

## PH-315

Winter-2009  
Room SB1 201  
T & TH 14:00-16:50 PM  
PM  
<http://www.physics.pdx.edu/~larosaa/>

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- Text:** No textbook is required at this time. Still, due to the variety of experiments to be covered, students may have to consult a variety of books on electronics available in the PSU library. Alternatively, if you decided to buy a book I would suggest: Here I suggest a few:
- "*Foundations of Electronics*," by J.R. Cogdell, Prentice Hall
  - ("Foundations of Electric Circuits," by J.R. Cogdell)
  - "*The Art of Electronics*," by Horowitz & Hill; 2nd Ed., Cambridge University Press.
  - "*Basic Electronics for Scientists*," James Brophy, McGraw-Hill.
- Some laboratory notes will be distributed in class.
- Grading:**
- Lab notebook** **30%**  
All the experiments, except the three write-ups (see below) must be included in the lab notebook.  
Objective for keeping a lab-notebook: It helps develop skills for reporting scientific results.  
Good presentation is expected: clear, readable, neat.  
Each experiment description should be broken down into sections: Abstract, List of equipment used, Procedure, Graphs, Data Analysis, Conclusions.  
Lab notebooks will randomly revised on a weekly basis.
- Work performance during laboratory session** **30%**  
Keep your lab station clean, free of dust.  
Good record attendance during official time meeting.  
Positive attitude to complete tasks.  
Follow guideline to prevent equipment damage (i. e. make sure power supplies are in its lowest output values before turning them on.)  
Estimate the precision of the equipment used.
- Report write-ups** **40%**  
Out of the 10 experiments listed below, we will require write-up papers of 3 selected experiments: 02, 05 and 07. They are due the week after the experiment is officially scheduled. The reports should be submitted in electronic form (pdf or Word format).
- Note:** A brief quiz is taken during the last two weeks on an individual basis, which includes basic questions related to the experiments performed in the previous weeks. For this reason, keep your lab notebook well organized and updated as to have information quite handy at any time.
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|----------|----------|----------|----------|
| 95-100 A | 90-94 A- | 81-89 B+ | 76-80 B  |
| 71-75 B- | 66-70 C+ | 61-65 C  | 55-59 C- |

## List of experiments

Week	Subject	Write-ups
01	<b>Series Resonance Circuit</b> (Complex impedance.)	
02	<b>Parallel Resonance Circuit</b>	<b>Due Week-3</b>
03	<b>Transistors amplifiers</b>	
04	<b>Input output impedance</b>	
05	<b>Combinational and Sequential Logic Circuits</b> Hardware implementation and LabView software design	Due week-6
06	<b>Filters and Operational amplifiers</b> Low pass filter, comparator (no feedback), comparator with positive feedback: Schmitt trigger	
07	<b>Negative Feedback and Applications</b> Differential, integrator, inverting and non-inverted amplification	Due week-8
08	<b>Voltage controlled oscillator</b> Building a device whose output frequency can be controlled with an input voltage;	
09	<b>Digital-to-Analog Conversion ( DAC).</b>	
10	<b>Analog-to-Digital Conversion ( ADC).</b>	
11	<b>Positive Feedback &amp; Oscillators.</b>	