Semester II

Subject Name: Linear Algebra	**Duration: 6 hrs /Cycle**
Subject Code: 2PGM2(2015 on)	**Credit : 4**

Unit I: Vector Spaces and Modules: Elementary Basic Concepts of Vector Spaces – Linear independence and Basis – Dual Spaces – Inner Product Spaces – Modules.

Unit II: Fields: Extension Fields – Roots of Polynomials – Construction with Straightedge and Compass - More about Roots.

Unit III: Galois Theory: The Elementary Galois Theory –Solvability by Radicals – Galois group over the Rational – Finite Fields.

Unit IV: Linear Transformations: The Algebra of Linear Transformations – Characteristic Roots – Matrices – Canonical Forms: Triangular Form only.

Unit V: Matrices and Linear Operators: Trace and Transpose – Determinants - Hermition, Unitary and Normal Transformations.

Text Book: Topics in Algebra by I. N. Herstein, 2nd Edition 2006, John Wiley and Sons.
Chapters: 4 (4.1 – 4.5), 5 (5.1, 5.3 – 5.8), 6 (6.1 – 6.4, 6.8 – 6.10), 7 (7.1).

Reference Books: 1. A First Course in Abstract Algebra by J.B. Fraleigh, Dorling Kindersley (India) Pvt. Limited (2003).

2. Linear Algebara by Kenneth Hoffman and Ray Kunze, Second Edition, PHI Leaner's Private Limited (2012).