Youngstown State University
Electrical and Computer Engineering (ECEN)

Syllabus for Basic Digital and Computer Circuits, Spring 2013

Course: 1521
CRN: 22189
Room: 3040 Moser Hall
Time: M W F 10:00-10:50 AM

Instructor: Mr. Jason Zapka
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Phone: 330-941-3013 office 330-360-8187 cell
Office Hours: Room ESB 2042 - By appointment

Required Text: *Fundamentals of Logic Design, 6th ed.*, Roth, Jr. & Kinney, Cengage, 2010

Course Website: Class information including but not limited to the syllabus, unit outlines and homework assignments will posted at http://people.ysu.edu/~jazapka/ECEN1521.html. Please check often for updated information.

Course Description: Introduction to digital and computer design concepts: number systems, switching algebra, logic gates, truth tables, combinational and sequential design techniques, comparators, multiplexers, coders and decoders, flip-flops, registers, counters, and their practical applications.

Tentative Outline:

Weeks	Chapters	Topics	Test Dates
1-4	1, 2 & 3	Number Systems and Conversion, Boolean Algebra	Friday, Feb 8
5-9	4, 5 & 6	Applications of Boolean Algebra, Minterm and Maxterm Expansions, Karnaugh Maps, Quine-McCluskey Method	Friday, Mar 22
10-14	7, 8 &9	Multi-Level Gate Circuits: NAND and NOR Gates, Combinational Circuit Design and Simulation Using Gates, Multiplexes, Decoders, and Programmable Logic Devices	Friday, Apr 26
15	11 & 13	Latches and Flip-Flops	
Finals		**Final Exam**	Friday, May 10 8:00 a.m.

Note: The test dates will not change but the material covered may be adjusted as necessary.

Course Goals: At the completion of the course, a student will be able to

1) represent numbers and do arithmetic in binary, convert between decimal and binary and between binary and power-of-2 bases, and understand and use simple binary codes

2) use Boolean algebra to represent and simplify logic functions
3) use K-maps and the Quine-McCluskey method to minimize logic functions
4) design combinational circuits to implement a variety of logical outputs
5) develop and present systematic, clear, and concise solutions to engineering circuit problems

Academic Honesty: Academic honesty is essential to the educational process and serves to protect the integrity of the University community. All work that is turned in must be your own, except if specified otherwise. Refer to the YSU undergraduate bulletin for additional information on consequences of academic misconduct and university policies on academic honesty.

Grading: This course is designed to develop and improve your thinking abilities with respect to electrical circuit theory and design. Therefore your work will be graded based on how you think and the solutions you obtain. You should always show your thinking and your approach to every problem and design you do. The standard grading policy will be used for determining the letter grade:

$$A \geq 90\% \quad 90 > B \geq 80\% \quad 80 > C \geq 70\% \quad 70 > D \geq 60\% \quad F < 60\%$$

Grade Weighting:

Homework & Quizzes	75 pts.
Test 1	100 pts.
Test 2	100 pts.
Test 3	100 pts.
Final Exam	125 pts.

Attendance: Although not required, class attendance is essential for good performance and the student is responsible for all material covered in the class. Attendance is required on all tests. No make-ups will be given and no late assignments accepted unless prior arrangements are made with the instructor. There will be no make-ups for quizzes and in-class work.

Homework: To succeed in this course, timely completion of all homework assignments will be critical. Homework assignments will be collected periodically and graded. By completing the assignments one will gain the knowledge essential for mastering the course. Assignments will be posted on the class webpage, as well as, a guideline for proper formatting.

Quizzes: Several short quizzes will periodically be given. All questions will be basic examples of homework or in-class material. Quizzes may be scheduled or unannounced. The quizzes will be closed book and notes.

Tests: Three 50 minute tests will be given throughout the semester. The tests will be open book and notes.

Final Exam: A 2 hour comprehensive final exam will be given during finals week. The final will be open book and notes.

Cell Phones: Although cell phones may be an important part of our lives, they can be a serious distraction those around you. Please turn cell phones OFF or to a quiet vibrate and refrain from using them during class time.