Course Name: Vedic Mathematics   **Credi**t-03
Course Code: VAC -12

SYLLABUS

1. **Introduction of Vedic Mathematics**:
   Definition of Vedic Mathematics, Historical background and origin of Vedic Mathematics,, Principle of Vedic Mathematics, Benefit of Vedic Mathematics, Difference between conventional and Vedic Mathematics, Development of concept of zero, concept of infinity, educational value of infinity in Vedic Mathematics, Contribution to modern mathematics

2. **History of Vedic mathematician:**
   Aryabhata's: Life and work, Brahmagupta's: life and Contributions. Bhaskara I: Life and work, Madhava: Life and work, Mahaviracharya: Life and work, Bhaskara II: Life and work, Varahamihira: Life and work.

3. **Srinivasa Ramanujan:**
   Srinivasa Ramanujan (1887-1920). Brief outline of the life and mathematical career of Ramanujan. Hardy's assessment of Ramanujan and his Mathematics (1922, 1940).Some highlights of the published work of Ramanujan and its impact. Selberg's assessment of Ramanujan's work (1988). The saga of Ramanujan's Notebooks. Ongoing work on Ramanujan's Notebooks. The enigma of Ramanujan's Mathematics. Ramanujan not a Newton but a Mādhava.

4. **Mathematics knowledge in Vedas and Śulva Sūtras:**
   Mathematical references in Vedas. Comprehensive exploration of 16 Sutras and 13 upa(sub)-Sutras. The extant Śulbasūtra texts & their commentaries. The meaning of the word Śulbasūtra. Qualities of a Śulbakāra.

5. **Brief Introduction about Bodhāyana Theorem:**
   Finding the cardinal directions. Methods for obtaining perpendicular bisector. Bodhāyana's method of constructing a square. The Bodhāyana Theorem (so called Pythagoras Theorem) Applications of Bodhāyana Theorem. Constructing a square that is the difference of two squares.

6. **Indian Astronomy and Vedic Mathematics**:
   Continuing tradition of Indian Astronomy and Mathematics (1770-1870).

7. **Calculation with the help of Vedic Mathematics:**
   Addition and Subtraction, Vinculum. Beejank (Reminder by Nine). Table. Mixed operations. Kaparekarconstant.Multiplication (Nikhilam Sutra). Division of a number.

8. **Techniques of root finding in Vedic Mathematics:**
   Square. Cube, Division, Square root. Cube root. Divisibility. Ekadhikenpurven Method, Purven Method.

9. **Algebraic method in vedic tradition:**
   Vedic methods to prime factorization, Divisibility rule, Modular arithmetic. Diophantine equation. Multiplication, (Urdhva- Tirayak Sutra). Mountain Expansion.

10. **Essential tool for higher arithmetic:**
    Power, Least common multiple, Recurring decimal, Solution of Equations. Partial Fraction