

# EGR/CS 333 Digital Design & Interfacing

## (“Digital Design II, Assembly Language, and Interfacing”)

### 2017 FINAL EXAM REVIEW

J Wunderlich PhD

#### **Mandatory prereq topics**

from [EGR/CS332 Computer Organization & Architecture](#) (“Digital Design I and Intro to Assembly Language”):

- ( ALL BUT PROOF AND NANDS ) [Combinational Circuit DESIGN](#)
- ( EVERYTHING ) Sequential Circuit DESIGN: [Case1](#), [Case:w/unused states](#), [Case:Counters](#)
- ( EVERYTHING ) [Simplest Pipeline \(Machine Instruction Cycle\)](#)
- ( EVERYTHING ) [Basic CPU Design \(and intro to Assembly Language\)](#)

#### **Electronics Fundamentals**

- ( EVERYTHING ) Resistors ([Part 1](#)) ([Part 2](#))
- ( CONCEPTS & DRAW CIRCUITS ) [Debouncing Switches \(waveform analysis 1\)](#) ([waveform analysis 2](#))
- ( EVERYTHING ) [Relays](#) by A. Offner
- ( EVERYTHING ) [Buffers](#)

#### **Communications** ( EVERYTHING ) ([PDF](#))

#### **PLC's** (Programmable Logic Controllers)

- ( EVERYTHING HIGHLIGHTED ) [PLC Fundamentals](#) excerpt
- ( EVERYTHING ) [NanoLC Manual](#) by D.Esteves, C.Peters, and J.Wunderlich
- ( ONLY MAIN CONCEPTS ) Wunderlich 1991 PSU [Factory Real-Time Control](#) of a Bottling Plant
- ( ONLY MAIN CONCEPTS ) Wunderlich 1991 PSU [Factory Simulation](#) of a Bottling Plant
- ( ONLY MAIN CONCEPTS ) Wunderlich 2001 publication on [Simulation vs. Real-Time control](#)

#### **Microcontrollers and Assembly Language**

- Intel 8051 Microcontroller:
  - ( EVERYTHING ) [Memory Map, PSW, Stack, Instruction Set, \(Jumps&Calls Lecture\)](#)
  - ( ALL HIGHLIGHTED ) Wunderlich 1999 publication on [Microprocessors vs Microcontrollers](#)
- ( EVERYTHING ) [Raspberry Pi and ARM Microcontroller Assembly Language Manual and Labs](#) by D.Esteves & J.Wunderlich

#### **Lab Projects:** ( EVERYTHING ) [1](#), [2](#), [3](#), [4](#), [5](#), [6](#), [7-8](#)

**NOTE:** All of this is also on Dr. W’s website on the “Lectures/Manuals” page:  
[http://users.etown.edu/w/wunderjt/home\\_Lab\\_Manuals.html](http://users.etown.edu/w/wunderjt/home_Lab_Manuals.html)