

Lecture 1

I. Bazarov

web site: [blackboard.cornell.edu](http://blackboard.cornell.edu) (self enroll)  
↳ TA info, office hours, etc.

Texts: E. Kirkland and R. Littauer, Lab Manual  
I. Bazarov, Supplement

Labs: 401 MW 7:30PM-10:30PM  
402 TR 1:25PM-4:25PM

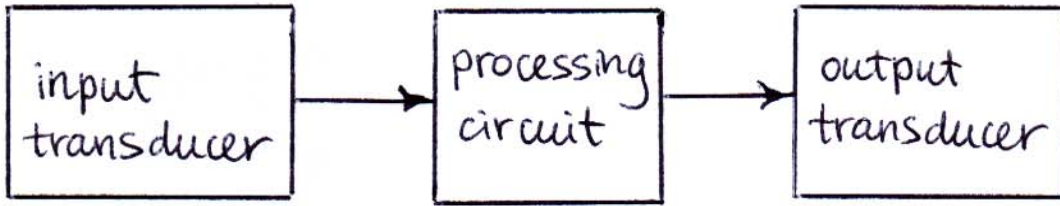
HW: 1 each week, due next week (Friday)  
Soln. handed out → no late HW accepted

Grade: 35% lab  
40% exam (prelim + final)  
15% HW  
10% quiz & participation

More info: Blackboard, printouts, 1<sup>st</sup> lab (!)

Goals: -  
-  
-

# Typical Electronic Device



transducer :

input transducer :

output transducer :

## Two types of circuits

info is represented by

typical functions :

Q: possible problems ?

input/output signals have

typical fcn :

Basic quantities of interest

$V = \text{voltage} =$

$I = \text{current} =$

DC :

AC :

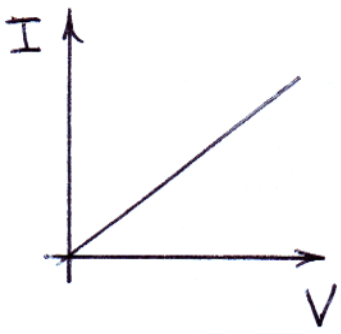
Convention     $I, V -$   
                       $i, v -$

$I, V -$  represent

Electric circuit -

Linear circuit devices

- ① Resistor                      obeys Ohm's law



I-V curve

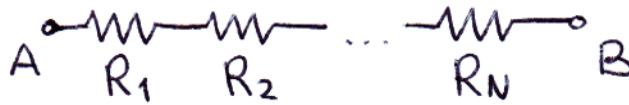
$$R \neq f(I, V)$$



Black	0	n/a - 20%
Brown	1	silver - 10%
R	2	gold - 5%
O	3	
Y	4	
G	5	
B	6	
V	7	
Gray	8	
White	9	

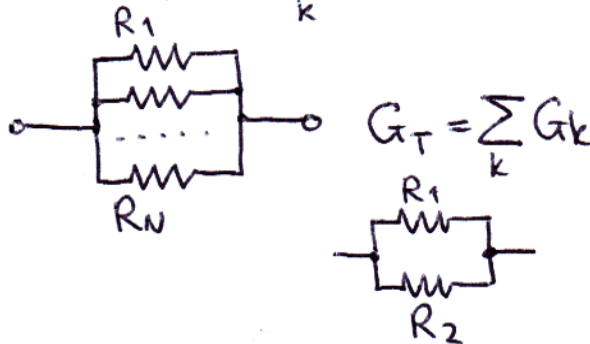
Conductance = inverse resistance

Series resistors



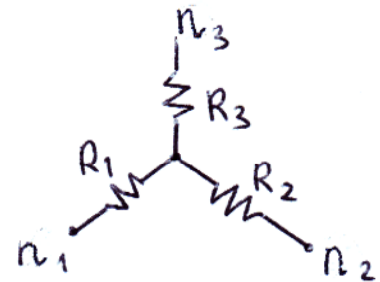
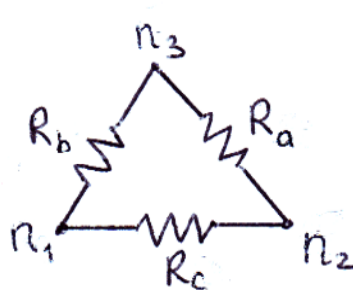
$$R_T = \sum_k R_k$$

Parallel



Y-Δ transformation

Δ → Y:



Y → Δ: