MECH 103 NEW LABORATORIES

LAB 1   MATLAB UNIT CONVERSIONS
  - command window
  - workspace
  - basic math operations
  - unit conversions

LAB 2   FRICTION LAB
  - calculate coefficient of friction
  - have students create arrays
  - use array math to calculate MATLAB variables
  - Also make requirement to do some kind of unit conversion

LAB 3   ??? Adapt current energy lab?

LAB 4   Use accelerometers (adapt jump lab)
  - plotting emphasized
  - maybe add potential energy height calculation or something

LAB 5   Arduino Introduction Lab
  - Blink LED
  - Get Arduino working with MATLAB
  - ~~Use trim-pot to chan~~

LAB 6   Arduino External LED Blink
  - Add external LED
  - Use loops to blink a message
  - Use trim-pot and pwm to change brightness?

LAB 7   TMP 36 + LED

         ↳ temperature changes LED color
            HOT → RED   ROOM → YELLOW   COLD → BLUE
            Have students use functions to accomplish

LAB 8   MUSIC DAY

         ↳ Make a musical instrument
            4 button → 4 different notes on speaker
            EC: trimpot whammy
            When button is held → note plays
                  on realese → note stops

            Songs w/ 4 notes or less
               HOT CROSS BUNS   MARY HAD A LITTLE LAMB
               LONDON BRIDGE   OH SUSSANA
               OLD MAC DONALD

            Also make a function that plays song

LAB 9   ~~The first~~ Proximity Sensor Lab

         ↳ Make a proximity sensor that displays
            feedback to user about how close an
            object is to sensor

            object > close threshold   Green LED / no sound   solid
            Warning thresh > object > close   Yellow LED / pulse beep
            object > warning thresh   Red LED / solid beep
                                              flashing

LAB 10   Theramin

         ↳ make a theramin w/ proximity sensor and LEDs

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POST
FORMAL   Students work on final project
LABS