

**DUE:** Wednesday, October 23

1. Design a circuit which has a 4-bit input,  $A = A_3A_2A_1A_0$  and a single output  $Z$ .  $Z$  is high if  $A$  is odd, and  $A$  is not equal to 11. Use a decoder chip (74HC138), a multiplexer chip (74HC153), and minimum logic gates if necessary. You need to note whether the inputs and outputs of the chips you have available are active when they are low or high. This will affect your design and implementation. Also, pay attention to any global enable inputs. See the course web page for the appropriate data sheets.
2. Enter your design above into a logic simulator found on the course web page. Verify correct operation.
3. Wire up the circuit that you designed in part 1. Verify correct operation. Report on the success and/or challenges you faced in getting this circuit working.

## Turn In

- **Staple this assignment sheet** to your solutions, which are to be done in accordance with the school of engineering homework guidelines posted on the course web page.
- The “paper” part of your design. Include a schematic and report on the success/failure of your design. Make notes about what you learned wiring up this circuit.