



PHYS351001 Contemporary Electronics Laboratory



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Instructor: Michael Burns

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<https://www2.bc.edu/michael-burns-3/>

Office Hours: By appointment.

At any given time, the most up-to-date syllabus & schedule can be found at

<https://www2.bc.edu/michael-burns-3/PHYS351001/ClassStuff.html>

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Office Hours: By appointment.



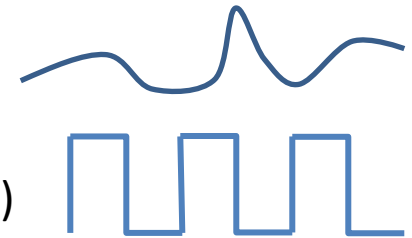
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This course covers:

Analog Electronics – continuously varying signals

Digital Electronics – digital logic (discrete bimodal signals)

Instrumentation Programming – Labview programming language



At the end of this course, you should be able, using info sheets provided by the transistor & integrated circuit manufacturers, design fairly complex circuits to amplify signals, electromagnetically probe things, etc.



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General Course structure:

Mondays 12:00-12:50pm

Lecture & quiz

Thursdays 3-5:50pm

Lab work

There are exceptions to this structure as noted in the Class Schedule on the Class Syllabus.



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Concepts this course assumes you know:

[Kirchhoff's Laws](#) as covered in PHYS220101 (Introductory Physics II)

[Fourier Analysis](#) as covered in PHYS3100 (Waves and Vibrations)



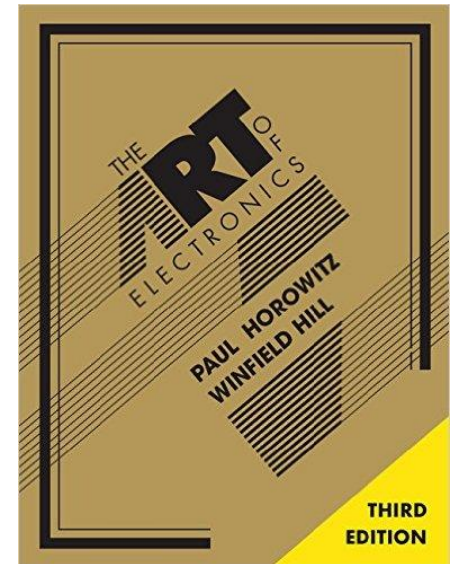
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Course Text:

The Art of Electronics 3rd Edition **by Paul Horowitz & Winfield Hill** (Harvard University)

1st edition published in 1980, and even that edition beats every electrical circuits text ever written.

Pretty much every figure in the book is a real circuit using real parts. Build it exactly as in the figure, and it will work exactly as described.





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Course reading:

Weekly reading assignments – most (but not all) at the Scientific American level. You'll have a multiple choice quiz on each reading assignment.

Various chapters in Horowitz & Hill as delineated in the syllabus.



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Labs:

Lab work will be performed as individuals.

Each person will keep their own lab book. (I'll pass them out next week.)

Photocopy of your lab notebook attached to the lab writeup.

Lab writeup detailed in the syllabus. Should be written such if I handed it to another student in the class, they could reproduce your work based only on your writeup.



Real Lab Notebook

In an Industrial Setting, a Tech Company (or even University) that runs a tight ship requires that in addition to the instructions to the right, that you:

- Sign & date every page
- Get a colleague to read & sign every page

This is critical for Intellectual Property documentation purposes.

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Project No. _____

Confidential Book No. _____ TITLE _____

From Page No. _____

Written like a diary – story of what you did + data + any other observations, calculations, etc.

This should be a real record of what actually happened. Everything in ink, no white out. Things can be crossed out but still must be visible. All of your mistakes, paths abandoned, etc left visible.

Needs to be complete enough that anyone else with a similar background to yours can pick it up and using just the lab notebook alone, can reproduce everything you did.

To Page No. _____

Witnessed & Understood by me,	Date	Invented by:	Date
		Recorded by:	



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Course grading:

No midterm or final.

Reading Assignment Quizzes:	25%
Lab Reports:	50%
Homework Problem sets:	25%

This means you really need to take the reading assignments & homework seriously.



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Most up-to-date course info:

<https://www2.bc.edu/michael-burns-3/PHYS351001/ClassStuff.html>

- Most up-to-date class syllabus & schedule
- Reading assignment links are there.
- Class slides will be posted usually within a day after the class.
- Lab instructions will be posted usually within a day after the lab.
- Homework assignments are posted there when assigned.
- Homework solutions are posted.

Can always find the above website by Googling
michael burns boston college