EMC1: Macro and micro view of engineering:

Catalog description: A course designed to be exciting and stimulate a student's further interest in the engineering minor. This course would include an introduction to and hands on experience with engineering problem solving, modeling, simulation, and analysis tools. It would also provide the participants with an understanding of the macro view of what engineering is and what engineers do. The class would be exposed to practicing engineers, and make one or two visits to local companies.
MWF 9.10-11.00, Fall 2010.

Syllabus:
Inventions in physical sciences
Electrical materials
Fabrication technologies
Devices
Integrated circuits
Systems
Computer
Fundamental laws of electrical science
Electrical components and devices
Instrumentation systems
Acquisition of data
Manipulation of data
Display of information
Graphical software
Experiments in use of computer based instrumentation
Electrical measurement techniques
Experiments in electrical measurements
Commercialization of inventions
Engineering ethics

Credit hours: 3

Textbook/required materials: a) Electrical Engineering, Theory and Examples, 2nd Edition, K.H. Norian, HRC Publishers (2005). ISBN 0-9772484-1-0

Course activities: Each student will study an engineering invention as his/her term project. The written report should include a brief introduction to the history of the invention, a description of how the invention works, how it can be improved, on how it is marketed and on its benefit to society. The written report is due on Nov. 3. Students will learn how to search the literature to find material relevant to their project. They will also hear lectures to help them understand some of the basic concepts and principles, parameters and units that underlie the tools that the engineer uses in designing and inventing products useful to society. Other lectures will introduce the student to the use of graphical programming algorithms and their application in modeling and simulation in engineering.

Assessment: Each student does a term paper on a project topic. Students are assessed on progress they make on the project during the semester, in their depth of understanding the subject in a final oral presentation and on the written report on the project, on assignments. Grade determination, written project=30%, oral presentation of project=20%, assignments and tests =50%. Students who stay away from class for long periods without a good excuse will fail the course. Students with special needs need to let the instructor know of these during the first week of classes.

Class/laboratory schedule: This class meets three times per week, 50 minutes per session.

Prepared by: K.H. Norian

Date prepared: Aug, 2010

Time table

Aug. 30, 2010 First day of class.
Oct.11-12, 2010 Pacing break.
Nov. 3, 2010 Project paper due during class.
Nov. 24-26, 2010 Thanksgiving break.
Dec. 10, 2010 Last day of class.
Tests dates to be announced.
Project presentation dates to be announced