

## Syllabus for Nonlinear Programming

1. Optimality conditions.
  - (a) Convex functions.
  - (b) Optimality conditions for unconstrained problems.
  - (c) Optimality conditions for constrained problems with equality and inequality.
2. Basic optimization methods and their convergence analysis.
  - (a) Unconstrained problems: Basic descent methods, conjugate direction and Quasi Newton methods.
  - (b) Constrained problems: Reduced gradient and Gradient projection methods, penalty and barrier methods, cutting plane methods, and Lagrange methods.

### Reference Texts:

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- [3 ] Anthony V. Fiacco and Garth P. McCormick, *Nonlinear Programming: Sequential Unconstrained Minimization Techniques*, SIAM. Philadelphia, 1990.
- [4 ] Phillip E. Gill, Walter Murray, and Margaret H. Wright, *Practical Optimization*, Academic Press, New York, 1989.
- [5 ] David G. Luenberger, *Linear and Nonlinear Programming*, Second Ed., Addison-Wesley, Massachusetts, 1984.
- [6 ] Olvi L. Mangasarian, *Nonlinear Programming*, SIAM, Philadelphia, 1994.
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