

# AIAA OC Rocketry (Revision 1 April 27, 2014 - <http://aiaacrocketry.org>)

## ELEMENT 14 VIDEO TUTORIALS (JEREMY BLOOM)

- 1 – It Begins: <http://www.jeremyblum.com/2011/01/02/arduino-tutorial-series-it-begins/>
- 2 – Now with more blinky things: <http://www.jeremyblum.com/2011/01/10/arduino-tutorial-2-now-with-more-blinky-things/>
- 3 – Electrical Engineering Basics: <http://www.jeremyblum.com/2011/01/17/electrical-engineering-basics-in-arduino-tutorial-3/>
- 4 – Analogue Inputs: <http://www.jeremyblum.com/2011/01/24/arduino-tutorial-4-analog-inputs/>
- 5 – Motors and Transistors: <http://www.jeremyblum.com/2011/01/31/arduino-tutorial-5-motors-and-transistors/>
- 6 – Serial Comm and Processing: <http://www.jeremyblum.com/2011/02/07/arduino-tutorial-6-serial-communication-and-processing/>
- 7 – I2C and Processing: <http://www.jeremyblum.com/2011/02/13/arduino-tutorial-7-i2c-and-processing/>
- 8 - SPI Interfaces: <http://www.jeremyblum.com/2011/02/20/arduino-tutorial-8-spi-interfaces/>
- 9 – Wireless Communications: <http://www.jeremyblum.com/2011/02/27/arduino-tutorial-9-wireless-communication/>
- 10 – Interrupts and debouncing: <http://www.jeremyblum.com/2011/03/07/arduino-tutorial-10-interrupts-and-hardware-debouncing/>
- 11 – SD Cards and Datalogging: <http://www.jeremyblum.com/2011/04/05/tutorial-11-for-arduino-sd-cards-and-datalogging/>
- 12 - RFID Card Reading: <http://www.jeremyblum.com/2011/07/08/tutorial-12-for-arduino-rfid-card-reading/>
- 13 – Liquid Crystal Displays: <http://www.jeremyblum.com/2011/07/31/tutorial-13-for-arduino-liquid-crystal-displays/>
- 14 – Holiday Lights and Sounds: <http://www.jeremyblum.com/2011/12/25/tutorial-14-for-arduino-holiday-lights-and-sounds/>
- 15 – GPS Tracking: <http://www.jeremyblum.com/2012/07/16/tutorial-15-for-arduino-gps-tracking/>

Jeremy Bloom Tutorials: <http://www.jeremyblum.com/category/arduino-tutorials/>

Blog: <http://www.jeremyblum.com/blog/>

Project Portfolio: <http://www.jeremyblum.com/portfolio/>

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### VIMEO ARDUINO VIDEO TUTORIALS (SCOTTY – NETWORK ENGINEER)

Arduino Tutorial 1 – Arduino Microcontroller Overview: <http://vimeo.com/20394890>  
Arduino Tutorial 2 – Arduino Software Install: <http://vimeo.com/20524812>  
Arduino Tutorial 3 – First Arduino Project – Night Light: <http://vimeo.com/20601787>  
Arduino Tutorial 4 – Overview of Where the Tutorials are Going: <http://vimeo.com/21536686>  
Arduino Tutorial 5 – IR (Infrared) Sensor: <http://vimeo.com/21570555>  
Arduino Tutorial 6 – Sonic Sensor and Map Function (method): <http://vimeo.com/21974182>  
Arduino Tutorial 7 – Button Control and Modulo: <http://vimeo.com/22049956>  
Arduino Tutorial 8 – Part 1 – LCD – Liquid Crystal Display: <http://vimeo.com/24144663>  
Arduino Tutorial 9 – Part 2 – LCD – Liquid Crystal Display: <http://vimeo.com/24176019>  
Arduino Tutorial 10 – Part 1 – N-Channel MOSFET, PNP, PWM: <http://vimeo.com/26780617>  
Arduino Tutorial 11 – Part 2 – N-Channel MOSFET: <http://vimeo.com/27533370>

Vimeo Page: <http://vimeo.com/channels/myarduino>

### VIDEO TUTORIALS BY ROBOTEE

Tutorial #1 – Getting Started and Connected: [http://www.youtube.com/watch?v=kLd\\_JyvKV4Y](http://www.youtube.com/watch?v=kLd_JyvKV4Y)  
Tutorial #2 – Sketch Structure, Variables, Procedures: [http://www.youtube.com/watch?v=Ub\\_oYlCo3i0](http://www.youtube.com/watch?v=Ub_oYlCo3i0)  
Tutorial #3 – Functions, Return Values, Variables: <http://www.youtube.com/watch?v=kV7FKL9FtwM>  
Tutorial #4 – LCD Displays, Libraries: <http://www.youtube.com/watch?v=X1BCvjxIDHM>  
Tutorial #5 – Digital Voltmeter, Analog to Digital Converter: [http://www.youtube.com/watch?v=y-Pkw\\_GQ-c](http://www.youtube.com/watch?v=y-Pkw_GQ-c)

Main Link: <http://www.robotee.com/index.php/arduino-tutorial-videos-51061/>

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## VIMEO ELECTRONICS VIDEO TUTORIALS (SCOTTY – NETWORK ENGINEER)

- Basic Electronics Tutorial 1 – Overview of some tools: <http://vimeo.com/14938059>
- Basic Electronics Tutorial 2 – Electricity – Basic Circuit – Breadboard: <http://vimeo.com/15033861>
- Basic Electronics Tutorial 3 – Lab 1 – Testing the breadboard: <http://vimeo.com/15879586>
- Basic Electronics Tutorial 4 – Electricity – Basic Circuit – Resistance and Ohms law: <http://vimeo.com/15395291>
- Basic Electronics Tutorial 5 – Lab 2a – LED and Resistors: <http://vimeo.com/15889333>
- Basic Electronics Tutorial 6 – Lab 2b – Resistors in series and parallel: <http://vimeo.com/16242553>
- Basic Electronics Tutorial 7 – Diode, Capacitors, Potentiometer, Power Supplies: <http://vimeo.com/16784155>
- Basic Electronics Tutorial 8 – Lab 3a – Diode, Capacitors, Potentiometer, Power Supplies: <http://vimeo.com/17444792>
- Basic Electronics Tutorial 9 – Lab 3b – Diode, Capacitors, Potentiometer, Photo Cells (LDR), Power Supplies: <http://vimeo.com/17448722>
- Basic Electronics Tutorial 10 – Transistors Part 1 – PNP and NPN: <http://vimeo.com/14967607>
- Basic Electronics Tutorial 11 – Lab 4 – PNP and NPN Transistors: <http://vimeo.com/17933731>
- Basic Electronics Tutorial 12 – Lab 5a – Part 1 Building a night light: <http://vimeo.com/19221218>
- Basic Electronics Tutorial 13 – Lab 5b – Night Light Part 2: <http://vimeo.com/19265776>
- Basic Electronics Tutorial 14 – Soldering the night light: <http://vimeo.com/19504307>
- Basic Electronics Tutorial 15 – Hexadecimal, Binary, Decimal conversions – with bonus footage: <http://vimeo.com/20755594>
- Basic Electronics Tutorial 16 – Building a 5 Volt Regulator: <http://vimeo.com/20925400>
- Basic Electronics Tutorial 17 – Part 1 – N-Channel MOSFET, PNP, PWM: <http://vimeo.com/26780617>
- Basic Electronics Tutorial 18 - Arduino Tutorial 11 – Part 2 – N-Channel MOSFET: <http://vimeo.com/27533370>

Vimeo Page: <http://vimeo.com/channels/electron>

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## ARDUINO TUTORIALS FLOSSSCIENCE PRE-ENGINEERING: ELECTRONICS WITH MICRO\_CONTROLLERS

Setting Up Your Breadboard: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/setting-up-your-breadboard](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/setting-up-your-breadboard)

Sequence LEDs: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/if-loop](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/if-loop)

Sequence LEDs with while: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/while-loop-1](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/while-loop-1)

Light Catching Game: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/light-catching-game](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/light-catching-game)

The For Loop: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/Lesson-3](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/Lesson-3)

Digital Input: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/Lesson-4](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/Lesson-4)

Analog Write: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/Lesson-5](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/Lesson-5)

Servo How-to: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/servo-how-to](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/servo-how-to)

Arrays: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/arrays-woot](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/arrays-woot)

Analog Read - Potentiometer: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/analog-read-and-a-potentiometer](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/analog-read-and-a-potentiometer)

Analog Read – Photoresistor: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/analog-read-and-a-photoresistor](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/analog-read-and-a-photoresistor)

Analog Read – Piezo: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/analog-read-and-a-piezo](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/analog-read-and-a-piezo)

H-Bridge: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/h-bridge](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/h-bridge)

Sound Lesson 1: [https://sites.google.com/a/flossscience.com/arduino/Home\\_LE/Arduino-Lessons/arduino-sound-lesson-1](https://sites.google.com/a/flossscience.com/arduino/Home_LE/Arduino-Lessons/arduino-sound-lesson-1)

Main Page and Tutorial List: [http://electronics.flossscience.com/Home\\_LE/Arduino-Lessons](http://electronics.flossscience.com/Home_LE/Arduino-Lessons)

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### ARDUINO TUTORIALS (LADYADA.NET)

Starting (list of recommended hardware): <http://www.ladyada.net/learn/arduino/starterpack.html>  
Lesson 0 – Introduction (hardware, software, and tools you'll need): <http://www.ladyada.net/learn/arduino/lesson0.html>  
Lesson 1 – Blink a LED (the embedded equivalent of Hello World): <http://www.ladyada.net/learn/arduino/lesson1.html>  
Lesson 2 – Blink blink bLiNk BLINK: <http://www.ladyada.net/learn/arduino/lesson2.html>  
Lesson 3 – Breadboard and LEDs: <http://www.ladyada.net/learn/arduino/lesson3.html>  
Lesson 4 – Communications: <http://www.ladyada.net/learn/arduino/lesson4.html>  
Lesson 5 – Arduino Inputs (: <http://www.ladyada.net/learn/arduino/lesson5.html>  
Lesson 6 – LEDs (many more LED links on this page): <http://learn.adafruit.com/all-about-leds>  
Liquid Crystal Displays (many more LCD related links on this page): <http://learn.adafruit.com/character-lcds>  
Ethernet and Writing to an SD Card: <http://www.ladyada.net/learn/arduino/ethfiles.html>  
Sensors: <http://www.ladyada.net/learn/sensors/index.html>  
Help: <http://www.ladyada.net/learn/arduino/help.html>

Introductory Page: <http://www.ladyada.net/learn/arduino/>

### HOW TO ARDUINO – A VIDEO TOOLBOX ON MAC

Lesson #1 – Arduino IDE, your first sketch, breadboards: <http://www.youtube.com/watch?v=qHeF3hOn684>  
Lesson #2 – Using a 16x2 LCD with Arduino: [http://www.youtube.com/watch?v=UiyOTBGn4\\_U](http://www.youtube.com/watch?v=UiyOTBGn4_U)  
Lesson #3 – Servos!: <http://www.youtube.com/watch?v=ybV8vitYAWU>  
Lesson #4 – Potentiometers and Analogue Read: <http://www.youtube.com/watch?v=xWjkuYSQcoI>

Main Link: <http://www.embeddedrelated.com/showarticle/529.php>

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## ROBOTSHOP ARDUINO 5 MINUTE TUTORIALS

Lesson 1 – Software Download & Install: <http://www.robotshop.com/blog/en/arduino-5-minute-tutorials-lesson-1-software-3640>

Lesson 2 – Basic Code & Blink LED: <http://www.robotshop.com/blog/en/arduino-5-minute-tutorials-lesson-2-basic-code-blink-led-2-3639>

Lesson 3 – Potentiometer: <http://www.robotshop.com/blog/en/arduino-5-minute-tutorials-lesson-3-potentiometer-3638>

Lesson 4 – IR Sensor -Button: <http://www.robotshop.com/blog/en/arduino-5-minute-tutorials-lesson-4-ir-distance-sensor-push-button-2-3637>

Lesson 5 – Servo Motors: <http://www.robotshop.com/blog/en/arduino-5-minute-tutorials-lesson-5-servo-motors-3636>

Lesson 6 – Force, Bend, Stretch: <http://www.robotshop.com/blog/en/arduino-5-minute-tutorials-lesson-6-force-bend-stretch-sensors-3635>

Lesson 7 – Accel, Gyros, IMUs: <http://www.robotshop.com/blog/en/arduino-5-minute-tutorials-lesson-7-accelerometers-gyros-imus-3634>

Robotshop Tutorials List: <http://www.robotshop.com/blog/en/robots/gorobotics/tutorials>

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## MISCELLANEOUS ARDUINO LINKS

The Making of Arduino (IEEE Spectrum): <http://spectrum.ieee.org/geek-life/hands-on/the-making-of-arduino>

The Origin of the Arduino (Hackaday): <http://hackaday.com/2011/11/15/the-origin-of-the-arduino>

Arduino All-in-One Getting Started Guide (Instructables): <http://www.instructables.com/id/Arduino-All-in-One-Getting-Started-Guide>

Computing Related Tutorials at Smith College (all): <http://cs.smith.edu/dftwiki/index.php/Tutorials#Arduino>

Introduction to the Arduino: [http://cs.smith.edu/dftwiki/index.php/Tutorial: Introduction to the Arduino](http://cs.smith.edu/dftwiki/index.php/Tutorial:Introduction_to_the_Arduino)

Arduino and XBee: [http://cs.smith.edu/dftwiki/index.php/Tutorial: Arduino and XBee Communication](http://cs.smith.edu/dftwiki/index.php/Tutorial:Arduino_and_XBee_Communication)

ArduSat and Freertronics: <http://www.youtube.com/watch?v=OXG1fxj5alg>

ArduSat Arduino Based CubeSat Video: <http://www.youtube.com/watch?v=WCfG0OBEPHM>

ArduSat Ideas: <https://docs.google.com/file/d/0B4hRbWlH9kinS3FfOEIJTU5Gc00/edit?pli=1>

MIT Videos: <http://video.mit.edu/channels/>

MIT Video Engineering Channel: <http://video.mit.edu/channel/school-of-engineering/>

MIT Arduino Video Tutorial #1: <http://video.mit.edu/watch/arduino-tutorial-1-10950/>

MIT Video Inside Flagship of DIY: <http://video.mit.edu/watch/inside-a-flagship-of-diy-91/>

MIT LOLriokart: <http://video.mit.edu/watch/lolriokarts-new-motor-controller-5584/>

Balancing Robot Tutorial Series Home: [http://www.x-firm.com/?page\\_id=148](http://www.x-firm.com/?page_id=148)

Part 3 – Kalman Filtering: [http://www.x-firm.com/?page\\_id=191](http://www.x-firm.com/?page_id=191)

Guide to gyro and accelerometer with Arduino including Kalman Filtering: <http://forum.arduino.cc/index.php?topic=58048.0>

TKJ Electronics Guide: Gyro and Accelerometer Kalman filtering with the Arduino; <http://blog.tkjelectronics.dk/2011/06/guide-gyro-and-accelerometer-kalman-filtering-with-the-arduino/>

IntoRobotics Accelerometer, Gyro, and IMU tutorials: <http://www.intorobotics.com/accelerometer-gyroscope-and-imu-sensors-tutorials/>

Using Transistors to Control Higher Current Loads: <http://itp.nyu.edu/physcomp/Tutorials/HighCurrentLoads>

Tone Output using Arduino: <http://itp.nyu.edu/physcomp/Labs/ToneOutput>

Connect LS20031 GPS to Google Earth (instructables): <http://www.instructables.com/id/Connect-your-LS20031-GPS-receiver-to-Google-Earth-/>

Interface to a GPS (KronosRobotics) Series: <http://www.kronosrobotics.com/Projects/GPS.shtml>

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## ARDUINO SOFTWARE LINKS

Arduino Language Reference from Arduino.cc: <http://arduino.cc/en/Reference/HomePage#.Uxs0sE2YYpB>

Github Arduino repository: <https://github.com/arduino/arduino>

Github Arduino Library repository: <https://github.com/arduino/Arduino/tree/master/libraries>

Com Port Development Tool: <https://sites.google.com/site/terminalbpp/>