COURSE “Fundamentals of Medical Imaging”

General Instructions for Class Project

Organize your report in the following sections:

Members of the team:
List the participants, people soft number, department, graduate/undergraduate status.

Introduction:
Describe the project, the aims of this work and a short review of that you did and what were your conclusions. List your aims clearly and number them as example, “Aim 1” or First Aim”. That way, in the next section you can refer to them by number also.

Methods:
Describe in detail the methods you used in pursuing your project: software, algorithms, equations, etc. Exactly as you did it in your homework. Note that:
• Description of your phantom and its figures should be reported in this section (the phantom is one of your methods, it is not a result!).
• Figure of your GUI and examples of the outputs (graphs, images etc) should be included also in this section.
Correlate the aims you listed in your introduction to the methods you used. Example: “… to calculate the parameters we used in Aim number 2, we developed an algorithm shown in the flowchart of figure 4 and then implemented it with the Matlab code … etc”

Results and Discussion:
In this section report your results and comment about them. Organize them according to your aims. Depending on your project, include use figures with graphs, images etc.

Conclusions
This should be a short section that reviews your results.

Literature:
If you used any bibliography in your text, report it in this section. Number them and when you refer to them in the text use this number (first referred in the text then first listed)

CODE:
Important: In the report include:
• A hardcopy of your code, so you can refer to its different sub-routines/functions/etc in your main text.
• Instructions of how to use your code!
• Also, zip and email it to me and the TA.
Structure and GUI: A graphics user interface (GUI) implemented with Matlab GUIDE will be used for interfacing to your code. The purpose of the GUI is to help you in debugging and testing your code. Organize and separate the different tasks. As example:

- A part of the GUI will be devoted to generating a phantom by entering its dimensions, matrix size and its properties. When you run this task, an image of the phantom should appear in a new window and its corresponding matrix (or matrices) should be then available as input to the other tasks (data acquisition or analysis).
- Another part of your GUI will be devoted in acquisition and image reconstruction of your raw data. Then if you change the acquisition parameters (e.g. distance of the x-ray detector or matrix size in MRI) and run it, it should generate a new window where you present your results.

Functions: create a folder with the name “ProjectFunctions” and inside it place all the different functions you may have written for the specific tasks needed. Those functions will be called by the GUI as required!

Comments: For each function or piece of code you use, write comments that describe clearly what it does. Also, include comments at the beginning of each function that describes the parameters you are using

Output: It is easier to open separate windows to present the results of your code. Check the different Matlab examples in the course web site. In the windows you present your results add comments what those results are! That way you can save the output

Ground Truth and Analysis of your results: Remember that the ground truth, the real object is your phantom! This means that the real thing is your phantom and you will be comparing the images you generate with your code to this one (images is the output of your code.)