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

MTM510055 Iterative Methods for Inverse Problems

Pre-requisite: x-x

Weekly lesson hours: 06h

Discipline syllabus: Landweber method linear, nonlinear, Landweber methods. Modified, conjugate gradient method, type methods. Newton (Gauss-Newton, IRGN, Levenberg-Marquardt), Level-set methods, Application 1: inverse problems modeled by equations. Integrals, Application 2: inverse problems modeled by equations. Differentials.

BIBLIOGRAPHIC REFERENCES

Main Books: [1], [6]; Secondary books: [5], [7]

[1] Engl, Heinz W.; Hanke, Martin; Neubauer, Andreas, "Regularization of inverse problems", Kluwer, Dordrecht, 1996.

[2] Groetsch, Charles; "Generalized inverses of linear operators: representation and approximation", Marcel Dekker, New York, 1977.

[3] Groetsch, Charles, "Elements of applicable functional analysis", Marcel Dekker, Inc., New York, 1980.

[4] Groetsch, Charles, "Stable approximate evaluation of unbounded operators" Springer-Verlag, Berlin, 2007.

[5] Groetsch, Charles, "The theory of Tikhonov regularization for Fredholm equations of the first kind", Pitman, Boston, MA, 1984.

[6] Kaltenbacher, Barbara; Neubauer, Andreas; Scherzer, Otmar, "Iterative regularization methods for nonlinear ill-posed problems", Walter de Gruyter GmbH & Co. KG, Berlin, 2008.

[7] Kirsch, Andreas, "An introduction to the mathematical theory of inverse problems", Springer-Verlag, New York, 1996.

[8] Schuster, Thomas; Kaltenbacher, Barbara; Hofmann, Bernd; Kazimierski, Kamil, "Regularization methods in Banach spaces", Walter de Gruyter GmbH & Co. KG, Berlin, 2012.