MIT Splash X8844 Syllabus  
Minecraft Machines: Working with Redstone

Instructor Information:  
 Ryan Jerue  
 Computer Science Student at the University of Massachusetts Amherst  
 [rjerue@umass.edu](mailto:rjerue@umass.edu)

Couse objective:

The objective of this course is relatively simple. I want to allow players to construct some sort of useful object using Redstone in Minecraft. First, we are going to talk about what Redstone is, and how it applies to the real world. This will be done first by describing **Boolean Logic** that is used by Minecraft with Redstone. Redstone allows us to construct **Logic Gates** that allow us to perform Boolean functions. From there, we will learn how logic gates are the backbones of **Circuits** and we will then move on from there into to making **Machines**.

The machines that I am going to demonstrate are ones that are going to be practical in their use. For example, a lock to a door may be helpful in keeping intruders away from your precious diamonds. Or to lock a door from thieves. Perhaps, you want a machine that produces some sort of raw material or makes it easier to harness resources. My demonstrations will be done on a Bukkit server using the CraftBook plugin to enable the use of things such as a bridge or gate.

Each of these devices will need certain pieces. All of them will require some sort of **input** to produce a desired **output**. The means of how we achieve this however are vague. We want to design our products with building blocks that can be used over and over. So, we will be looking at **clocks** that are used to set things at certain frequencies as well as the logic gates that I mentioned previously. We’ll look at a primitive form of **memory** to store a certain value (spoiler, it’s a boolean) for future use, and we will also look at a **display** to see the value of things that we store.

I will close by demoing something that can be built far beyond the span of what a splash class and my attention span can allow to explain: a Redstone computer. The Redstone computer was designed by myself and a friend of mine, and uses command block in addition to a custom Bukkit plugin to allow for the design of the computer to be heavily compacted and run faster at almost a 4hz clock speed.

Throughout the lesson, I will give you time to implement what you learned in the Minecraft game on either the provided computers, though Minecraft.net; or on your own computers. The course is for a relatively small amount of people so that I can access students one on one if need be. I also encourage you all to work together in figuring out how to do things. I am going to give you the pieces to make a puzzle, but what it resembles is up to you!