Code	Subject Title	Cr. Hrs	Semester
MATH-414	**Functional Analysis - II**	**3**	**VII**
Year	Discipline		
4	**Mathematics**		

Objectives:

Compact Normed Spaces

- Completion of metric spaces
- Completion of normed spaces
- Compactification
- Nowhere and everywhere dense sets and category
- Generated subspaces and closed subspaces
- Factor Spaces
- Completeness in the factor spaces

Complete Orthonormal set

- Complete orthonormal sets
- Total orthonormal sets
- Parseval's identity
- Bessel's inequality

The Specific geometry of Hilbert Spaces

- Hilbert spaces
- Bases of Hilbert spaces
- Cardinality of Hilbert spaces
- Linear manifolds and subspaces
- Othogonal subspaces of Hilbert spaces
- Polynomial bases in 2L spaces

Recommended Books:

- G. Bachman and L. Narici, Functional Analysis, (Academic Press, New York, 1966)
- A. E. Taylor, Functional Analysis, (John Wiley and Sons, Toppan, 1958)
- Helmberg, Introduction to Spectral theory in Hilbert spaces , (North Holland Publishing Company, 1969)
- E. Kreyszig, Introduction to Functional A nalysis with Applications, (John Wiley and Sons,
- 2004)
- F. Riesz and B. Sz. Nagay, Functional Analysis, (Dover Publications, Inc., New York, Ungar, 1965)
- W. Rudin, Functional Analysis, 2nd edition, (McGraw Hill Book Company, New York, 1991)