

**CPE 301L**  
**Microcontroller Based System Design**  
**Laboratory Exercise #2**

**Atmel Studio Tutorial Part 1**

**Department of Electrical and Computer Engineering**  
**University of Nevada, at Las Vegas**

**Goals:**

Learn how to install AVR Studio and WinAVR. Learn how to assemble, compiler, and debug using Atmel Studio.

**Equipment Usage**

*Note: The following links provides a step by step process of downloading and installing Atmel Studio*

- Atmel AVR Studio 6 - Download and Install  
<http://www.atmel.com/System/Overlay/Video.aspx?uri=tcm:26-39806>

**Downloading Atmel Studio**

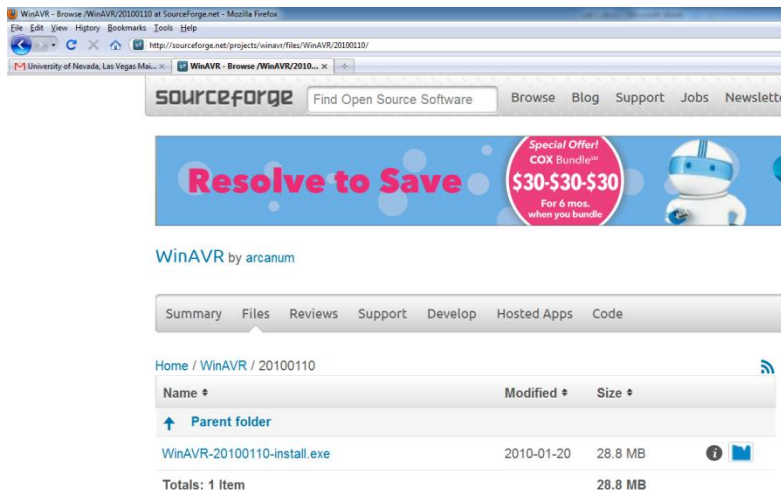
AVR studio can be downloaded from the Atmel website: [www.atmel.com](http://www.atmel.com). Once there go under products and select **Atmel AVR 8-and-32-bit**. Once there select either tinyAVR (or megaAVR) and click on the **Tools** tab. Under the section Related Items should be a link for AVR Studio 6. Click on the CD with the words register written across it and it will take you to the download page. Before you can download the file you must either enter the registration information or fill the 'download as guest' section first.

The screenshot displays the Atmel website's product page for Atmel Studio. The left sidebar contains a 'Microcontrollers' menu with options like 'Atmel AVR 8- and 32-bit', '32-bit AVR UC3', 'AVR XMEGA microcontroller', 'megaAVR Microcontroller', 'tinyAVR', 'Battery Management', 'Automotive AVR', 'ARM-based Solutions', 'MCU Wireless', 'SoSI Architecture', 'Touch Solutions', 'Memory', 'Automotive', 'Wireless / RF', and 'More Products'. The main content area is titled 'Atmel Studio' and includes a 'Get Started' section with links for 'Start Now', 'Contact Sales', 'Request Samples', and 'Sign-Up for News'. Below this is a 'Related Items' section listing various Atmel products and services. The 'Software Description' table at the bottom provides details about the Atmel Studio 6.0 installers, including their build numbers and update dates.

Software	Description
Atmel Studio 6.0 with Service Pack 2 (build 1996) Installer - Full (799MB, updated November 2012)	This installer contains Atmel Studio 6.0 with service pack 2, Atmel Software Framework 3.5, and Atmel Toolchain.
Atmel Studio 6.0 with Service Pack 2 (build 1996) Installer (584MB, updated November 2012)	This installer also contains MS Visual Studio Shell and .NET 4.0. Select this installer if you need to install Atmel Studio on a computer not connected to the internet.

## Downloading WinAVR:

Go to <http://winavr.sourceforge.net/> and click on the *Download* link. Follow the link to sourceforge.net and click on the WinAVR link next to the folder. Click on the first link tilted 20100110 (should be first link) and click on the next link begin downloading the exe file. You can ignore the registration it is not necessary for the download.



## Installation:

Follow the setup-wizard for each program to install them on your machine. NOTE: When installing AVR Studio, make sure you also install the Jungo USB Driver as well.

**Prelab:**

Watch the videos explaining how to install and use Atmel Studio

- Atmel AVR Studio 6 - Download and Install  
<http://www.atmel.com/System/Overlay/Video.aspx?uri=tcm:26-39806>

**Lab Experiments:**

Experiment 1: Download and install both Atmel Studio and WinAVR on your computer

Experiment 2: Download the datasheet for the Atmega328P.

Experiment 3: Use installed software to create and build the project.

Questions:

- a) Go to the Atmel website and find the Atmega328P datasheet. List some of the various functions that can be performed using the chip.
- b) Go to Atmel's website and find another microcontroller that is similar enough to replace the Atmega328P. Explain why it would be a suitable replacement and list some of the differences from the 328P.

**Post-Lab Deliverables:**

1) Submit your answers to the questions listed in the lab.