

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: 5 Course credit policy (105)													
Course Full Title: Microelectronics Course Short Title:															
Faculty: Faculty of Applied and Technical Studies		Department (or program if no department): Physics													
Calendar Description: Time and frequency domain analysis of linear and nonlinear electronic circuits, biasing and small signal analysis of transistor amplifiers, operational amplifiers, feedback and stability of amplifiers, oscillators and active filters, digital circuits, D/A and A/D conversion, instrumentation.															
Prerequisites (or NONE):		PHYS 221.													
Corequisites (if applicable, or NONE):															
Pre/corequisites (if applicable, or NONE):		PHYS 232 or ENGR 210.													
Antirequisite Courses <i>(Cannot be taken for additional credit.)</i> Former course code/number: Cross-listed with: Equivalent course(s): PHYS 332 and PHYS 342 <i>(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)</i>		Course Details Special Topics course: No <i>(If yes, the course will be offered under different letter designations representing different topics.)</i> Directed Study course: No <i>(See policy 207 for more information.)</i> Grading System: Letter grades Delivery Mode: May be offered in multiple delivery modes Expected frequency: Annually Maximum enrolment (for information only): 18													
Typical Structure of Instructional Hours <table border="1"> <tr> <td>Lecture/seminar</td> <td>75</td> </tr> <tr> <td>Supervised laboratory hours (science lab)</td> <td>30</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>Total hours</td> <td>105</td> </tr> </table>		Lecture/seminar	75	Supervised laboratory hours (science lab)	30							Total hours	105	Prior Learning Assessment and Recognition (PLAR) PLAR is available for this course.	
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Supervised laboratory hours (science lab)	30														
Total hours	105														
Scheduled Laboratory Hours Labs to be scheduled independent of lecture hours: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		Transfer Credit <i>(See bctransferguide.ca.)</i> Transfer credit already exists: Yes Submit outline for (re)articulation: Yes <i>(If yes, fill in transfer credit form.)</i>													
Department approval		Date of meeting: February 14, 2022													
Faculty Council approval		Date of meeting: April 14, 2022													
Undergraduate Education Committee (UEC) approval		Date of meeting: September 23, 2022													

Learning Outcomes *(These should contribute to students' ability to meet program outcomes and thus Institutional Learning Outcomes.)*

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

1. Analyze existing analog and digital electronic circuits at the block level.
2. Design specific analog and digital electronic circuits at the block level.
3. Construct physical analog and digital circuits using individual electronic components.
4. Use D/A and A/D conversion proficiently.
5. Manage the devices, tools, and electronic components in a basic electronics laboratory.
6. Simulate electronic circuits using industry standard software tools.
7. Explain how various basic electronic components work at both a fundamental and a practical level.

Recommended Evaluation Methods and Weighting *(Evaluation should align to learning outcomes.)*

Final exam:	40%	Assignments:	15%	Quizzes/tests:	25%
Lab work:	20%		%		%

Details:

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

Texts and Resource Materials *(Include online resources and Indigenous knowledge sources. [Open Educational Resources](#) (OER) should be included whenever possible. If more space is required, use the [Supplemental Texts and Resource Materials form](#).)*

Type	Author or description	Title and publication/access details	Year
1. Textbook	Sedra / Smith	Microelectronic Circuits, 7e	2014
2.			
3.			
4.			
5.			

Required Additional Supplies and Materials *(Software, hardware, tools, specialized clothing, etc.)***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
- Digital circuits
- D/A and A/D conversion
- Filters and tuned amplifiers