KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
Department of Mathematical Sciences

Syllabus

Term 062 (2006-2007)

Course #: Math. 612 - Hilbert Space Methods in Applied Mathematics II.

Instructor: Dr A. Boucherif.

Textbook: I. Stakgold, Green s Functions and Boundary Value Problems, John Wiley & Sons, New York, 1979.

References:

1. L. D. Kovach, Boundary Value Problems, Addison Wesley, 1984.
2. J. P. Keener, Principles of Applied Mathematics: Transformation and Approximation, Addison Wesley.
3. B. Friedman, Principles and Techniques of Applied Mathematics,

Objectives: This course is a continuation of Math.611. It covers the areas of Applied Functional Analysis, the theory of Integral Equations, and an introduction to Nonlinear Problems. The emphasis will be on the applications of nonlinear analysis.

Topics to be covered:

- Fredholm Integral equations
- Volterra Integral Equations
- Spectral theory of second order differential operators
- Variational Principles and related methods
- Introduction to Nonlinear Problems