MA40050: Numerical Optimisation & Large–Scale Systems

Lecturer: Dr Pranav Singh

For any queries concerning the course, please email me at `ps2106@bath.ac.uk` or approach me after the lecture. My office is in 6W 1.24a. Please email me beforehand if you want to come and see me.

General information:

Lectures:	Wednesday	10.15	1W 3.30
	Thursday	11.15	CB 4.10
No lectures in	week 4		
Problem classes:	Friday	17.15	8W 2.20
No problem classes in	weeks 1,2,4,10		

I will hand out *Problem Sheets* typically in the lecture on Thursday. There will be about *6 problem sheets*. Please *hand in* your solutions to the marked questions on the problem sheets at one of the lectures or drop them off in the course pigeon hole on Level 1 of 4W. I will give you feedback to your solutions provided they have been handed in by Thursday a week before the problem class.

Web Page: Problem sheets, handouts, Matlab codes, the assignment and some useful links for this unit will be made available at

www.pranavsingh.co.uk/ma40050.

Literature: There is no set textbook for this course, but I will essentially follow the lecture notes by Christoph Ortner (Warwick) for a course he taught in Oxford in 2009;

[Ort09] C. Ortner, "*Continuous Optimization*", Lecture Notes, 2009 (available on the moodle page or at https://homepages.warwick.ac.uk/staff/C.Ortner/teaching/files/opt_ln.pdf.

They are themselves based on

NW06] J. Nocedal, S.J. Wright, "*Numerical Optimization*", 2nd Edition, Springer, 2006 (available from the library).

Two other useful references are

[DS83] J.E. Dennis, R.B. Schnabel, "*Numerical Methods for Unconstrained Optimization and Nonlinear Equations*", Prentice-Hall, 1983 (available from the library).

GL03] N.I.M. Gould, S. Leyffer, "*An introduction to algorithms for nonlinear optimization*", in Frontiers in Numerical Analysis (J.F. Blowey, A.W. Craig, T. Shardlow, Eds.), Springer, 2003 (available at `http://www.numerical.rl.ac.uk/people/nimg/oumsc/lectures/paper.pdf`)

Computing: The computing for this course will be done using MATLAB running on BUCS. This system can be accessed from any university computer.

Coursework: There will be one assignment, worth 25% of the final mark for the course. *Provisionally*, I aim for this to be set on **Wednesday, 18th March 2020** and to be due on **Tuesday, 28th April 2020**. I shall confirm these dates nearer the time. Please let me know about any severe clashes with other assignments. A modest amount of computing will be required in the assignment, but the emphasis will be on understanding the numerical methods and links to the theory.

I hope you enjoy the course. Don't hesitate to come and see me if there are any problems.

Pranav Singh, February 5, 2020