**Course:** ME 549 – Microcontroller Interfacing (Bradley University)

**Project:** Play Day I

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**Date:** 28 JAN 2019

**Desc:** Class was canceled today, so we were asked to practice working with microcontrollers during the usual class period.

**Objective:** Start laying out potential course project and begin research.

**Introduction:**

While I have worked with the Arduino microcontroller extensively in the past, I have not had the opportunity to write custom sensor drivers/libraries in C++ or to program the Arduino microcontroller in ATMEL Studio. While these techniques make the Arduino a more powerful platform, work projects typically present the time constraints that prevent experimentation. Learning ATMEL Studio is not a good plan when the device *has to* work *today*.

I consider these two topics professional skills that I would like to develop during the course.

**Potential Course Project:**

**Milestones:**

In order to develop these skills, I plan on working towards the following milestones.

1. Read a flow cell using an Arduino microcontroller.
2. Write a function encapsulating the code to manage the flow cell in the background.
3. Write a real, Arduino library for the flow cell in a separate file.
4. Write an Arduino library for a serial device (e.g. electronic balance, linear photodiode array).
5. Write a driver for a serial peripheral interface (SPI) device.
6. Write a driver for an I2C device.
7. Port the code from STEP (1) into ATMEL Studio.
8. Write a driver for the flow cell as a separate library in ATMEL Studio.

**Grading Criteria:**

In order to evaluate my progress on the milestones above, I propose the following grading criteria/categories.

* + - 1. Milestone completion
      2. Project documentation (e.g. reports, tutorials, and code commenting)
      3. Adherence to published code style guidelines
      4. Use of Git tracking/Maintenance of public GitHub page for drivers

**Course Guest Lecture:**

During the course, we are required to give an hour-long lecture on a topic of our choosing. Based on the timing of this lecture in the semester, I am planning on talking about “SPI Interfacing.” I am planning on the lecture lining up with my completion of MILESTONE 5, writing a driver for an SPI device.