**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

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<th>SCIENCE/PHYSICS</th>
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<td>COURSE NAME/NUMBER</td>
<td>ANALOG ELECTRONICS</td>
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**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:** Physics 222

**COREQUISITES:**

**SYNONYMOUS COURSE(S)**

(a) Replaces:

(b) Cannot take:

**SERVICE COURSE TO:**

**TOTAL HOURS PER TERM:** 43

**TRAINING DAY-BASED INSTRUCTION**

**STRUCTURE OF HOURS:**

Lectures: 43 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 [ ]

- (upper-level requested by department)
  - Yes [ ]
  - No [ ]

**TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:**

**AUTHORIZATION SIGNATURES:**

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

Chairperson: Revised E. Camm (Curriculum Committee)

Department Head: Revised P. Mulhern

Dean: J.D. Tunstall, Ph.D.; Revised J. Snodgrass

PAC Approval in Principle Date: PAC Final Approval Date: December 14, 2001
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.

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:

Initial oral discussion
Successful completion of a final exam

TEXTBOOKS, REFERENCES, MATERIALS:

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


REFERENCES:


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:]

Jan 5, 8  Introduction/Overview/Circuit Analysis
         Sections 1.1, 1.4, 1.5
Jan 12 - 22  Operational Amplifiers and Applications
             All of Chapter 2 plus additional material
Jan 26, 29  Diodes and Semiconductor Physics
            All of Chapter 3 plus additional material
Feb 2 - 23  Bipolar Junction Transistors
            All of Chapter 4, some of Chapter 10
Feb 26, Mar 2  Field Effect Transistors
               All of Chapter 5
Mar 5, 9  Differential Amplifiers
   Sections 6.1, 6.2, 6.3, 6.4 plus sensing devices
Mar 12  MIDTERM
Mar 16, 19 Frequency Response
   Sections 7.1, 7.2, 7.3, 7.4
Mar 23, 26 Feedback
   Sections 8.1, 8.2, 8.3, 8.4, 8.8
Mar 30, Apr 2 Output and Power Amplifiers
   Sections 9.1, 9.2, 9.3, 9.6
Apr 6, 9  Filters and Tuners
   Sections 11.1, 11.2, 11.3, 11.5, 11.11