

Spring 2019  
Room: KC137  
Days: TTH  
Time: 1:15-2:30 P.M.

Instructor: Mark Randall  
Office: KC274  
Phone: 488-2498  
Email: mr63@evansville.edu

Course Web Site: <http://csserver.evansville.edu/~mr63/>

**Catalog Description: CS 220 Logic Design and Machine Organization** (3) Introduction to logic design and computer hardware concepts. Topics include Boolean algebra, number representations, sequential logic, counters and registers, microcomputer architecture and assembly language programming. Prerequisite: None. Spring.

**Course Objectives:**

**Successful students will be able to:**

1. Understand the differences between number systems and how to convert between them.
2. To simplify a Boolean expression using Boolean identities and KMAPs.
3. Design a combinational logic circuit.
4. Design a Sequential logic circuit.
5. Construct a digital circuit using digital logic gates.

**Texts:**

- *Mano, Morris M., and Kime, Charles R., Logic and Computer Design Fundamentals, 5th edition, Prentice-Hall, 2016.*

**Software:**

- *Logisim*: A digital logic design and simulation program. Logisim is an open source program written in Java, so it runs under all major operating systems. Available for download from [ozark.hendrix.edu/~burch/logisim/](http://ozark.hendrix.edu/~burch/logisim/).
- *Quartus II*: software from [www.altera.com](http://www.altera.com). A licensed professional version of this software is available on the CECS server. A student version of this software is available via the internet.

**Course Structure:** The class will meet three times per week in lecture. Projects and homework will be assigned throughout the semester. Projects and homework will be completed outside of class hours.

**Credit Hour Policy:** This Course meets the federal requirements of 15 in-class hours plus an expected 30 hours of out-of-class work per credit hour;

**Grading:** There will be 4 hour exams, graded homework projects, and a two hour comprehensive final exam. The homework projects will consist of assignments which will be done in teams of three (or less). All exams are open book. The hour exams will count (55/4)% each, the final will count 25%, and the homework projects will count 20% of the final grade. **Class Policies:** Students are expected to abide by the Academic Honor Code. No aid should be given or requested on any examination. Students may collaborate on homework (this is encouraged), but each student must submit their own work. Projects are to be your own work. On programming projects you are not permitted to look at someone else's code nor are you allowed to share your code with someone else.

**Office Hours:**

MTTH 9AM-11AM  
M 12PM-1PM

I can be contacted by email anytime between 8:00 AM and 8:00 PM M-F I will respond to email and weekends but only on a limited basis and if I have time and resources to do so.

**Disability Policy:** It is the policy and practice of the University of Evansville to make reasonable accommodations for students with properly documented disabilities. Students should contact the Office of counseling and Health Education at 488-2663 to seek services or accommodations for disabilities. Written notification to faculty from the Office of Counseling and Health Education is required for academic accommodations.

**Honor Code:** All students at the University of Evansville agree to the University honor code: I will neither give nor receive unauthorized aid, nor will I tolerate an environment that condones the use of unauthorized aid.

**Topics:**

1. Binary Numbers and Codes
2. Standard Logic Gates
3. Logic Circuit Simplification
4. TTL and CMOS ICs
5. Encoding and Decoding
6. Arithmetic Circuits
7. Flip Flops and Multi-vibrators
8. Counters and Shift Registers

