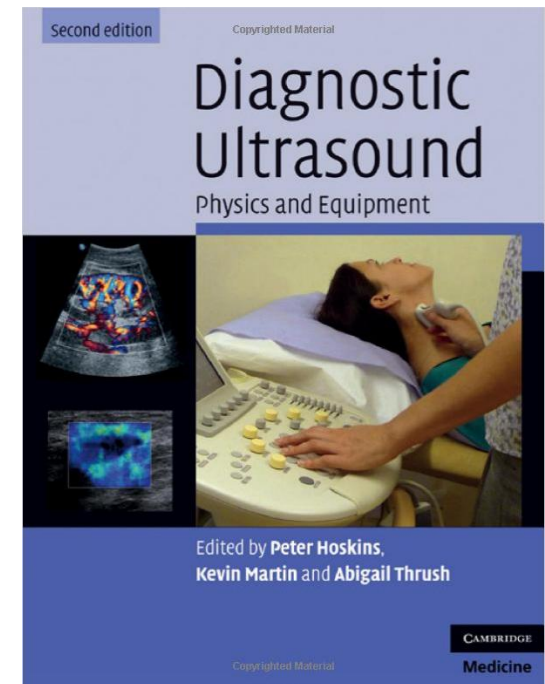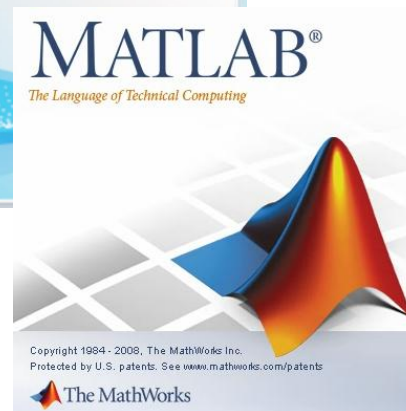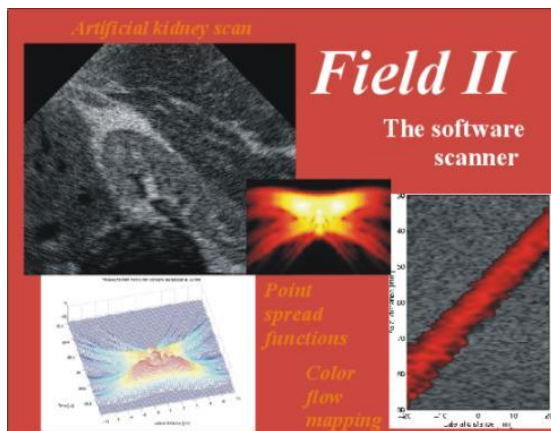# (超音波)電子電路設計

劉浩灃 長庚大學電機系
2014/ Fall

課程目標

- 本課程教授學習如何分析和設計射頻超音波電子電路
- 通過本課程將瞭解:
  - 基本超音波原理
  - 超音波成像概念
  - 超音波射頻電路構成
  - 超音波之訊號模擬及信號處理技術
  - 超音波電子電路韌體設計概念
  - 超音波電子電路介面撰寫控制

上課資料/工具

- **Text book**: PR Hoskins, K Martin, A Thrush, Diagnostic Ultrasound: Physics and Equipment ,Cambridge Medicine, 2nd Edition, 2010

- **Simulation environment**: Matlab

- **Simulation package**: Field II

- **GUI:** Visual C++

Online Resources

- 台大電機系 李百祺教授 課程資料(超音波)
- http://ultrasound.ee.ntu.edu.tw/course1.htm

- 交大電機系 張智星教授 課程資料(Matlab)
- http://mirlab.org/jang/books/matlabProgramming4beginner/slide/
- http://mirlab.org/jang/books/matlabProgramming4guru/slide/

- Prof. Jorgen Arendt Jensen (Field II on Matlab)
- http://field-ii.dk/

成績考核

- 上課需自備筆記型電腦

- 平常成績40% (含出席率、作業每週一次)
- 考試30%
- 期末專題/報告30%
- 出席10% (缺席逾1/3學期成績以不及格計)

課程規劃

Week	Content	Note
1	Introduction	
2	Basics of diagnostic ultrasound	Text book
3	Basics of diagnostic ultrasound	Text book
4	Basics of diagnostic ultrasound	Text book
5	Basics of diagnostic ultrasound	Text book
6	Basics of diagnostic ultrasound	Text book
7	Basics of diagnostic ultrasound	Text book
8	Simulation hands on	Field II
9	Hardware hands on	16-channel board
10	Hardware hands on	16-channel board
11	Hardware hands on	16-channel board
12	Hardware hands on	16-channel board
13	Project hands on	GUI
14	Project hands on	Integration and team project
15	Project hands on	Integration and team project
16	Project hands on	Integration and team project
17	Project hands on	Integration and team project
18	Final presentation	