

# CSC258 Computer Organization (Winter 2009)

## Course Outline

### **Circuit Technology**

analog and digital, semiconductors  
diodes, transistors, logic gates, integrated circuits

### **Binary (Boolean) Algebra**

notations, unified algebra, laws, simplification  
binary expressions, value (truth) tables, circuit diagrams  
complete sets of gates

### **Useful Circuits**

encoder, decoder, multiplexer, demultiplexer  
time and delay, latch, pulse generator (clock), flip-flop, edge-trigger

### **Memory**

registers, random access memory (RAM), read-only memory (ROM)

### **Arithmetic**

incrementer, counter, adder, subtractor, multiplier, divider  
arithmetic and logic unit (ALU)  
base conversion, negative integers, radix complement  
fractions, IEEE standard, quote notation

### **Data Representation**

data interchange codes (ASCII), error detection and correction codes

### **A Simple Computer**

compiler writer and machine language programmer's view  
machine instructions and assembly language  
machine architect and microprogrammer's view  
bus, register transfers, micro-programming, optimization  
timing: synchronous, asynchronous

### **Addressing**

indexing, indirection  
number of addresses (0 to 4)  
base registers, relocatability  
paging, associative memory

### **Input and Output**

channels, cycle stealing, interrupts

### **High-Level Circuit Design**

compiling from programs to circuits