

One of the goals of higher education is to foster and develop skills that enable you to become a lifelong learner. The advent and rapid use of the internet and internet resources has made tremendous amounts of information available to help you in your pursuit of learning. With this in mind, the goal of this laboratory exercise is to introduce you to a variety of laboratory equipment, provide basic instruction on how to use the equipment, and challenge you to find additional resources of information to assist you in the laboratory.

PRE-LAB

1. Develop an understanding on how to work with a breadboard for constructing logic circuits (*find a website that provides details!*).
2. Go to www.digikey.com and download the **datasheet** for part number “SN74LS32DRG4-ND”. You can find it by searching for part “74LS32” and under “Gates and Inverters”. Find the logic diagram and top view for this part.

LAB

In this lab, you'll receive instruction on using the logic probe, researching logic chips, and using data sheets. We'll use <http://www.digikey.com> as a resource for finding information on a variety of logic chips and components.

1. Find data sheets for the 74### series NOT, AND, and OR logic chips. Note, for the AND and OR chips, find devices that have four logic gates per package (quad) and find a NOT chip with six gates (hex).
2. Using the protoboard and logic probe, connect the NOT chip such that the output of the first gate becomes the input to the second gate and the second output becomes the input to the third etc. Verify the proper functioning of this chip (check each inverter!) using the probe and by varying the input to the first gate.
3. Next, connect the AND chip and verify each gate on the chip by varying the inputs and examining the output. Complete a truth table for each gate on the chip.
4. Repeat step 3 using the OR chip.
5. Demo Step 4 to your instructor.