

# EE380 Spring 2017

## Micro Controllers and Logic Design

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### Digital Multimeter (DMM)

For this project you may use an ARM processor purchased for use in EE354 and EE454. Your project should allow the user to select from three measurement types (Voltage, Current, and Capacitance). After the user has selected a measurement the measurement should be continually taken and printed to the screen (LCD or Computer terminal)(Data may be filtered for readability). Your meter measurement specifications are as follows.

Measurement Type	Range	tolerance
Voltage	0-20V	+-.01V
Current	0-100mA	+-.005A
Capacitance	10nF-1UF	+10%

Submit: Hardware schematic, Notebook, calculations, and documentation. Your documentation should include a verification sheet signed and dated by Mark Randall, Jeff Cron, or Dick Blandford.

### Micro Controlled Button Lock

Using a keypad (Found in the stockroom), you should design a micro controlled system that will allow a student to enter a 6 digit code. If the code is correct your project should blink a green LED 5 times and "Unlock the door". The lock mechanism will be simulated using a solenoid also found in the stockroom. If the code is incorrect your project should blink a red led 5 times.

Once a code has been entered if the code is correct door should remain unlocked for 10 sec. (release the solenoid). If time expires or if the wrong code is entered the system should wait for another code to be entered.

Submit: Hardware schematic, Notebook, calculations, and documentation. Your documentation should include a verification sheet signed and dated by Mark Randall.

## **Micro Controlled Plant Irrigation System**

Design a system that will use a moisture sensor (Get from Jeff) to monitor the moisture level of a potted plant. Allow a user to adjust a threshold that the micro will use to determine when the plant should be watered. From the stockroom obtain a small DC motor that you act as your “pump”. You should simulate the watering aspect by manually watering the soil, when the motor turns on. When the moisture sensor detects that the level is below the set threshold it should then turn off the “pump”. Adequate amounts of hysteresis should be added to your system as to not cause the “pump” to oscillate on and off.