UNIVERSITY COLLEGE of the FRASER VALLEY



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 vary - see course syllabus available from instructor

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

| **PHYS 342** | | **3** |
|---|---|---|
| COURSE NAME/NUMBER | FORMER COURSE NUMBER | UCFV CREDITS |

**Analog Electronics Laboratory**
COURSE DESCRIPTIVE TITLE

## CALENDAR DESCRIPTION:

PHYS 342 is the laboratory portion of PHYS 332. Students enrolling in PHYS 342 must in the same semester enroll in PHYS 332. This course will introduce and provide the students with experience and practice in wiring and designing circuits, how passive and active circuit devices are used in circuits, and how to check the circuits by employing the electronic measuring and test equipment used in modern laboratories. The lab computers will be used to check how the actual circuits function in comparison with the computer simulated circuits.

PREREQUISITES: **PHYS 222**
COREQUISITES:
PRE or CO-REQUISITES: **PHYS 332**

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 two or three yrs**
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): Peter Mulhern
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:**

This course is designed to provide students with:

1. practical experience in constructing and testing the classroom circuits;
2. practice in using computer simulators to check and to model laboratory circuits;
3. experience of using modern electronic measuring equipment;
4. appreciation of how actual circuits can be designed to perform specific functions

Students, after successfully completing this laboratory course, will have a good understanding of the limitations and effectiveness of the classroom theory, how modern computers are used to model and test electronic circuits, and how to construct, test and design electronic circuits.

**METHODS:**

The lab consists of multiple prepared experiments. They are designed to dovetail with the lecture material. Additionally, there will be student designed projects. Oral presentations and seminars will be used whenever possible.

**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:]

Malvino, P., Experiments for Electronic Principles, 5th Ed., McGraw Hill (1993)

References:

1. Malvino, Electronic Principles, McGraw Hill (1993)
2. Horowitz and Hill, The Art of Electronics, Cambridge (1989)
3. Simpson, R., Introductory Electronics for Scientists and Engineers, 2nd Ed., Simon & Schuster (1987)
4. Driscoll, F., Analysis of Electric Circuits, Prentice Hall (1973)
5. Fortney, L., Principles of Electronics, HBJ (1987)

**SUPPLIES / MATERIALS:**

Fully-equipped physics lab

**STUDENT EVALUATION:**

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

| | |
|---|---|
| Lab Reports | 70% |
| Projects | 30% |

**COURSE CONTENT:**

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

1. Optoelectronic Devices
2. Common Emitter Connection

3. Q Points and Bias
4. The CE Amplifier
5. AC Load Lines
6. JFET Curves and JFET bias
7. JFET Amplifiers and Applications
8. Op Amps and Negative Feedback
9. Oscillators: Wein-Bridge, LC
10. Voltage Regulation
11. The Frequency Mixer