UNIVERSITY COLLEGE of the FRASER VALLEY

COURSE IMPLEMENTATION DATE:	September 2006
COURSE REVISED IMPLEMENTATION DATE:	
COURSE TO BE REVIEWED: (Four years after UPAC final approval date)	May 2010 (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/Physics**

COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS
PHYS 410		**3**

History of Physics
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

Once students have learned some physics, they should also know the history behind it. This course surveys the history of physics from the Paleolithic to the 21st century and will add breadth to students' understanding of physical thought.

PREREQUISITES: **Any 300 – level Physics course**
COREQUISITES: **PHYS 382 or 383 (Historical Group of experiments) strongly recommended**

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: **60**
STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:	**15**	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 every 2-3 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): R.Woodside
Chairperson: Gillian Mimmack *(Curriculum Committee)*
Department Head: Norm Taylor
Dean: Jackie Snodgrass
UPAC Approval in Principle Date:
UPAC Final Approval Date: May 26, 2006

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

At the conclusion of this course, the student will be expected to:

1) know the true order of major events in physics
2) understand the recurrent themes in physical thought such as continuity vs. discreteness and the nature of the vacuum
3) have a better appreciation for new directions in physics.

METHODS:

Lecture based with a large seminar component. Students will be expected to give and evaluate presentations, as well as participate in them. Students will also research and write a major paper.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

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

METHODS OF OBTAINING PLAR:

Please see the Physics PLAR policy on the department's webpage.

TEXTBOOKS, REFERENCES, MATERIALS:

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

Selection of readings from:

F. Cajori, "History of Physics"
I.Newton "Principia","Optiks"
J.C. Maxwell, "Electrodynamics"
A.Einstein , "Meaning of Relativity"
W. Gibbs, Collected Works
A. Einstein, L.Infeld, "The Evolution of Physics"
Needham, History of Science in China (26 vol.)
Galileo :Dialogues Concerning Two Chief World Systems
Dialogues on Two New Sciences
Starry Messenger
M. Jammer, Concepts of Space 2nd Ed.
Concepts of Force
Concepts of Mass
T. Heath, History of Greek Mathematics, vol 1 & 2
Aristarchus of Samos
Greek Astronomy
O. Neugebauer, The Exact Sciences in Antiquity
H. Hodges, Technology in the Ancient World
Stillman Drake, Galileo at Work
Paul Schilp, Library of Living Philosophers, vol. 7
A. Einstein

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

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

Seminar Participation	10%
Presentation	30%
Paper	30%
Final	30%

COURSE CONTENT:

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

Week 1-3 The Prehistory - Classical Period
In the first three weeks the long period from prehistory to the Hellenic Age will be covered. Topics will include emergent technologies and mathematics from Sumerian and Asian origins to Archimedes.

Week 4 The Age of Faith and Physics in the Arab World
The Age of Faith will cover Christian contributions, such as the stoning of Hypatia, the Crusades, and Roger Bacon.

Week 5 - 6 The Renaissance
The next two weeks will be used to cover the Renaissance and the first universities from the workshops of Toledo and Venice, through the fall of Byzantium to the machinery of Leonardo.

Week 7 - 8 Physics in the 17th Century
In the 17th Century we have the founding of Journals and Scientific Societies, and such notables as Kepler, Descartes, Galileo, and Newton.

Week 9 - 10 Physics in the 18th Century
The 18th Century consolidated Newton's mechanics, developed continuum mechanics and started electricity and thermodynamics.

Week 11 - 12 Physics in the 19th Century
In the 19th Century, Faraday, Maxwell, Kelvin and Gibbs brought electromagnetism and thermodynamics to fruition and started statistical mechanics.

Week 13 - 14 Physics in the 20th Century and Beyond
The 20th Century gave a marked departure from Classical Physics. Although Einstein's relativity theories are still in the classical mould, quantum mechanics with its fundamental probabilities is a direct break. This leads to the remarkable new directions of space-time thought and nano-technology.

Students taking Physics 410 are also encouraged to take either Physics 382 or 383 with an appropriate group of experiments. This is listed as "The Historical Group" in the Phys 382 course outline.