EE 100

Electrical Engineering Concepts

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Motivation

CALVIN AND HOBBES

GOSH, LOOK AT ALL THE DINOSAUR BONES WE DISCOVERED.

LET'S GLUE THEM TOGETHER SO WE CAN SEE HOW THEY FIT. THEN YOU CAN DRAW A RECONSTRUCTION OF THE ACTUAL DINOSAUR.

AFTER THAT, WE'LL WRITE UP OUR FINDINGS, AND GET THEM PUBLISHED IN A SCIENTIFIC JOURNAL.

THEN WE'LL WIN THE NOBEL PRIZE, GET RICH, AND GO ON TALK SHOWS.

WHAT ABOUT BABES? WHEN DO WE GET THOSE?
Course Information

Course Description (UVM 2009–2010 Catalogue) Introduction to analog and digital electrical measurements and circuits; introduction to microprocessors. (Four Credit Hours)

Prerequisites: Physics 125.

Instructor Office Hours: MW 10:30–12:00 noon & by appointment.

Supplemental Text: Dolores Etter, Engineering Problem Solving with MATLAB, Prentice-Hall.
Prerequisite Physics Text Level: R. Wolfson & J. Pasachoff, Physics for Scientists & Engineers, Addison-Wesley.
Course Outline

- Chapter 1. Introduction - Review Chapters 23–24 of W & P.
- Chapters 2–4. Basic Circuit Analysis - Review Chapters 28 & 33 of W & P.
- Chapter 5. Transient Analysis.
- Chapter 5. Steady State Power Analysis & Transmission Lines - Review Chapter 31 of W & P.
- Chapter 7. AC Power.
- Additional Topics (time permitting).
Electric and magnetic fields are fundamentally fields of force that ultimately originate from electric charge. Whether this force field is referred to as electric or magnetic or electromagnetic hinges upon the motional state of the electric charge relative to the point at which the field observation is made. This engineering science subject matter then naturally involves the Special Theory of Relativity.

- Electric charges at rest relative to the observation point give rise to an electrostatic field at that point.
- A relative motion of the charges results in a convective current and provides an additional magnetic force field. This additional field is a magnetostatic field if the charges are all moving at constant velocities relative to the observation point.
- If the charges undergo accelerated motions, both time-varying electric and magnetic fields are produced that are coupled; they are then referred to as an electromagnetic field.
Microwave Link

Microwave communication network.
Electromagnetic Spectrum

The electromagnetic spectrum.
Radio Frequency Bands

Individual bands of the radio spectrum and their primary applications.
Problem Assignments:
- Problems will be assigned on Monday of each week and are due the following Monday.
- Each student is required to develop their own individual solution to each assigned problem.
- Students are encouraged to discuss these problems with their classmates in developing their solution, but are forbidden from simply copying someone else’s solution (plagiarism).

Chapter Exams:
- There will be a 50 minute class exam at the conclusion of each chapter grouping.
- All exams are closed book. Notes, electronic calculators, laptops, etc. are not permitted.
- Each chapter exam (there will be, at most, 6 of them) will count 10% of the final grade.
Grading:

- Each chapter exam contributes equally to 60% of your final grade in the 3 credit lecture part of the course.
- Graded homework counts for 20% of your final grade in the 3 credit lecture part of the course.
- The final exam counts for 20% of your final grade in the 3 credit lecture part of the course.

Final Exam: Monday, December 12, 2011; 10:30 AM–1:15 PM; Rowell 103.

Please note that all exams are closed book, no notes, no electronic calculators, no laptops, etc.
"My dog ate the Palm Pilot that had the URL of the website my homework was posted on."
Rules of Class Etiquette

- Class attendance and on-time arrival at the start of class is expected.

- Absences may result in a decrease in individual performance assessment (i.e. your grade). You are responsible for obtaining any missed lecture notes from your fellow students. I will not provide them.

- Talking between students during the lecture is frowned upon =:~ (°)

- Cell phone, texting, twittering, and other PDA use during class is strictly forbidden.

- Any food brought into class must be shared.
Please do ask questions during class about the lecture. They may help to clarify the topic not only for you, but for others in the class as well.

Please try not to email me with questions about the course. Ask them in class instead so that all may benefit.

Back in the 1960’s when I was an undergraduate, the Professor lorded over the class and the students suffered at his or her whim. Today, university administrators view the students as customers and the faculty as their servers (or facilitators). Both of these extreme points of view are wrong.
'Delusions of adequacy'

Associated Press

When the British military judges its officers, it sometimes does so with the droll humor of a Noel Coward play. Here are some excerpts taken from Royal Navy and Marines fitness reports.

- His men would follow him anywhere, but only out of curiosity.
- I would not breed from this Officer.
- This Officer is really not so much of a has-been, but more of a definitely won't-be.
- When she opens her mouth, it seems that this is only to change whichever foot was previously in there.
- He has carried out each and every one of his duties to his entire satisfaction.
- He would be out of his depth in a car park puddle.
- Technically sound, but socially impossible.
- This young lady has delusions of adequacy.
- When he joined my ship, this Officer was something of a

... + ...

Telling excerpts from British military fitness reports

- She sets low personal standards and then consistently fails to achieve them.
- He has the wisdom of youth, and the energy of old age.
- This Officer should go far — and the sooner he starts, the better.
- In my opinion this pilot should not be authorized to fly below 250 feet.
- The only ship I would recommend this man for is citizenship.
- Works well when under constant supervision and cornered like a rat in a trap.
- This man is depriving a village somewhere of an idiot.

Granny, since then he has aged considerably:
- This Medical Officer has used my ship to carry his genitals from port to port, and my officers to carry him from bar to bar.
- This Officer reminds me very much of a gyroscope — always spinning around at a frantic pace, but not really going anywhere.
- Since my last report he has reached rock bottom, and has started to dig.