AMA 505, Optimization Methods, 2024/25 Semester 1

Instructor: Prof. PONG, Ting Kei
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Consultation Hour: Appointment via Emails
Tutor: Same as instructor

Course Format

Meeting times: Monday 12:30 pm to 3:20 pm in Z503.
Midterm test is tentatively arranged in Week 9. The exact date and time will be announced later

Assessment:

Continuous Assessment	- 2 Assignments	10%
	- 1 Test	30%
Final Exam		60%
	Total:	100%

Grade thresholds:

To be announced soon.

Tentative Schedule:

Week	Content
1	Overview/Preliminaries
2	Gradient Descent + Linesearch
3	(Tutorial 1) Quasi-Newton Method
4	Quasi-Newton Method (Tutorial 2)
5	Convex Sets and Functions, LP Duality I
6	LP Duality II (Tutorial 3) SDP duality I
7	SDP duality II (Tutorial 4) SDP and CVX I
8	SDP and CVX II
9	(Tutorial 5) KKT Conditions I
10	KKT Conditions II, Penalty and Barrier Methods I
11	Penalty and Barrier Methods II (Tutorial 6)
12	Conjugate Gradient Method (Tutorial 7)
13	Revision

Reference Books

Nonlinear Programming, 3rd edition, by D. P. Bertsekas, 2016.
Numerical Optimization, 2nd edition, by J. Nocedal and S. J. Wright, 2006.
(For Weeks 5 - 8) **Convex Optimization**, by S. Boyd and L. Vandenberghe.
Available at `https://web.stanford.edu/~boyd/cvxbook/`.
(For Weeks 5 - 8) **Introduction to Nonlinear Optimization: Theory, Algorithms, and Applications with MATLAB**, by Amir Beck.
Available at `https://archive.siam.org/books/mo19/`.