NY(2000)

SUPPLIES / MATERIALS:

Fully-equipped physics lab

STUDENT EVALUATION:

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

Experiments	50%
Computer Simulations	30%
Research Project	20%

COURSE CONTENT:

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

The textbook contains thirty experiments. The students must complete one experiment per week.