

# WQD7011

## Numerical Optimization

### Course Briefing

# Contact Info and Time Table

- Lecturer: Dr Lim Chee Kau
- email: `limck@um.edu.my`
- Classes: Friday 6:00pm – 9:00pm  
Sunday 8:30am – 11:30am
- Link : <https://meet.google.com/rej-gttz-dix>

# About this course

- This is a mathematics course, with a little bit assistance of computer programming.
- An elective course for Master of Data Science
- At the end of the course, students are able to:
  - Explain the key principles and values pertinent to numerical optimization and linear algebra
  - Apply and implement numerical solution methods
  - Interpret the numerical solutions with respect to their accuracy and suitability

# Syllabus

- Unconstrained optimization and constrained optimization, which include:
  - Modelling for Optimization
  - Unconstrained Optimization
    - Line search methods
    - Trust region methods
  - Constrained Optimization
    - Linear programming
- Octave / Matlab programming

# References

- Numerical Optimization. Jorge Nocedal and Stephen Wright, second edition, Springer-Verlag, 2006.
- Numerical Methods and Optimization: An Introduction. Sergiy Butenko and Panos M. Pardalos, 2014

# Assessment

- Final examination 40%
- Continuous assessments 60%
  - Mid term test 1 (30%)
  - Assignment (30%)

# Schedule (Tentative)

Week	Date (G1)	Date (G2)	Lecture
1	17 Mar	19 Mar	Briefing, Intro
2	24 Mar	26 Mar	Basic LA and Calculus
3	31 Mar	02 Apr	Modelling
4	07 Apr	09 Apr	Fundamental of UO
5	14 Apr	16 Apr	Line Search methods
6	21 Apr	23 Apr	Programming
			BREAK
7	05 May	07 May	Constrained Optimization
8	12 May	14 May	Mid Term Test
9	19 May	21 May	Simplex method (part 1)
10	26 May	28 May	Simplex method (part 2)
11	02 Jun	04 Jun	Simplex method tutorial
12	09 Jun	11 Jun	Trust region method
13	16 Jun	18 Jun	Revision
14	23 Jun	25 Jun	AA

# The reasons to skip this course

- I don't like mathematics.
- When I learn mathematics, I need a lot of examples.
- It is difficult for me to imagine problems that cannot be visualize.
- I think Parallel and Distributed Computing / Big Data Applications & Analytics / Network and Security is more interesting.
- The course is more towards research / academic oriented, rather than practical / business oriented.