WWU ENGR 354 - Digital Logic
Fall 2020, 3 credits

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Textbook: Fundamentals of Digital Logic with VHDL Design, 3rd ed by Brown & Vranesic

Bulletin Description: Introduction to the theory and application of digital logic circuits, logic functions, logic gates, flip-flops, counters, state machines, and integrated logic families. Laboratory work required

Goal: To efficiently design combinational and sequential digital logic circuits using methodologies that result in sound and reliable systems.

Knowledge domains: Relevant knowledge domains include binary numbers, logic functions, state machine fundamentals, and breadboard construction of logic circuits.

Objectives:
1) Build a solid understanding of fundamental logic functions and how to minimize logic circuits to achieve efficient designs
2) Understand common logic blocks such as multiplexers, demultiplexers, decoders, counters, etc.
3) Learn the fundamentals of combinational logic circuit design.
4) Gain an understanding of sequential logic circuits as typified by synchronous state machines

Handouts: Occasionally there will be handouts that extend or clarify material covered in the textbook. Unless stated otherwise, **you are responsible for the content of these handouts.**

Assignments: **Reading assignments** will be given and **you are expected to read** them prior to the class period they are listed for. ***Read!!!*** I expect it. Written assignments are due at the start of class. There may be quizzes.

A kit containing a breadboard, power source, logic parts, wires, and LED display will be provided (this is covered by a class lab fee). This kit will be used to implement certain homework assignments.

Late work: Not accepted unless one of the following conditions is met (but do inform me if you are getting behind or have questions) :
a) A valid medical reason exists
b) You confer in advance with this instructor and receive an ok.

Cheating: Will be rewarded. With scores of zero. And a possible F for the quarter. I expect anything you turn in for grading to be your work and represent your understanding of the material, See WWU integrity policy link below.

Grading:

Homework (& quizzes)	30%
Midterms (two)	40%
Final	30%

The instructor reserves the right to shift this distribution to best serve the needs of the class.

The final grade will be based on the break points that usually occur when the final distribution for the entire class is ranked at the end of the quarter. However, from experience minimum grades typically fall into categories like this:

> 90%	some sort of A (A-, A, A+)
> 80%	some sort of B (B-, B, B+)
> 65%	some sort of C (C-, C, C+)
> 55%	some sort of D (D-,D, D+)
< 55%	F

Homework grades will be posted on D2L.
Missed exams will receive a score of zero and cannot be made up.

Final Exam: The final exam will be given on Tuesday, November 24, at 8 am.

Homework: To promote good problem solving and facilitate grading, I require that the following guidelines be followed:

- Solutions are to be neatly written on engineering paper, sheets folded together lengthwise, and stapled. The following must be on the outside of the folded papers:
  ENGR 354
  your name
  assignment number
  due date
- The problem number must be clearly stated for each problem.
- Each problem solution must begin with a statement of the problem.
- Work must be neat and readable.
- Templates must be used for drawing logic & circuit components
- Work you submit must be your own. Consultation with friends regarding concepts is expected but solutions to assigned problems are to be your own work. This holds for homework, exams, and projects. An exception would be the case of a team project.

See the Engineering Department Professionalism handout.

Disability: If you have a physical and/or learning disability and require accommodations, please contact the Disabilities Support Services office at 527-2366 and also inform the instructor.

Walla Walla University (WWU) is a Seventh Day Adventist institution of higher education

Bulletin description of this class:

Introduction to the theory and application of digital logic circuits, logic functions, logic gates, flip-flops, counters, state machines, and modern integrated logic families. Laboratory work required.

WWU Integrity policy:

www.wallawalla.edu/academics/academic-administration/academic-policies/academic-integrity-policy/

WWU Emergency information

WWU is committed to having a safe campus. Emergency information is at: www.wallawalla.edu/campus-life/student-life/campus-security

WWU Disability accomodations

In addition to the phone number listed above, see: www.wallawalla.edu/?id=4318

WWU Title IX sex discrimination and sexual misconduct policy

WWU prohibits all forms of sex discrimination and sexual misconduct including, but not limited to, sex-based intimidation and harassment, sexual harassment, domestic violence, dating violence, stalking and sexual violence. If you have been subjected to, or are aware of, an instance of sex discrimination or sexual misconduct, you are highly encouraged to report it to the Title IX coordinator, through the Title IX webpage, or by calling (509) 527-2141. The University has resources to help.
Title IX coordinator email address: erica.sanderson@wallawalla.edu
Title IX web page: www.wallawalla.edu/resources/human-resources-payroll/titleix/

Relationship of this class to the WWU core themes

Excellence in Thought

This class helps students develop ability to perform design that requires excellence in thought.

Generosity in Service

Course content does not directly address generosity in service although as an engineering professional there are opportunities to contribute professional service to the community.

Beauty in Expression

There is beauty in carefully crafted documentation that is clear, concise, and complete. Such is required in this class.

Faith in God

A life with inner peace comes through faith in God.