

Digital Logic With Minecraft Redstone

IDH 3931 Class #29960

Class Periods: Mondays, period 10, 5:10 PM - 6:00 PM

Location: HVR1 114

Academic Term: Spring 2024

Peer Instructor:

Matthew Cohen

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Office Hours: Fridays, period 8, 3:00-3:50 or by appointment

Office Hours Location: Zoom

Instructor of Record:

Dr. Jeremiah Blanchard

Email: 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 and Redstone Basics
Week 2:	University Holiday
Week 3:	Common Redstone Circuits
Week 4:	Boolean Logic and Logic Gates
Week 5:	Boolean Algebra
Week 6:	Binary and Number Systems
Week 7:	Encoders and Decoders
Week 8:	7 Segment Displays
Week 9:	Memory: SR Latches, ROM, and RAM
Week 10:	Spring Break
Week 11:	MUXs, ROM/RAM Applications
Week 12:	Sequential Logic and Flip Flops
Week 13:	Counters
Week 14:	Binary Addition and Half Adders
Week 15:	Full Adders
Week 16:	Arithmetic Logic Units (ALUs)

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

Assignment	Total Points	Percentage of Final Grade
Homework Sets (13)	100 each	100%
		100%

Grading Policy

The following is given as an example only.

Percent	Grade	Grade Points
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>