# EC II - THEORY OF LINEAR OPERATORS

## UNIT I

Spectral theory of linear operators in normed spaces - spectral theory on finite-dimensional normed spaces - basic concepts - spectral properties of bounded linear operators - properties of resolvent and spectrum - Banach algebra.

## UNIT II

Compact linear operators on normed spaces - properties - spectral properties of compact linear operators on normed spaces.

## UNIT III

Operator equations involving compact linear operators - Theorems of Fredholm type - Fredholm alternative.

## UNIT IV

Spectral properties of bounded self adjoint linear operators - positive operators square roots of a positive 'operator.

## UNIT V

Projection operators - their properties - spectral family - spectral family of bounded self adjoint linear operators.

## TEXT BOOK(S)

Erwin Kreyszig - Introductory Functional Analysis with its applications

> Unit I : Sections 7.1 to 7.7
> Unit II : Sections 8.1 to 8.4
> Unit III : Sections 8.5 to 8.7
> Unit IV : Sections 9.1 to 9.4'
> Unit V : Sections 9.5 to 9.9

## REFERENCE(S)

[1]    K. Yosida, Functional Analysis, Springer-Veralg, 1974.
[2]    Lustermikn Sobolev, Introduction to Linear Operators.