

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 • <i>Jyothishya Shastram</i>-Introduction of Astronomy, Astrology & Time Computation • <i>Shilpa Shastram</i>- 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., *Campus 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
