



**UNIVERSIDADE FEDERAL DE SANTA CATARINA
CENTRO DE CIÊNCIAS FÍSICAS E MATEMÁTICAS
PÓS-GRADUAÇÃO EM MATEMÁTICA PURA E APLICADA**

MTM510010 Convex Analysis

Pre-requisite: MTM410029 Functional Analysis

Weekly lesson hours: 06h

Discipline syllabus: Basic concepts (convex sets and convex functions in Banach spaces), Fenchel-Legendre conjugate, Moreau-Rockafellar subdifferentials, minimization of convex functions in reflexive Banach spaces, applications in variational inequalities, duality in convex optimization, differentiability of convex functions, variational principles of Ekeland and Borwein-Preiss.

BIBLIOGRAPHIC REFERENCES

Text book:

1. EKELAND, I.; TÉMAM, R; Convex Analysis and Variational Problems, Classics in applied mathematics, SIAM, 1999.

COMPLEMENTARY BIBLIOGRAPHY

1. BORWEIN, J.M.; VANDERWERFF, D. - Convex functions: constructions, characterizations and counterexamples. Encyclopedia of mathematics, Cambridge, 2009.