

MBY0014

INTRODUCTION TO OPERATOR THEORY

FALL 2011-2012

INSTRUCTOR: Tunc Misirlioglu

PLACE: Istanbul Kultur University

TIMETABLE: Thursday 15:00-18:00

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ASSESSMENT: Thirty percent of the midterm, the final forty percent

PRE-REQUISITES: Real Analysis and Functional Analysis in undergraduate level

PRINCIPAL TEXTBOOK: B.P. Rynne and M.A. Youngson, Linear Functional Analysis, Second Edition, Springer, 2008 (Chapters: 6, 7, and 8)

SUGGESTED READING:

- Y. Eidelman, V. Milman, and A. Tzolomitis, Functional Analysis, AMS, GSM 66, 2004.
- I. Gohberg and S. Goldberg, Basic Operator Theory, Birkhauser, 1981.
- I. Gohberg, S. Goldberg, and M.A. Kaashoek, Basic Classes of Linear Operators, Birkhauser, 2004.
- P.R. Halmos, A Hilbert Space Problem Book, Springer, 1982.

PROGRAMME

WEEKS	SUBJECTS TO BE COVERED
1 & 2	Linear Operators on Hilbert Spaces. The Adjoint of an Operator.
3 & 4	Normal, Self-adjoint, and Unitary Operators.
5 & 6	The Spectrum of an Operator. Positive Operators and Projections.
7 & 8	Compact Operators. Spectral Theory of Compact Operators. Self-Adjoint Compact Operators.
Will be announced	Mid-term Exam
9 & 10	Integral and Differential Equations. Fredholm and Volterra Integral Equations.
11 & 12	Differential Equations.
13 & 14	Eigenvalue Problems and Green's Functions.
Will be announced	Final Examination