EE 1130 Freshman Eng. Design for Electrical and Computer Eng.

Class 1

Course Introduction.

- Chapter 17: Intro to Eng. Design.

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Textbook

Exploring Engineering, Kosky et. al, 2nd Edition, 2010.

- **Evaluation criteria**

- Instruments for course evaluation will be used to measure established course objectives. These instruments will be associated with the Program Outcomes and IEEE Program Criteria that they can support. These are:

- Midterm exams (c, d, e, f)

- In-class design exercises (c, d, e, f, g, h, i, j, k)

- Final project (c, d, e, f, g, h, i, j)

- The course instructor will be responsible to show the course coordinator how these instruments will determine the final grade. The same person will also choose the most adequate instrument(s) from the above list to gather data and analyze it, and display valuable evidence of the Program Outcomes Assessment for which this is a key course.

General Course Rules

- Please use your PUPR mail for communication. Alternatively you could use the Blackboard (BB) message system.

- Please activate your BB account.

- You are responsible of reading all BB messages.

Course Objectives:

Los estudiantes se familiarizaran con los siguientes temas:

- Introduce and put into practice the methodology of the engineering design and analysis.

- Develop creativity in the solution of engineering design problems.

- Practice written and oral communications skills needed in the engineering profession.

- Develop the ability to work in teams.

- Develop a high-level understanding of the major applications and areas of interest within Electrical and Computer Engineering.

- Expose students to the historical milestones of the Electrical and Computer Engineering profession.

- Promote understanding of contemporary and ethical issues within the engineering profession.

Topics Covered:

1. Major areas and applications of Electrical and Computer Engineering.

2. Historical overview of the physical and conceptual principles and landmark solutions that have represented paradigm-shifts in the way problems are solved.

3. The Engineering Design Process

   a. Defining the problem

   b. Generating alternative concepts

   c. Evaluating alternatives and selecting a concept

   d. Detailed design

   e. Implementation and Testing

   f. Performance Evaluation

   g. Presentation and Reports

Modulos and Rotation schedule:

- Students from all four sections will rotate to be exposed to the four modules. The modules are the following:
  - Computer Module.
  - Power Electronics Module.
  - Engineering Control Systems Module.
  - Digital Signal Processing (DSP) and Communications Module.
- The duration of each module is 2 ½ weeks (5 sessions)
- The rotation schedule is the following (in Spanish)

Sección	Días	1er Módulo	2do Módulo	3er Módulo	4to Módulo
05	MW	L302: Computer	L311:Controles	L311:Power	L??:DSP
06	TR	L311:Power	L??:DSP	L302: Computer	L311:Controles
15	MW	L311:Controles	L302: Computer	L??:DSP	L311:Power
16	TR	L??:DSP	L311:Power	L311:Controles	L302: Computer

Chapter 17: Introduction to Engineering Design

- The nine steps

17.9 STEPS IN THE ENGINEERING DESIGN PROCESS

A systematic approach to engineering design that uses the elements of the Design for Six Sigma philosophy may be viewed as consisting of eight steps:

1. Define the problem.
2. Generate alternative solutions.
3. Evaluate and select a solution.
4. Detail the design.
5. Defend the design.
6. Manufacture and test.
7. Evaluate the performance.
8. Prepare the final design report.

Homework

- Read and understand chapters 17 to 25of the book.

- THANK YOU!!

End of Class