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EET 227T.01: Computer Fundamentals

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EET227T COMPUTER FUNDAMENTALS
SYLLABUS
Course Description, Policies, and Materials

Credits: 4   **Prerequisites**: EET103T

Instructor: Steven (Steve) L. Stiff   Office: to be determined
Phone: 243-7672   Office Hours: to be determined
E-mail: steven.stiff@umontana.edu

Class schedule:
Monday through Friday, 8:10am – 10:00am.
Class time will be approximately 50% lecture and 50% lab activity.

Course Description:
Covers the operation, application, and troubleshooting of TTL and CMOS logic devices, their use in combinatorial and sequential logic circuits, the interface between logic families, and the interface between digital and analog circuits. Also provides a study of Boolean algebra, binary and hexadecimal number systems, binary codes, and the analysis of the basic components and circuits used in semiconductor switching.

Text(s):
- Digital and Microprocessor Fundamentals 4th Edition, William Kleitz, Pearson Education, Inc. (2003), ISBN 0130932175
- Handouts, worksheets, and labs as provided by the instructor.

Course Objectives:
At the completion of this course, the student should be able to:
1) Identify the two basic types of electrical signals.
2) Convert numbers between decimal, binary, octal, and hexadecimal number systems.
3) Identify commonly used binary codes.
4) Name the major components used in implementing digital circuits and explain how they operate.
5) Explain the operation of digital logic gates.
6) Name the most frequently used combinatorial logic circuits and explain their operation.
7) Identify commonly used integrated circuit families used in digital equipment.
8) Use Boolean algebra express logic operations as equations and use Karnaugh maps to minimize (simplify) Boolean equations.
9) Identify and explain the operations of various types of flip-flops.
10) Describe the operation of binary and BCD counters, shift registers, and other sequential logic circuits.
11) Design both combinatorial and sequential logic circuits for a given application.
12) Name and describe the function of various data conversion devices, such as DACs, ADCs, and multiplexers.
13) Troubleshoot digital circuits using standard test equipment and specialized instruments.

STUDENTS WITH DISABILITIES:
- Eligible students with disabilities will receive appropriate accommodations in this course when requested in a timely way. Please speak with me after class or in my office. Please be prepared to provide a letter from your *Disability Services for Students* (DSS) Coordinator.
- For students planning to request testing accommodations, be sure to bring the form to me in advance of the two-day deadline for scheduling in the *Academic Support Center* (ASC).

GRADING:
- Points are awarded for each graded item. Your final grade is calculated by summing all points for a given category and weighted by its associated percentage as shown below.
- Letter grades are assigned as a percentage of weighted total points.

Homework, Quizzes, Attendance	35.0%		A	93.0% and up
Labs (construction & write-ups)	30.0%		B	85.0% - 92.0%
Exams (including Final)	35.0%		C	70.0% - 84.0%
Total	100.0%		D	60.0% - 69.0%
			F	Below 60.0%

LAB & HOMEWORK MATERIALS (SUPPLIED BY STUDENT):
- EET227T parts kit (UMCOT bookstore)
- Breadboard (prototyping board)
- Graph paper (Engineer's Computation Pad, Ampad #22-144)
- Additional materials as required by the instructor

EQUIPMENT (SUPPLIED BY UMCOT):
- Personal computer
- Oscilloscope
- Signal generator
- Variable voltage/current power supply
- Additional materials as provided by the instructor