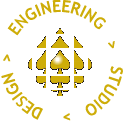
****Completing this proposal with **care and consideration** is the first step towards a **successful** **Independent Study Project**. You have read [the underlying philosophy of the activity](http://darcy.rsgc.on.ca/ACES/ISPs/Hardware.html), explored various topics of pursuit, and have understood the [evaluation criteria](http://darcy.rsgc.on.ca/ACES/ISPs/LongISPEvaluationWithCOMMCADICS3U.docx). When fully completed, attach this document to an email to **ACESHandin**, by the deadline, under the Subject: **ISP.Long Proposal**

|  |  |
| --- | --- |
| **1. Your Name** |  |
|  | |

|  |  |
| --- | --- |
| **2. Project Title** |  |
|  | |

|  |  |
| --- | --- |
| **3. General Description** |  |
|  | |

|  |  |
| --- | --- |
| **4. MCU (Highlight One)** |  |
| NONE | 84 | 85 | 328P | 2560 | ESP-12, ESP8266, | PHOTON | Teensy (32 bit ARM) | Other? UNO?, Nano?, etc… | |

|  |  |
| --- | --- |
| **5. Design Details (EasyEDA, Fusion360) , Acrylic, etc.)** |  |
|  | |

|  |  |
| --- | --- |
| **6. Communication Details (Serial, SPI, I2C, RF, IR, Bluetooth, WiFi, etc.)** |  |
|  |  |

|  |  |
| --- | --- |
| **7. Mechanical Details (DC Motor, Servo, Stepper, Solenoid, etc.)** |  |
|  | |

|  |  |
| --- | --- |
| **8. Hand-Drawn Sketch of Your Imagining of the Final Prototype** |  |
|  | |

**NOTE: Be sure to check ALL the applicable boxes on Page 3.**

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  □ IR proximity sensor □ **Op**erational **Amp**lifier  □ voltage regulators  □ MOSFETs  □ Logic ICs (40xx) □ shift registers  □ Specialty ICs (555, MSGEQ7, H-Bridge, LM3914, 24LC256, etc.)  □ Real Time Clock (RTC)  □ ATtiny84  □ ATtiny85 □ LEDs (single, Bi, RGB, neo)  □ 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  ☑ Fusion 360  □ 3D printing  □ 2D acrylic fabrication  □ 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 |
| **Design** |
| □ TINKERCAD  □ EASYEDA Simulation  □ FUSION 360  □ [JLCPCB](https://jlcpcb.com/)  □ [Sawdust&Noise](http://www.wecut4u.com/laser_cutting/laser_cutting_service.html) (acrylic, wood)  □ OTHER |
| **Engineering Fields** |
| □ electrical  □ computer  □ mechanical  □ software □ design □ OTHER |