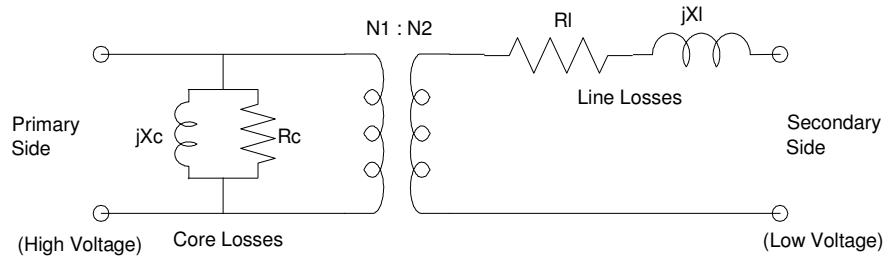


# ECE 111: Homework 15

Week #15 - ECE 331 Energy Conversion. Due Tuesday, May 2nd  
Please email to jacob.glower@ndsu.edu, or submit as a hard copy, or submit on BlackBoard

1) Determine the circuit model for a 13.2kV : 240V transformer is tested with the following test results:



Transformer Model

	V	Power	pf
Open-Circuit Test	V1 = 13.2kV	56 W	0.025
Short-Circuit Test	V2 = 40V	9 W	0.975

For the utility grid on the back of the page....

- 2) Convert the voltages and impedances to the 120V node (right side)
- 3) Write the voltage node equations for this circuit (with transformers removed)
- 4) Determine the voltages at each node
- 5) Determine the efficiency of this system
  - Ignoring the core losses
    - Assumes a large number of customers share these losses
  - Including the core losses
    - Assumes a single customer

