**Curriculum Plan: B. Sc. (Hons) Mathematics (Semester VI)- RING THEORY AND LINEAR ALGEBRA II.**

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| **DR. ABHISHEK KR SINGH**Assistant ProfessorDepartment of MathematicsKalindi CollegeUniversity of DelhiDelhi- 110008Mobile: +91-8375834510**E- mail**: abhishek@kalindi.du.ac.in | C:\Users\Abhishek\Pictures\2014-05-28 002\photo.jpg | **Marks Distribution**  | **Theory** -75  |
| **Internal Assessment-25** |
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| **Classes Assigned** | **Lectures: 5 per week** |
|  | **References** | **1. JOSEPH A. GALLIAN (CONTEMPORARY ABSTRACT ALGEBRA) 4TH ED,** **2. STEPHEN H. FRIEDBERG (LINEAR ALGEBRA) 4TH ED.** |
|  | **Week** | **Topics** |
|  | **1st week**JAN 2-7 | POLYNOMIAL RINGS OVER COMMUTATIVE RINGS. |
| **2nd week**JAN 9-14 | DIVISION ALGORITHM AND CONSEQUENCES. |
| **3rd week**JAN 16-21 | PRINCIPAL IDEAL DOMAINS, FACTORIZATION OF POLYNOMIALS, REDUCIBILITY TESTS. |
| **4th week**JAN 23-28 | IRREDUCIBILITY TESTS, EISENSTEIN CRITERION, UNIQUE FACTORIZATION IN Z[X] |
| **5th week**JAN 30- FEB 4 |

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UNIQUE FACTORIZATION IN Z[X] |
| **6th week**FEB 6-11 | DIVISIBILITY IN INTEGRAL DOMAINS, IRREDUCIBLES |
| **7th week**FEB 13-18 | PRIMES, UNIQUE FACTORIZATION DOMAINS, EUCLIDEAN DOMAINS. |
| **8th week**FEB 20-25 | DUAL SPACES, DUAL BASIS, DOUBLE DUAL. |
| **9th week**FEB 27- MARCH 4 | TRANSPOSE OF A LINEAR TRASFORMATION AND ITS MATRIX IN THE DUAL BASIS.ANNIHILATORS. |
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|  | **10th week**MARCH 13-18 | EIGENSPACES OF A LINEAR OPERATOR, DIAGONALIZABILITY, INVARIANT SUBSPACES. |
| **11th week**MARCH 20-25 | CAYLEY HAMILTON THEORAM, MINIMAL POLYNOMOAL FOR A LINEAR OPERATOR. |
|  | **12th week**MARCH 27- APRIL 1 | INNER PRODUCT SPACES AND NORMS. GRAM SCHMIDT ORTHOGONALISATION PROCESS. |
| **13th week**APRIL 3-8 | ORTHOGONAL COMPLEMENTS. BESSELS INEQUALITY, ADJOINT OF A LINEAR OPERATOR. |
| **14th week**APRIL 10-15 | LEAST SQUARES APPROXIMATION, MINIMAL SOLUTIONS TO SYSTEMS OF LINEAR EQUATIONS. |
| **15th week**APRIL 15-22 | NORMAL AND SELF ADJOINT OPERATORS.ORTHOGONAL PROJECTIONS AND SPECTRAL THEOREM. |
|  **APRIL 24-29- REVISION** |