

SECONDARY COURSE LITERATURE (examples):

- S. Boyd & L. Vandenberghe (2004)** *Convex Optimization*: Sections 2.3 and 3.2 on operations that preserve convexity; Chapters 6–8 on applications in approximation/fitting, statistical estimation, and geometric problems
- R. T. Rockafellar (1970)** *Convex Analysis*: Part III on duality correspondances (conjugacy, polarity)
- J. Stoer & C. Witzgall (1970)** *Convexity and Optimization in Finite Dimensions I*: Chapter 1 on inequality systems; Chapter 5 on duality theorems
- M. Avriel (1974)** *Nonlinear Programming—Analysis and Methods*: Chapter 6 on generalized convexity
- J.-B. Hiriart-Urruty & C. Lemaréchal (1993)** *Convex Analysis and Minimization Algorithms I*: Part V on sublinearity and support functions; Part VI on subdifferentials of finite convex functions
- M. S. Bazaraa, H. D. Sherali & C. M. Shetty (2005)** *Nonlinear Programming—Theory and Algorithms. Third edition*: Chapter 4 on the Fritz John and Karush–Kuhn–Tucker optimality conditions; Chapter 5 on constraint qualifications
- D. P. Bertsekas, A. Nedić & A. E. Ozdaglar (2003)** *Convex Analysis and Optimization*: Chapter 4 on subgradients and constrained optimization; Chapter 5 on Lagrange multipliers with extensions
- J. M. Borwein & A. S. Lewis (2006)** *Convex Analysis and Nonlinear Optimization—Theory and Examples. Second edition*: Chapter 3 on Fenchel duality, Chapter 5 on special cases, Chapter 8 on fixed points
- I. Ekeland and R. Témam (1976/1999)** *Convex Analysis and Variational Problems*: Chapter IV on applications of duality to the calculus of variations; Chapter VI on duality by the minimax theorem
- J.-P. Aubin (1993)** *Optima and Equilibria—An Introduction to Nonlinear Analysis*: Chapter 2 on convex functions and proximation, projection and separation theorems; Chapter 5 on marginal properties of solutions of convex optimization problems
- R. Webster (1994)** *Convexity*: Chapter 3 on convex polytopes; Chapter 6 in mixed volumes and extremum problems; Chapter 7 on selected topics, including Helly’s Theorem
- M. J. Panik (1993)** *Fundamentals of Convex Analysis—Duality, Separation, Representation, and Resolution*: Chapter 4 on convex cones; Chapter 5 on existence theorems for linear systems; Chapter 6 on theorems of the alternative for linear systems
- A. Barvinok (2002)** *A Course in Convexity*: Chapter V on convex bodies and ellipsoids; Chapter VI on faces of polytopes; Chapter VII on lattices and convex bodies
- J. van Tiel (1984)** *Convex Analysis—An Introductory Text*: Chapter 3 on separation theorems; Chapter 5 on convex functions on a linear space; Chapter 7 on optimization
- R. R. Phelps (1989)** *Convex Functions, Monotone Operators and Differentiability*: Chapter 2 on Monotone operators, subdifferentials and Asplund spaces; Chapter 3 on lower semicontinuous convex functions; Chapter 4 on a smooth variational principle
- A. Cambini and L. Martein (2009)** *Generalized Convexity and Optimization—Theory and Applications*: Chapter 2 on non-differentiable generalized convex functions; Chapter 3 on differentiable generalized convex functions; Chapter 4 on optimality and generalized convexity; Chapter 5 on generalized convexity and generalized monotonicity; Chapter 6 on generalized convexity of quadratic functions

EXAMINATION:

- Active participation in exercise solution seminars
- Written and orally presented summary of additional reading material