Operator Algebras, Operator Systems, Operator Spaces: an introduction.

A. Katavolos, University of Athens

These lectures will cover a very brief overview of the basic ideas and results concerning various classes of operators on Hilbert space which are of interest in Quantum Probability and Quantum Information Theory:

- Operator Spaces and their matrix norms

- Operator Systems and Positivity; states and density matrices.

- Operator Algebras: C* algebras.

- Characterisations: The Gelfand-Naimark theorem.

- Subspaces of C* algebras.

- Positivity and complete positivity: Stinespring dilation, Kraus decomposition.

A variety of examples will be presented.