TTK4135 Optimization and Control
Preliminary syllabus ("Pensumliste")

Spring 2019
2019-01-04

- N&W: Ch. 1
- N&W: Ch. 2 (except subsections "Nonsmooth problems" and "Models for trust-region methods")
- N&W: Ch. 3 (first two pages until 3.1), Ch. 3.1 (except subsection "The Goldstein conditions"), 3.4 (first two pages until "Eigenvalue modification"), 3.5 (to "A line search algorithm for Wolfe conditions")
- N&W: Ch. 6.1
- N&W: Ch. 8.1 (to "Approximating a sparse Jacobian")
- N&W: Ch. 9 (first two pages until 9.1), Ch. 9.1, 9.5 (NB: Check errata available on Blackboard.)
- N&W: Ch. 11.1 (to "Inexact Newton methods")
- N&W: Ch. 12 (except 12.4, 12.6 and 12.7). In 12.9, Theorems 12.13 and 12.14 are excluded, but Examples 12.11 and 12.12 are important
- N&W: Ch. 13 (except first part of 13.5 ("Pricing and selection of the entering index"), 13.6 and 13.7)
- N&W: Ch. 15.3, 15.4 (to "filters"), 15.5
- N&W: Ch. 16 (except: 16.3, 16.6 and 16.7. In 16.2, the "Schur-complement method" and the "Null-space method" is not a part of the syllabus, neither is the "Updating factorizations"part in 16.5.)
- N&W: Ch. 18 (except 18.5, 18.6 and 18.7. Details of "Reduced-Hessian Quasi-Newton Approximations" in 18.3 are not required, but you should understand the approach conceptually.)
- N&W: Appendix A (except "Sherman-Morrison-Woodbury formula", "Interlacing eigenvalue theorem" and "Error analysis and floating point arithmetic"in A.1, and "Sequences", "Rates of convergence" and "Implicit function theorem" in A.2)
- Foss & Heirung, "Merging Optimization and Control" - all pages
- All exercises
- Helicopter laboratory project
- Matrix calculus note on Blackboard
- Matlab examples published on Blackboard

N&W refers to the textbook: Nocedal & Wright, "Numerical Optimization", 2nd Edition, 2006.

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