

Barbu, V.; Precupanu, Th.

Convexity and optimization in Banach spaces. 2nd rev. and extended ed. Transl. from the Romanian. (English) [Zbl 0594.49001](#)

Mathematics and Its Applications (East European Series), 10. Dordrecht/Boston/Lancaster: D. Reidel Publishing Company, a member of the Kluwer Academic Publishers Group; București: Editura Academiei. XVII, 397 p. Dfl. 190.00; \$ 64.00; £52.75 (1986).

The chapter titles are: 1. Fundamentals of functional analysis; 2. Convex functions; 3. Convex programming; and 4. Convex control problems in Banach spaces.

Convexity in topological linear spaces, maximal monotone operators and evolution systems in Banach spaces, the subdifferential of a convex function, concave-convex functions, convex distributed control problems, synthesis of optimal control, boundary control problems with convex cost criteria are some of the topics discussed in this book. Applications of duality theory are also given. Minimax problems and variational inequalities appear as applications. Concepts are explained by means of illustrations. For instance, self-adjoint operators in Hilbert spaces are cited as an example of monotone operators.

Printing and get-up are attractive. This is a good text on optimization and control theory.

Reviewer: [K.Chandrasekhara Rao](#)

MSC:

- 49-01 Introductory exposition (textbooks, tutorial papers, etc.) pertaining to calculus of variations and optimal control
- 49J27 Existence theories for problems in abstract spaces
- 49K27 Optimality conditions for problems in abstract spaces
- 46A55 Convex sets in topological linear spaces; Choquet theory
- 49J40 Variational inequalities
- 49J45 Methods involving semicontinuity and convergence; relaxation
- 49N15 Duality theory (optimization)
- 49K35 Optimality conditions for minimax problems
- 90C25 Convex programming
- 93C25 Control/observation systems in abstract spaces
- 47H05 Monotone operators and generalizations
- 49J35 Existence of solutions for minimax problems

Cited in **3** Reviews
Cited in **155** Documents

Keywords:

Convexity in topological linear spaces; maximal monotone operators; evolution systems in Banach spaces; subdifferential; distributed control; boundary control; duality theory; Minimax problems