

## **Digital Logic With Minecraft Redstone**

IDH 3931 Class #29960

**Class Periods:** Tuesdays, Thursdays, period 6, 3:30 PM - 4:45 PM

**Location:** LIT 0119

**Academic Term:** Summer A 2024

### **Peer Instructor:**

Matthew Cohen

Email: [cohen.matthew@ufl.edu](mailto:cohen.matthew@ufl.edu)

Office Hours: By appointment

Office Hours Location: Zoom

### **Instructor of Record:**

Dr. Jeremiah Blanchard

Email: [jjb@eng.ufl.edu](mailto:jjb@eng.ufl.edu)

Phone: 352-294-6643

Office Hours: None

### **Course Description**

(1 Credit) Special topics restricted to those in the university-wide honors program. (WR) In this course students will explore the concepts of digital logic and how those concepts can be applied to create digital components using redstone in the game Minecraft. Students will explore the behavior of various redstone components in Minecraft and how this behavior can be leveraged to create redstone circuits that function the same way as real life electrical circuits. Students will learn fundamental computing concepts and will see how simple digital components can be used to create machines with complex behavior. The course will focus on implementing these ideas in Minecraft and will demonstrate how it is possible to build a computer using Minecraft's redstone circuits.

### **Course Pre-Requisites / Co-Requisites**

Prereq: None

### **Course Objectives**

Students will learn about the basic components that make up modern computers and digital devices through class lectures and hands-on class/homework assignments in Minecraft. At the end of the course students will be familiar with the behavior and uses of these components and have experience building them using redstone in Minecraft.

### **Materials and Supply Fees**

None

### **Required Textbooks and Software**

Minecraft Java Edition

### **Recommended Materials**

None

### **Course Schedule**

- Week 1: Course Introduction, Redstone Basics, Common Redstone Circuits
- Week 2: Boolean Logic and Logic Gates, Boolean Algebra
- Week 3: Binary and Number Systems, Encoders and Decoders
- Week 4: 7 Segment Displays, Sequential Logic, Latches, and Flip Flops
- Week 5: Memory/ROM/RAM, MUXs and Expanding RAM, Counters
- Week 6: Binary Addition and Half Adders, Full Adders and Arithmetic Logic Units (ALUs) and Computers

### **Attendance Policy, Class Expectations, and Make-Up Policy**

The course grade is primarily based on participation and attendance and students are expected to attend class each week. Excused absences must be consistent with university policies in the Undergraduate Catalog (<https://catalog.ufl.edu/graduate/regulations>) and require appropriate documentation. Additional information can be found here: <https://gradcatalog.ufl.edu/graduate/regulations/>

### **Evaluation of Grades**

<b>Assignment</b>	<b>Total Points</b>	<b>Percentage of Final Grade</b>
Homework Sets (13)	100 each	100%
		100%

### **Grading Policy**

The following is given as an example only.

<b>Percent</b>	<b>Grade</b>	<b>Grade Points</b>
90.0 - 100.0	A	4.00
87.0 - 89.9	A-	3.67
84.0 - 86.9	B+	3.33
81.0 - 83.9	B	3.00
78.0 - 80.9	B-	2.67
75.0 - 79.9	C+	2.33
72.0 - 74.9	C	2.00
69.0 - 71.9	C-	1.67
66.0 - 68.9	D+	1.33
63.0 - 65.9	D	1.00
60.0 - 62.9	D-	0.67
0 - 59.9	E	0.00

More information on the UF grading policy can be found at <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

### ***Students Requiring Accommodations***

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

### ***Course Evaluation***

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

### ***University Honesty Policy***

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

### ***Software Use***

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

### ***Student Privacy***

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>