ECE 204 Introduction to Electrical Engineering

Syllabus for Fall 2019

Instructor: Stephen Kasdorf, ECE Department, skasdorf@rams.colostate.edu
Office: Engineering Building, B106 (BC Infill)
Office hours: Tuesday and Thursday 3:00 - 4:00pm
Course TA: Thomas Tathryn ttathryn@gmail.com Mondays, Wednesdays, and Fridays 1:00 – 2:00pm Engineering B106 (BC Infill)
Recitations (optional): Time and Date TBD

Textbook:
- Allan R. Hambley, Electrical Engineering Principles and Applications, 7th Edition
- MasteringEngineering® access code for Hambley, by Pearson

Reference book:
- C. K. Alexander and M. N. O. Sadiku, Fundamentals of Electric Circuits, Mc Graw Hill

Course Objectives:
Electrical Engineering encompasses a large variety of topics and areas of application, ranging from DC and AC electric circuits, to electromagnetics, optics, telecommunications, computers, and power systems, just to name a few. Considering the breadth of the subject and the shortness of one semester, not everything can be covered and some choices have to be made. Principal objective of this course is to provide students with general understanding of some of the main areas of electrical engineering. While comprehension at a great depth is not aimed for, it is expected that a successful student will grasp main ideas of circuits, and be able to understand and explain how basic electrical-engineering components, devices, and systems work.
While studying this challenging course, students should have in mind that electrical engineering is a very practical and important subject, which has in the past, and will continue in the future, to revolutionize our everyday lives.

Topics covered:
Intro: charge, current, power, energy
Circuit elements: resistors, capacitors, inductors, non-linear elements, independent and dependent sources, Ohm's law, Kirchoff's laws
DC circuits: resistors, equivalent resistance, techniques for calculating nodal voltages and branch currents - nodal analysis, mesh analysis, superposition, source transformation, Thevenin and Norton equivalents
Transient response: first and second order circuits
AC circuits: phasors, phasor representation, impedance, equivalent impedance, techniques for calculating nodal voltages and branch currents
Power analysis: different types of power, power factor and its correction, three-phase circuits, transformers
Operational amplifiers
Programs and tools available for circuit simulations
Binary numbers: operations with binary numbers, digital logic
Semiconductors: diodes, circuits with ideal diodes, transistors, BJT and FET, modes of operation
Students will be expected to do (web) research on different questions assigned in class, some of which could be exam questions.
The TA will hold (optional) recitations on a day to be determined. Problems similar to in-class examples and homework problems will be worked-out during this time. This time will be used for additional demos and discussions about behavior of different circuits and electrical engineering applications in different majors.
It is recommended to attend lectures, since some of the in-class discussion will be from references other than the course textbook.
It is student's responsibility, if absent, to obtain class notes from one of the classmates.

10/1 *Exam #1*
11/12 *Exam #2*
12/16 *Final Exam (by CSU schedule, 6:20-8:20pm)*

Grading policy:
40% Midterm exams (20% + 20%)
30% Homework (paper-based + MasteringEngineering®)
30% Final exam

All paper-based homework will be due at the beginning of class (at 12:30 pm in the lecture hall) on the day it was assigned for. It must be turned in on time and in presentable condition. Solutions with no work shown will be assumed wild guesses and therefore receive *no credit*. Late homework is due to Thomas Tathryn, and it is your responsibility to coordinate with him to find a time and place to get it to him.
Please use highlighter or colored pencil to color-in/mark numbers of problems you have worked on.
Paper-based homework grading policy:
60% will be based on the number of questions attempted; shown work must make sense
40% will be based on the correctness of the questions chosen by instructor for grading
MasteringEngineering® homework Students will be expected to maintain a homework notebook which they will use to solve all MasteringEngineering® homework before entering final solution on the web. If a student has homework-related question, (s)he will be expected to bring notebook to show to the graders how (s)he has attempted the problem, and to ask for additional help and guidance.
Late homework policy:

One day late:	-50%
More than one day late:	no credit

Exams will be closed book, closed notes; students may bring one page of *hand-written* notes/formulas to the mid-year exams and two pages (<u>one</u> letter-size paper, both sides) to the final exam. Graphing calculators will be permitted.

Grades will be assigned from A through F, with plus or minus categories (no C-, D+, D-)

Contacting TA: Thomas Tathryn will be in charge of grading assignments and helping during office hours. For any homework-related questions, students are encouraged to email Thomas directly.

F: 0-60; **D:** 60-70; **C:** 70-77; **C+:** 77-80; **B-:** 80-83; **B:** 83-87; **B+:** 87-90; **A-:** 90-93; **A:** 93-97; **A+:** 97 and up