Preparing For CPE-390:

Introductions------------------------------------------------------------

Hello and welcome to CPE-390! Your instructor will probably be Dov Kruger.

We are moving to a new format for this course. Instead of using an old Motorola CPU, we will be using the ARM processor. One of the advantages is that you will be able to buy your own Raspberry Pi, which means that you can do the homework and some of the labs on your own schedule. For this reason, I am asking you all to buy a Raspberry Pi.

The total cost of getting a Raspberry Pi (and the necessary equipment) is about $58. I won’t require a textbook. For those of you who have never dealt with a Unix computer, this is a great opportunity to learn some of the benefits of using Linux. You can use it afterwards in other courses, for example with Professor Lu for Internet of Things.

The purpose of CPE-390 is to learn how computers work. Part of that will be writing assembler code to directly control a computer, and to debug it. Another part is interfacing to hardware. Unix, like any other operating system, prevents you from directly accessing the hardware. So for interfacing, we will be using Arduinos. You will be allowed to use C++ on the Arduino while you directly interface with the hardware, and on the Raspberry Pi you will need to learn assembler. In order to have no problems with voltage levels, we need an Arduino with 3.3V that matches the voltage of the Raspberry Pi. So I have selected an ARM-based Arduino Due clone. Although the Arduino is not required, it is recommended you purchase it as the lab may not have enough depending on the size of your lab block.

As part of this course, you will learn how to communicate using digital busses, SPI and I2C, and the course will end with you having connected the Raspberry Pi and Arduino and having them talk to each other.