Course Description of Positive Operators

Description

In this course we study here positive operators in the setting of Riesz spaces and Banach lattices and from both the algebraic and topological points of view.

Definition:

An operator $T : E \to F$ between two ordered vector spaces is said to be positive (in symbols $T \geq 0$ or $0 \leq T$) if $T(x) \geq 0$ for all $x \geq 0$.

Special emphasis is given to the compactness properties of positive operators and their relations to the order structures of the spaces the operators are acting upon. In order to make the course as self-sufficient as possible, some basic results from the theory of Riesz spaces and Banach lattices are included with proofs where necessary. However, familiarity with the elementary concepts of real analysis and functional analysis is assumed. The course is divided into five parts, each consisting of nineteen sessions all ending with examples and exercises designed to supplement and illustrate the material.

Course Contents

1. The Order Structure of Positive Operators
2. Components, Homomorphisms, and Orthomorphisms
3. Components, Homomorphisms, and Orthomorphisms
4. Banach Lattices
5. Compactness Properties of Positive Operators

Text Books

- Positive Operators, By Charalambos D. Aliprantis , Owen Burkinshaw, Springer, 2010.
- Banach Lattices and Positive Operators, By H. H. Schaefer, Springer-Heidelberg, 1974.