Value Addition Course

Vedic Mathematics - III

Course Title and Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Prerequisite of the Course
		Lecture	Tutorial	Practical/ Practice		
Vedic Mathematics- III	02	1	0	1	Pass in Class 12th	Vedic Mathematics-II

Course Objectives:

- Foster the love for mathematics by creating a positive attitude through Vedic and Ancient Indian Mathematics
- Help students appreciate ancient Indian Mathematics and its contribution to the world.
- Enhance conceptual as well as computational proficiency in trigonometric ratios and complex numbers
- Understand the conceptual ideas of coordinate geometry as developed and used in Ancient and medieval India
- Discuss the rich heritage of mathematical temperament of Ancient India

Learning Outcomes:

- Improved critical as well as logical thinking
- Familiarity with the mathematical procedures of geometry
- Ability to perform calculations in trigonometric ratios with ease.
- Appreciate the Mathematical advancements of Ancient India.

Syllabus of *Vedic Mathematics - III*

Unit I: Contribution of Indian Mathematicians -**Trigonometry**	**Sessions/Lectures**
• Baudhayana • Apastamba • Aryabhata I, II • Bhaskara I, II • Lilavati	**3**
Unit II: **Trigonometric Ratios**	
• Introduction of Trigonometric ratios • Trigonometric Identities • BN of Complementary angles • BN of sum and difference ($\alpha \pm \beta$) of an angle	**4**
Unit III: **Real-life Applications of Trigonometry**	

• Application Trigonometry-Height and Distance • Inverse Trigonometric Function	**3**
Unit IV: Vedic **Geometry**	
• Angle between two lines • Perpendicular distance from point to line • Baudhayan Geometry • *Jyothishya Shastram*-Introduction of Astronomy, Astrology & Time Computation • *Shilpa Shastram*- Introduction of temple architecture and constructions	**5**

Note: **Some of the theoretical concepts would be dealt with during practice hours.**

Practical/ Practice Component (15 sessions of 2 hours each= 30 hours)

The students are expected to demonstrate the application of Vedic Maths: *Sutra* and *Upsutra*

- Conduct workshops under the supervision of the course teacher to spread awareness on the utility of Vedic Mathematics.
- Students may share their experience with the class teacher in the form of audio-video presentations of 15 minutes.
- If required, students can share their experiences in the form of a Project Report.
- Any other Practical/Practice as decided from time to time

Essential Readings

- Vedic Mathematics, Swami Bharati Krishna Trithaji, *Motilal Banarsidas, New Delhi*.
- The Power of Vedic Mathematics with Trigonometry, *Atul Gupta, Jaico Publishing house*.
- Vedic Mathematics For All Ages, Vandana Singhal, *Motilal Banarsidas Publishers.*
- Studies in Indian Mathematics and Astronomy, Aditya Kolachana, K. Mahesh, K. Ramasubramanian, *Springer, Singapore*
- Elements of Vedic Mathematics, Udayan S. Patankar, Sunil M. Patankar, TTU Press.
- Vedic Mathematics: The Problem Solver, Ronak Bajaj, *Black Rose Publications*.
- Vedic Geometry Course, S. K. Kapoor, *Lotus Press*
- Gardner, Robert and J.F. Staal. *Altar of Fire*. Documentary. The Film Study Center at Harvard University, 1976

Suggested Readings

- A Modern Introduction to Ancient Indian Mathematics, T S Bhanumurthy, *Wiley Eastern Limited, New Delhi*
- Essential of Vedic Mathematics, Rajesh Kumar Thakur, *Rupa Publications, New Delhi*
- Vedic Mathematics - Modern Research Methods, Tiwari P., *Cumpus Books International*
- A Treatise on Astronomy By Bhaskaracharya, *Cosmo Publication*.
- Astronomical Applications of Vedic Mathematics, K. R. Williams, *Motilal Banarsidass Publishers, Delhi.*

Assessment Method

Subject to directions from the Examination Branch/University of Delhi from time to time

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