This course is given every year since 2000. For many years, it was recommended by LiTH Forskarutbildningsnämnden as "Fakultetsgemensamma forskarutbildningskursen".

The course starts on January 15, 2020, and it will take about 16-17 weeks (one seminar per week on Wednesdays 15-17). Each topic is covered twice - first by the lecturer, then at the next meeting by a couple of students. Their presentation is followed by discussions.

The course is worth 9 points. Examination: active participation (at least 85% attendance), presentation of the course topics.

The main topics:
- unconstrained optimization,
- constrained optimization,
- systems of simultaneous nonlinear equations,
- nonlinear least squares.

Students will get acquaintance with the most effective numerical methods in nonlinear optimization, equations and least squares, many of which have been developed only in recent years. The course responds to the growing interest in optimization in engineering, science, and business by focusing on the methods that are best suited to practical problems.


Extra materials covering the most recent advances in the topics:
- multi-criteria optimization,
- sparse (cardinality-constrained) optimization,
- Lagrange-duality-based decomposition,
- Alternating Direction Methods of Multipliers (ADMM).

Students background: basic calculus, numerical linear algebra and optimization. Any gap in the background can be closed by students at the beginning of the course by intensive self-study with a help of the lecturer.

Welcome!

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