

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: ENPH 310		Number of Credits: 4 Course credit policy (105)																	
Course Full Title: Electronics I																			
Course Short Title (if title exceeds 30 characters):																			
Faculty: Faculty of Science		Department (or program if no department): Physics																	
Calendar Description: Construct electronic circuits containing diodes, bipolar junction transistors (BJTs), MOSFETs, and differential amplifiers; analyze the frequency response of a circuit; design and troubleshoot circuits using simulation software. A lecture/lab combination course with a final project. Note: Students with credit for PHYS 332 and PHYS 342 cannot take this course for further credit.																			
Prerequisites (or NONE):		PHYS 232. Note: As of January 2019, PHYS 221 will become a prerequisite and PHYS 232 will become a pre/corequisite.																	
Corequisites (if applicable, or NONE):																			
Pre/corequisites (if applicable, or NONE):																			
Equivalent Courses (cannot be taken for additional credit) Former course code/number: Cross-listed with: Equivalent course(s): PHYS 332 and PHYS 342 <i>Note: Equivalent course(s) should be included in the calendar description by way of a note that students with credit for the equivalent course(s) cannot take this course for further credit.</i>		Transfer Credit Transfer credit already exists: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Transfer credit requested (OReg to submit to BCCAT): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (if yes, fill in transfer credit form) Resubmit revised outline for articulation: <input type="checkbox"/> Yes <input type="checkbox"/> No To find out how this course transfers, see bctransferguide.ca .																	
Total Hours: 75 Typical structure of instructional hours: <table border="1"> <tr> <td>Lecture hours</td> <td>57</td> </tr> <tr> <td>Seminars/tutorials/workshops</td> <td></td> </tr> <tr> <td>Laboratory hours</td> <td>18</td> </tr> <tr> <td>Field experience hours</td> <td></td> </tr> <tr> <td>Experiential (practicum, internship, etc.)</td> <td></td> </tr> <tr> <td>Online learning activities</td> <td></td> </tr> <tr> <td>Other contact hours:</td> <td></td> </tr> <tr> <td>Total</td> <td>75</td> </tr> </table>		Lecture hours	57	Seminars/tutorials/workshops		Laboratory hours	18	Field experience hours		Experiential (practicum, internship, etc.)		Online learning activities		Other contact hours:		Total	75	Special Topics Will the course be offered with different topics? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, different lettered courses may be taken for credit: <input type="checkbox"/> No <input type="checkbox"/> Yes, repeat(s) <input type="checkbox"/> Yes, no limit <i>Note: The specific topic will be recorded when offered.</i>	
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Online learning activities																			
Other contact hours:																			
Total	75																		
		Maximum enrolment (for information only): 18 Expected frequency of course offerings (every semester, annually, every other year, etc.): Annually																	
Department / Program Head or Director: Jeff Chizma		Date approved: November 17, 2017																	
Faculty Council approval		Date approved: December 1, 2017																	
Campus-Wide Consultation (CWC)		Date of posting: February 2, 2018																	
Dean/Associate VP: Lucy Lee (Greg Schlitt)		Date approved: December 1, 2017																	
Undergraduate Education Committee (UEC) approval		Date of meeting: February 23, 2018																	

Learning Outcomes

Upon successful completion of this course, students will be able to:

- Analyze existing analog electronic circuits at the block level.
- Design specific analog electronic circuits at the block level.
- Construct physical analog circuits using individual electronic components.
- Manage the devices, tools, and electronic components in a basic electronics laboratory.
- Simulate electronic circuits using industry standard software tools.
- Explain how various basic electronic components work at both a fundamental and a practical level.

Prior Learning Assessment and Recognition (PLAR)

☒ Yes ☐ No, PLAR cannot be awarded for this course because

Typical Instructional Methods (guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion)

Lecture, demonstrations, laboratories.

Grading system: Letter Grades: ☒ Credit/No Credit: ☐ Labs to be scheduled independent of lecture hours: Yes ☐ No ☐

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Text(s) and Resource Materials (if more space is required, download Supplemental Texts and Resource Materials form)

Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1. Sedra / Smith	Microelectronic Circuits, 7e	<input checked="" type="checkbox"/>	Oxford University	2014
2.		<input type="checkbox"/>		
3.		<input type="checkbox"/>		
4.		<input type="checkbox"/>		
5.		<input type="checkbox"/>		

Required Additional Supplies and Materials (software, hardware, tools, specialized clothing, etc.)**Typical Evaluation Methods and Weighting**

Final exam:	45%	Assignments:	15%	Midterm exam:	25%	Practicum:	%
Quizzes/tests:	%	Lab work:	15%	Field experience:	%	Shop work:	%
Other:	%	Other:	%	Other:	%	Total:	100%

Details (if necessary):

Typical Course Content and Topics

- Signals and amplifiers
- Diodes and semiconductor physics
- Bipolar Junction Transistors
- MOS Field Effect Transistors
- Operational Amplifiers
- Integrated - circuit amplifiers
- Power amplifier
- Frequency response