UNIVERSITY COLLEGE of the FRASER VALLEY



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| COURSE IMPLEMENTATION DATE: | June 1993 |
| 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
- see course syllabus available from instructor

FACULTY/DEPARTMENT: **Faculty of Science, Health & Human Services / Physics**

| COURSE NAME/NUMBER | FORMER COURSE NUMBER | UCFV CREDITS |
|---|---|---|
| Physics 382 | | **3** |

Modern Physics Laboratory
COURSE DESCRIPTIVE TITLE

**CALENDAR DESCRIPTION:**

This eclectic laboratory course is designed to give students a chance to perform many traditional and novel experiments. The students will be required to do a selection of experiments from a list spanning the many disciplines of physics: dynamics, optics, solid state physics, fluid dynamics, thermodynamics, electricity, magnetism, electronics, nuclear physics, etc.

PREREQUISITES Physics 221, Physics 222, Physics 252
COREQUISITES:

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: **45**

STRUCTURE OF HOURS:

| | | |
|---|---|---|
| Lectures: | | Hrs |
| Seminar: | | Hrs |
| Laboratory: | **45** | 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 or 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): George McGuire, revised P. 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:**

General Objectives:

1. The students should learn that a theoretical claim is only as good as the supporting data.
2. The students will have a chance to form and answer their questions experimentally.

Specific Objectives:

1. The students are to use the standard measuring devices found in most modern physics labs.
2. Students will have the opportunity to measure and to check if the classroom theory is reproducible in the lab.
3. Students will have the opportunity to try some simple research projects.
4. The students are to develop skills to make them more employable.
5. Students will have to learn the technical communication skills used in industry and research.
6. Students will be able to solve various problems in each of the topic areas listed in the Calendar Description section.

**METHODS:**

1. The student will be required to do a selection of experiments from a suggested list of about eighteen (18). The suggested experiments will cover a wide cross section of the standard physics disciplines: mechanics, electricity, magnetism, optics, thermal, solid state physics, electronics, etc.
2. The students will work individually.

**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:]

None

**SUPPLIES / MATERIALS:**

Fully-equipped Physics Lab

**STUDENT EVALUATION:**

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

1. The majority of marks earned (75%) in this course will be derived from the accumulated grades assigned to the individual laboratory reports.
2. The students will be required to give a seminar in which they will discuss the theory and present their data. This seminar will be worth 25% of the final grade assigned.

COURSE CONTENT:

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

1. Determine the numerical value for the Gravitational constant G. (Cavendish apparatus)
2. Measuring the acceleration due to gravity. (Kater's Pendulum)
3. Millikan Oil Drop Experiment
4. Measuring the speed of light. (rotating mirrors)
5. Franck-Hertz Experiment
6. Photoelectric Effect
7. Plotting of Magnetic Fields (3D)
8. Ferromagnetism (Hysteresis)
9. Mechanical Equivalent of Heat
10. Angular Momentum (Advanced PSSC)
11. Viscous Flow through tubes
12. Doppler Effect
13. Impedance of Loudspeakers
14. Nuclear Magnetic Resonance
15. Index of Refraction of Air (Interferometer)
16. Zeeman Effect
17. Black Body Radiation
18. Individual Research Projects