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 (Highlight One or More): 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□ [SHARP proximity](https://mail.rsgc.on.ca/~cdarcy/Datasheets/gp2y0a41sk_e.pdf) sensor□ [LM324](https://mail.rsgc.on.ca/~cdarcy/Datasheets/lm124-n.pdf) OpAmp□ [LM7805](https://mail.rsgc.on.ca/~cdarcy/Datasheets/LM7805.pdf) Volt. Reg.□ [TIP120](https://mail.rsgc.on.ca/~cdarcy/Datasheets/TIP120.pdf) Darlington□ [IRF520](https://mail.rsgc.on.ca/~cdarcy/Datasheets/IRF520.pdf) MOSFET□ surface mount parts□ Logic ICs (40xx)□ [74HC595](https://mail.rsgc.on.ca/~cdarcy/Datasheets/74HCT595.pdf) shift regs.□ [LM555](https://mail.rsgc.on.ca/~cdarcy/Datasheets/lm555.pdf) Timer□ [MSGEQ7](https://mail.rsgc.on.ca/~cdarcy/Datasheets/MSGEQ7.pdf)□ [SN754410](https://mail.rsgc.on.ca/~cdarcy/Datasheets/sn754410.pdf) H-Bridge □ [LM3914](https://mail.rsgc.on.ca/~cdarcy/Datasheets/lm3914TI.pdf) Display Driver□ [24LC256](https://mail.rsgc.on.ca/~cdarcy/Datasheets/24LC256.pdf) I2C EEPROM□ [DS1307](https://mail.rsgc.on.ca/~cdarcy/Datasheets/DS1307.pdf) RTC□ [ATtiny24/44/84](https://mail.rsgc.on.ca/~cdarcy/Datasheets/8006S.pdf)□ [ATtiny85](https://mail.rsgc.on.ca/~cdarcy/Datasheets/2586S.pdf)□ [ATmega328p](https://mail.rsgc.on.ca/~cdarcy/Datasheets/ATmega328PSummary.pdf)□ LEDs (single, Bi, RGB)□ 7-segment display□ Alphanumeric display□ Bargraph□ LED Matrix□ [LCD Panel](https://www.adafruit.com/product/1447)□ Graphics Panel□ DC motor□ servo motor□ stepper motor□ solenoid □ microphone□ audio line in□ speaker□ magnets□ point-to-point board□ perma-proto board□ custom PCB | □ High-Level□ Assembly□ Arrays□ Structs□ bitwise operators□ Libraries□ ADC□ PWM□ Debouncing□ LookUp Table□ Polling□ Persistence of Vision□ Interrupts□ Recursion□ ISP□ Onboard EEPROM□ Processing Language□ 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.](http://darcy.rsgc.on.ca/ACES/TEI3M/CommunicationProtocols.html#UART1)□ [(wired) SPI](http://darcy.rsgc.on.ca/ACES/TEI3M/CommunicationProtocols.html#SPI1)□ [(wired) I2C (aka. TWI)](http://darcy.rsgc.on.ca/ACES/TEI3M/CommunicationProtocols.html#I2C)□ [(wireless) RF](http://darcy.rsgc.on.ca/ACES/TEI3M/CommunicationProtocols.html#RF1)□ [(wireless) IR](http://darcy.rsgc.on.ca/ACES/TEI3M/CommunicationProtocols.html#IR)□ [(wireless) Bluetooth](http://darcy.rsgc.on.ca/ACES/TEI3M/CommunicationProtocols.html#BT) |
| **Engineering Fields**  |
| □ electrical□ computer□ mechanical□ software□ design□ OTHER |