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 332

COURSE NAME/NUMBER

ANALOG ELECTRONICS

FORMER COURSE NUMBER

UFV CREDITS

3

COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

Physics 332 is an introductory electronic principles and circuit analysis course. This course will cover the following topics: analysis of DC and AC circuits, diodes, bipolar transistors, field effect transistors, transistor amplifiers, operational amplifiers, and power supplies. Students enrolling in this course must also take the accompanying lab course, PHYS 342, in the same semester.

PREREQUISITES: PHYS 232

COREQUISITES: PRE- or COREQUISITES Physics 342

SYNONYMOUS COURSE(S)

(a) Replaces: n/a

(b) Cannot take: n/a

SERVICE COURSE TO:

(n/a)

(Department/Program)

COREQUISITES:

PRE- or COREQUISITES Physics 342

TOTAL HOURS PER TERM: 75

TRAINING DAY-BASED INSTRUCTION LENGTH OF COURSE:

HOURS PER DAY:

SÉRVICE COURSE TO:

(n/a)

(Department/Program)

SYNONYMOUS COURSE(S)

SYNONYMOUS COURSE(S)

TOTAL HOURS PER TERM:

75

STRUCTURE OF HOURS:

Lectures: 75 Hrs

Seminar: Hrs

Laboratory: Hrs

Field Experience: Hrs

Student Directed Learning: Hrs

Other (Specify): Hrs

MAXIMUM ENROLLMENT:

24

EXPECTED FREQUENCY OF COURSE OFFERINGS:

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 ☐ No

WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)

☐ Yes ☐ No

TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:

☐ Yes ☐ No

AUTHORIZED SIGNATURES:

Course Designer(s): George McGuire; revised P. Mulhern

Chairperson: Gillian Mimmack (Curriculum Committee)

Department Head: Norm Taylor

Dean: Dan Ryan

UPAC Approval in Principle Date: February 26, 2010

UPAC Final Approval Date: February 26, 2010
LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

This course is designed to provide students with:
1. The theory needed to understand and predict how electronic devices will function when placed in circuits;
2. The theory to design and analyze the electronic circuits;
3. The ability to design, run, and test circuits on computer simulators;
4. An appreciation of the importance electronics plays in the lives of Canadians.
5. The ability to solve various problems in each of the topic areas listed in the Calendar Description section.

METHODS:

This course will be presented using lectures, demonstrations, and computer simulations. The use of the computer simulators will permit the students to design and check how their circuits should function when constructed in the lab. The computer simulations will help the students understand and master the electronic principles and circuit theory, as well as provide an appreciation of how important a computer can be to a physicist. Students after successfully completing this course will have a good understanding of basic electronic devices, how computers may be used to model and test electronic circuits (active and passive devices), and the ability to design, construct, and to test circuits.

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:]


REFERENCES:

1. Horowitz and Hill, the Art of Electronics, Cambridge, 1989

SUPPLIES / MATERIALS:

Access to a PC is an advantage.

STUDENT EVALUATION:

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

Assignments                             20%
Mid-term                                 20%
Computer Simulations                    20%
Final                                     40%

COURSE CONTENT:

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

Week 1                                  Introduction/Overview/Circuit Analysis
Week 2,3                                 Operational Amplifiers and Applications
                                        All of Chapter 2 plus additional material
Week 4,5                                 Diodes and Semiconductor Physics
                                        All of Chapter 3 plus additional material
Week 6,7                                 Bipolar Junction Transistors
                                        All of Chapter 4, some of Chapter 10
Week 8,9                                 Field Effect Transistors
                                        All of Chapter 5
Week 10                                  Differential Amplifiers
Week 11                                  Frequency Response
Week 12                                  Feedback
Week 13                                  Output and Power Amplifiers