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

Class 5

Signal Processing Module (DSP).

- Module Project.
  - C2. Use knowledge, methods, processes and tools to create a design.
  - I1. Identify and learn to use the tools needed in order to conduct research projects and develop independent learning skills

Project Document

- A good project document should include:
  - Cover.
  - Contents index.
  - Introduction: (what are you going to do).
  - Problem approach: (how are you going to do, what mathematical approach, equations are you going to use).
  - Lab. Result:s (results of simulation, add block diagrams, figures, explanation of each figure and block).
  - Conclusions: (what you have learned, future work).
  - References: (if you copied, please reference the source)
  - Appendix: put Matlab code here, if applicable.

Project Document

- COVER.
  - Title: Project DSP Module
  - Name.
  - Course and section: ee1130-
  - Trimester: Fa13
  - University.: PUPR
  - Professor: Luis Vicente
  - Date:

Project Document

- CONTENTS INDEX

  - Document contents:

Project Document

- 1 - INTRODUCTION

    1. What is this module about (DSP, signal processing, filter unwanted signals, or noise, extract information from noisy signals) IN YOUR OWN WORDS.

    2. Explain what Signal Processing (search the web). What are the uses of Signal Processing. When citing a reference [1] IN YOUR OWN WORDS.

    3. Obtain what kind of jobs for Signal Processing Engineers. How much is the salary [2].

Project Document

2.- PROBLEM APPROACH (MOCK DESIGN PROJECT):
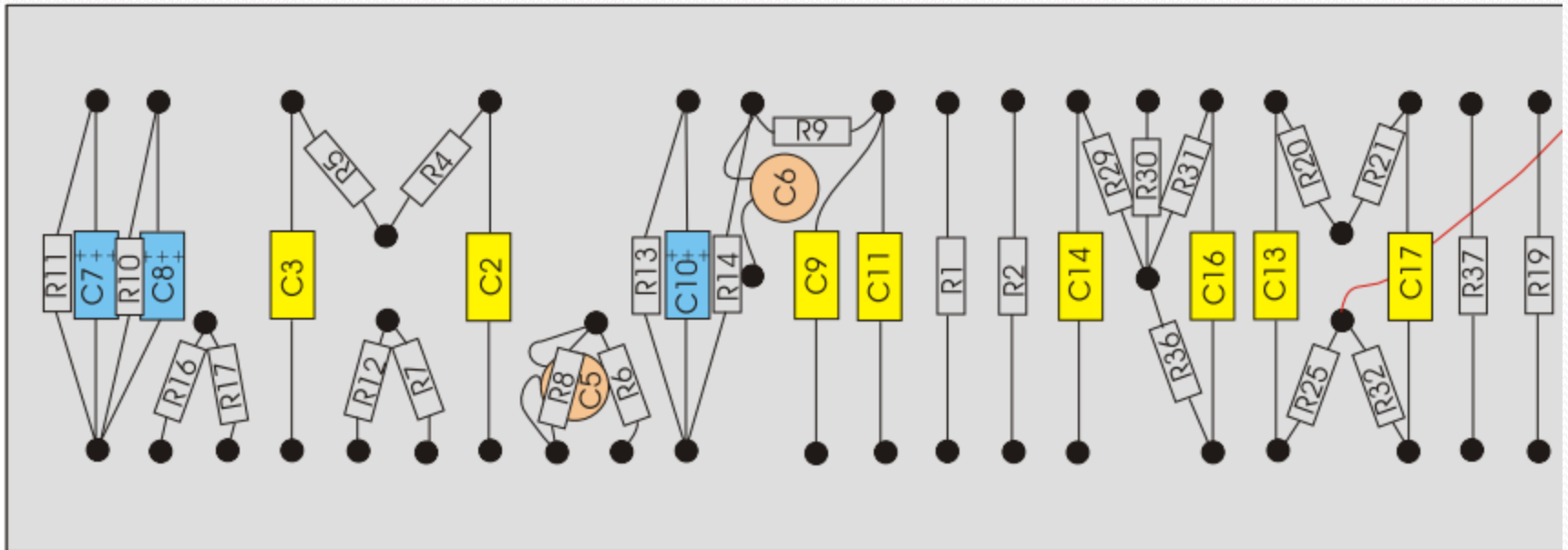Engineering design steps procedure to build a filter

1st. Define the problem: what are we going to solve (elaborate in more depth than in the introduction, put figures, etc.).

2nd. Generating alternative concepts (1- alejarse de la fuente de ruido 2- Construir un filtro usando la Transformada de Laplace, zeros y polos. 3- busquen en internet alguna otra alternativa para resolver estos tipos de problema.)

3rd. Evaluating alternatives and selecting a concept: [ventajas, inconvenientes de cada una de las alternativas, y seleccionar la que consideremos mejor, justificándolo.]

4rd. Detailed design (ver las notas y copiar el proceso de diseño, donde colocar los polos y los ceros para eliminar la frequencia de ruido, etc. Poner imágenes del diagrama de bloques, del scope de la simulación).

Project Document

The Engineering Design Process

5rd.- Implementation and Testing: (inventar algo así:

- A partir de la Funcion de Transferencia H(s), se calcularán los valores de los componentes que formarán el circuito eléctrico y el esquema (schematics).

- Se creará el Physical Layout del Board (ejemplo en la fig)

Project Document

The Engineering Design Process

5rd.- Implementation and Testing:

- (cont).
- Se construirá el board.
- Se colocarán y soldarán los componentes.
- Cada circuito se testeará.

6rd.- Performance Evaluation.

7rd.- Presentation and Reports.

Project Document

3 – CONCLUSION

que es lo que hemos diseñado y que aprendí de este proyecto.

- Summary of what we did.

- What we learn.

- What interesting aspects you found.

Project Document

- References.
    - [1] Try to write in IEEE format.
    - [2] B. Klaus and P. Horn, *Robot Vision*. Cambridge, MA: MIT Press, 1986.
    - [3] L. Vicente. (2013, Apr 1). EE1130-05: Freshman Design for EE and CoE [Online]. Available: http://www.lmvicente.com/ee1130.htm

Project Document

- Apendices.
  - Here we put software code (C++)
  - Copy of downloaded documents (manuals, technical sheets, etc)

Project Document

- The project should address the following issues:
  - Explain what we are designing (ex, a processing system that attenuates a high frequency component that is corrupting my signal of interest) (c,e).
  - Explain what is expected from the system (c,e).
  - Search in the web the impact of DSP engineers, what kind of problems deal with? (h).
  - Show how you did the internet search, what tools and reference documents you used? (i).
  - Search over the internet information about employments in DSP, what kind of jobs and salary.(j)

End of Class