

SECOND SEMESTER

MT506: ADVANCED ALGEBRA-II

Syllabus: Splitting fields; Normal Extension; Seperable and Inseperable extensions; Automorphisms of extensions; Galois theory; Galois extension and Galois group; Fundamental theorem of Galois theory; Extensions by radicals and solvability; Insolvability of quintic; Matrices of linear maps of composite maps and of dual maps; Rank and Nullity of linear maps and matrices; Invertible matrices; Eigen values and eigen vectors; change of basis and similar matrices; Determinant of matrices and their properties; Existence and Uniqueness of determinants; Characteristic polynomial and eigen values; Real Inner product space; Schwartz's inequality; Ortopgonality, Pythagoras theorem; Gram-Schmidt orthogonalization; Bessel's inequality, Parseval's identity, Direct sum' Adjoint of a linear map; Self adjoint linear maps and matrices; Orthogonal Linear transformation and matrices, Principal axis theorem

UNIT SCHEDULE

- Unit 8** Splitting fields, Normal Extension, Seperable and Inseperable extensions; Automorphisms of extensions
- Unit 9** Galois theory
- Unit 10** Matrices of linear map
- Unit 11** Rank and Nullity of Matrices
- Unit 12** Determinant of matrices
- Unit 13** Real Inner Product Space-I
- Unit 14** Real Inner Product Space-II
- Unit 15** Real Inner Product Space-III