ENGR 126
Intro Electric/Comp Engineering
Units: 4

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TEXT ***Electronic Formulas, Symbols & Circuits***, Mims, Forrest M. III, Volume IV, Lincolnwood, IL: Master Publishing, Inc., 2004

OUTSIDE ASSIGNMENTS
Students are expected to spend a minimum of four hours per unit per week in class and on outside assignments. All assignments are to be completed in a professional and legible manner. The requirement for all homework and test solutions is that it be presented in a clear and sequential format.

QUIZZES
All students must take all quizzes. No make up quizzes are given. A missed quiz will result in a zero score unless prior arrangements with the instructor, prior to the date of examination, have been approved.

GRADES
Grades are determined by the number of accumulated points earned throughout the semester. Letter grades are based on a curve that fluctuates from quiz to quiz, dependent upon the groups' performance.

PROJECT
The main objective of this course is to assemble the project. The project consists of assembling the 603A Copy Cat robot kit and learning the use of the electrical components used in the circuits. The robot kit is available from Graymark, and is available on the internet for approx. $50.00 plus S/H of approx $9.00. The hands-on approach for this course should be an enjoyable and practical way of learning the material.

LAB BOOK
Keeping a lab book is essential to good engineering. The following guidelines should be followed in generating a successful book.

- All pages are numbered.
- Always write in ink.
- Sign and date each page. (Multiple times if more than one date is covered on that page.)
- If a correction is to be made, cross out the part to be omitted neatly with one line so your previous words/work remains legible.

- When importing work from another source, put a diagonal line on the page where the entry is to be taped. Tape the work on all corners and put your signature in such a way as to cover the page, tape and entry.
- Write and draw legibly.

ATTENDANCE
Since construction of the robot is during class hours, it is essential that lectures and lab be attended. If a lecture is missed, it's your responsibility to obtain the missed material from a fellow student. Excessive late arrivals and/or absences will have an effect on your grade.

CONTENT
- Basic Circuit Elements
- Circuit Analysis/Construction
- Prototyping
- Resistive Networks and Equivalent Models
- Diodes and Piecewise Linear Models
- Modeling Bipolar transistors
- Transistor Circuits
- Amplifiers and Operational Amplifiers
- Binary Logic Circuits
- Combinational Logic: Boolean Algebra
- Combinational Logic: Karnaugh Maps
- Flip Flops
- Sequential Logic Circuits
- Finite State Machines
- Microcontrollers and Programmable Logic
- CMOS Programming

FINAL GRADE DETERMINATION

Final/ Lab Book / Homework	50%
Project/Assignments/quizzes/Competition(s)/ Attendance and classroom participation	50%

Robot kit needed: Graymark 603A Copycat
Each student is required to purchase a solderless breadboard and logbook (notebook).

Student Learning Outcome

What's a Learning Outcome?
Student learning outcomes are general skills, knowledge, or masteries which students are expected to have after completing a course or program of study. The faculty responsible for a course or program get together and decide what overall qualities or abilities a successful student should have after completing a course or program; those become the student learning outcomes. Faculty do assess their outcomes; that is, they find a way to determine if their students are achieving those desired outcomes. However, these assessments are not necessarily part of the students' grades in the courses.

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Successful students will be able to design an electronics circuit. Students will be asked to design an H-bridge circuit using readily available components.

Successful students will be able to construct an electronics circuit on a breadboard. Students will be asked to construct a working H-bridge circuit on a breadboard.

Successful students will combine circuits. Students will be asked to combine the H-bridge circuit into the existing robotics project.