VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
SYLLABUS FOR B.Sc. (MATHEMATICS)
SEMESTER III Inter Disciplinary Subject (IDS)
(Mathematical Methods-I)
Effective from June 2012
Marks: 50 (15 internal + 35 external)
(3 hour / Week.Credit: 2)

UNIT I Notations of finite difference calculus, Operators E, $\Delta, \nabla, \delta \ \ a \ n \ d$, relations between different operators and their prosperities, relation between difference and differential operators, Method of constructing difference tables, Location and effect of errors in tabular form, Finding the missing terms , constructing polynomials using differences

UNIT II Factorial notation, expression of polynomials in factorial notation by using finite differences, method of unknown coefficients, Method of detached coefficients

UNIT III Formation of difference equations, Order and degree of a difference equation, Solution of difference equations, linearly dependent and independent solutions, conditions for the linear independence, Superposition Principle, Solution of Homogeneous difference equations by the method of undetermined coefficients

The course is covered by the following reference books :

1. S.S. Sastry : Introductory methods of Numerical Analysis, Prentice-Hall of India Pvt. Ltd.; 4th Edition.
2. M. K. Jain, Iyenger & Jain : Numerical Methods for Scientific and Engineering Computations, New Age International Ltd.
3. Goel & Mittal : Numerical Analysis, Pragati Prakashan, Meerut.
4. Kaiser A. Kunz : Numerical Analysis, McGraw Hill Book Co., London.
5. James I. Buchanan & Peter R. Turner : Numerical Methods & Analysis, McGraw Hill Book Co., London.
6. VN Vedamurthy, NCh SN Iyengar, Numerical Methods, Vikas Publishing House Pvt Ltd

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
SYLLABUS FOR B.Sc. (MATHEMATICS)
SEMESTER IV Inter Disciplinary Subject (IDS)
(Mathematical Methods-II)
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(3 hour / Week.Credit: 2)

UNIT I **Theory of equations**

Definitions, Fudamental theorem(only statement),relation between roots and coefficients,symmetric functions of roots, roots with sign changed, reciprocal roots and reciprocal equations, formation of equations

UNIT II **Evaluation of roots**

Descarte's rule of sign for positive and negative roots, existence of imaginary roots, Cardin's method for solving cubic equations, Ferrari's method for solving biquadratic equations

UNIT III Solution of Non homogeneous difference equations with constant coefficient by the method of variation of parameter and generating functions

The course is covered by the following reference books :

1. S.S. Sastry : Introductory methods of Numerical Analysis, Prentice-Hall of India Pvt. Ltd.; 4th Edition.
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4. Kaiser A. Kunz : Numerical Analysis, McGraw Hill Book Co., London.
5. James I. Buchanan & Peter R. Turner : Numerical Methods & Analysis, McGraw Hill Book Co., London.
6. Murray R Spiegel: Calculus of finite differences and difference equations,Tata Mc Graw-Hill Publishing Company Ltd
7. Text book of higher algebra M Ray and HS Sharma ,SChand&Company
8. Theory of equations vol2 purnside & panton, SChand&Company