Use this page to submit a proposal for your **Independent Study Project**. You have read the underlying philosophy of the activity (<http://darcy.rsgc.on.ca/ACES/ISPs/Hardware.html>), explored various topics of pursuit and have understood the assessment criteria (<http://darcy.rsgc.on.ca/ACES/ISPs/ISPEvaluation.docx>).

**1. Your Name:**

**2. Project Title:**

**3. Provide a brief description of the project, including DESIGN (EAGLE and/or CAD) :**

**4. What Communication Protocol(s) will you incorporate (tick boxes on reverse)?**

**5. Where did your inspiration for this project come from?**

**6. List Two Additional concepts, skills, and/or techniques you hope to improve/acquire in completing this project.**

 a)

b)

c) Computer Assisted Design and Fabrication (EAGLE PCB, 2D Laser Cut and/or 3D Print)

**7. For each of the criteria below, indicate a position on the range scale and add a comment if appropriate.**

**Feature Range (mark a position) Comment**

**a) Risk L H \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**b) Research L H \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**c) Originality L H \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**D) Collaboration L H \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**NOTE: Be sure to check ALL the applicable boxes on the reverse.**

Please check all **additional** boxes corresponding to the skills you intend to exploit in this project.

|  |  |  |  |
| --- | --- | --- | --- |
| **Hardware Components** | **Software Techniques** | **Power** | **Skills** |
| □ resistors  □ capacitors  □ potentiometers □ transistors □ diodes  □ push buttons  □ switches  □ LDRs □ thermistor  □ temperature sensor  □ proximity sensor □ IR (infrared) □ Radio Frequency (RF) □ Bluetooth □ OpAmps  □ voltage regulators  □ MOSFETs  □ surface mount parts  □ Logic ICs (40xx) □ shift registers  □ Specialty ICs (555, MSGEQ7, H-Bridge, LM3914, 24LC256, OpAmps, etc.)  □ Real Time Clock (RTC)  □ ATtiny85 □ LEDs (single, Bi, RGB)  □ 7-segment display □ Alphanumeric display  □ Bargraph  □ LED Matrix  □ LCD Panel  □ Graphics Panel  □ DC motor  □ servo motor  □ stepper motor  □ solenoid  □ microphone  □ audio line in  □ speaker  □ magnets  □ point-to-point board  □ perma-proto board  □ custom PCB  □ OTHER | □ High-Level  □ Assembly  □ Arrays  □ Structs  □ bitwise operators  □ I2C (TWI)  □ Libraries  □ ADC  □ PWM  □ Serial Comm. (ISP)  □ Debouncing  □ LookUp Table  □ Polling □ Persistence of Vision  □ Interrupts  □ Recursion  □ ISP  □ EEPROM  □ Processing  □ Charlieplexing  □ Timing related □ UML Design  □ OTHER | □ Batteries  □ AC/DC Adapter  □ Transformers  □ coils/chokes  □ 12V  □ 24V  □ solar  □ manual  □ Peltier tiles  □ OTHER | □ reading a schematic  □ TH soldering  □ SM soldering  □ DMM Debugging  ☑ CAD  □ 3D printing  □ 2D acrylic fabrication  □ EAGLE PCB layout and manufacturing ☑ Word □ Excel ☑ Time-management □ Fritzing  □ Presentation Overview  ☑ video creation  ☑ technical writing  □ OTHER |
| **Communication** |
| □ (wired) Serial Comm.  □ (wired) SPI  □ (wired) I2C (aka. TWI)  □ (wireless) RF  □ (wireless) IR  □ (wireless) BlueTooth |
| **Engineering Fields** |
| □ electrical  □ computer  □ mechanical  □ software □ design  □ OTHER |