UNIVERSITY COLLEGE of the FRASER VALLEY

COURSE IMPLEMENTATION DATE: June 1993
COURSE REVISED IMPLEMENTATION DATE: September 2003
COURSE TO BE REVIEWED DATE: September 2007
(Four years after implementation date)

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 material will vary - see course syllabus available from instructor

FACULTY/DEPARTMENT: SCIENCE / **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 enrol 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: PHYSICS 222

PRE or COREQUISITES: PHYS 332

SYNONYMOUS COURSE(S)
(a) Replaces: N/A
(Course #)
(b) Cannot take N/A for further credit
(Course #)

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

TOTAL HOURS PER TERM: **39**

STRUCTURE OF HOURS:

Lectures:	39	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 ENROLMENT: **24**

EXPECTED FREQUENCY OF COURSE OFFERING: Once every two or three years, more often if we offer second year electrical engineering

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only) **YES** **N/A** **NO** **N/A**

WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department) **YES** **X** **NO**

TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE: **YES** **N/A** **NO** **N/A**

AUTHORIZATION SIGNATURES:

Course designer(s): P. Mulhern
Chairperson: *(Curriculum Committee)*
Department Head: P. Mulhern
Dean: J. Snodgrass
PAC Approval in Principle Date:
PAC Final Approval Date: December 14, 2001

PHYS 342

COURSE NAME / NUMBER

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.

METHODS:

This laboratory course will provide the students with 15 four-hour laboratory periods. Thirteen lab periods will be used to perform the experiments and two periods for evaluation and examinations. The circuit simulations will allow comparisons with the actual functioning laboratory circuits. 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.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

Credit can be awarded for this course through PLAR YES __X__ NO

METHODS OF OBTAINING PLAR:

Initial oral discussion
Relevant industrial experience

TEXTBOOKS, REFERENCES, MATERIALS:

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:

PHYS 342

COURSE NAME / NUMBER

STUDENT EVALUATION:

Lab reports	40%
Midterm	20%
Final	40%

COURSE CONTENT:

1. Optoelectronic Devices (Exp. #13)
2. Common Emitter Connection (Exp. 14, 15)
3. Q Points and Bias (Exp. 18, 19, 20)
4. The CE Amplifier (Exp. 23, 24)
5. AC Load Lines (Exp. 26, 27)
6. JFET Curves and JFET bias (Exp. 32,33)
7. JFET Amplifiers and Applications (Exp. 34,35)
8. Op Amps and Negative Feedback (Exp. 42,44)
9. Oscillators: Wein-Bridge, LC (Exp. 50, 51,52)
10. Voltage Regulation (Exp. 54,55)
11. The Frequency Mixer (Exp. 57)
12. TTL and Cmos Logic Gates