

# UNIVERSITY OF DELHI

CNC-II/093/1(28)/2023-24/188

Dated: 15.09.2023

## NOTIFICATION

Sub: Amendment to Ordinance V

[E.C Resolution No. 27-1/ (27-1-13/-) dated 25.08.2023]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

### **Add the following:**

Following Value Addition Courses (VAC) have been added to the Pool of Value Addition -Courses based on Undergraduate Curriculum Framework -2022 implemented from the Academic Year 2022-23 :

1. Vedic Mathematics -III
2. Vedic Mathematics – IV
3. VAC : National Cadet Corps – III

***(Details are as per Annexure-I)***

  
REGISTRAR

**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
<ul style="list-style-type: none"> <li>• Baudhayana</li> <li>• Apastamba</li> <li>• Aryabhata I, II</li> <li>• Bhaskara I, II</li> <li>• Lilavati</li> </ul>	3
Unit II: <b>Trigonometric Ratios</b>	
<ul style="list-style-type: none"> <li>• Introduction of Trigonometric ratios</li> <li>• Trigonometric Identities</li> <li>• BN of Complementary angles</li> <li>• BN of sum and difference (<math>\alpha \pm \beta</math>) of an angle</li> </ul>	4
Unit III: <b>Real-life Applications of Trigonometry</b>	

<ul style="list-style-type: none"> <li>• Application Trigonometry-Height and Distance</li> <li>• Inverse Trigonometric Function</li> </ul>	3
<b>Unit IV: Vedic Geometry</b>	
<ul style="list-style-type: none"> <li>• Angle between two lines</li> <li>• Perpendicular distance from point to line</li> <li>• Baudhayan Geometry</li> <li>• <i>Jyothishya Shastram</i>-Introduction of Astronomy, Astrology &amp; Time Computation</li> <li>• <i>Shilpa Shastram</i>- Introduction of temple architecture and constructions</li> </ul>	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

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## Value Addition Course

### Vedic Mathematics - IV

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

#### Course Objectives:

- Foster the love for mathematics by creating a positive attitude through Vedic and Ancient Indian Mathematics
- Enhance conceptual as well as reduce its fear through Vedic Mathematics
- Understand application of triangular array of numbers with *Meru Prastar*
- To become computational proficiency in differential and integral calculus
- Appreciate the rigour in mathematics conceptual understanding that existing in ancient India

#### Learning Outcomes:

- Improved critical as well as logical thinking
- Familiarity with the mathematical procedures of Pingala's *Meru Prastar*
- Ability to perform differentiation and integration of expressions faster with ease.
- Appreciate the Mathematical advancements of Ancient India.

#### Syllabus of *Vedic Mathematics - IV*

Unit I: Contribution of Indian Mathematicians	Sessions/Lectures
<ul style="list-style-type: none"> <li>● Pingala</li> <li>● Mahavira</li> <li>● Narayan Pandit</li> <li>● Jyesthadeva</li> <li>● Parmeshvaran</li> <li>● Madhavan</li> </ul>	3
<b>Unit II: Wonder World of Indian Mathematics-<i>Meru Prastar</i></b>	
<ul style="list-style-type: none"> <li>● Pingal's binary number system,</li> <li>● Different types of <i>Meru Prastar</i> (including Pascal triangle)</li> <li>● Applications of <i>Meru Prastar</i></li> </ul>	4
<b>Unit III: Lightning Complex numbers</b>	

<ul style="list-style-type: none"> <li>● Introduction of Complex number</li> <li>● Baudhayan form of Complex</li> <li>● Addition &amp; Subtraction of Complex Number</li> <li>● Multiplication of Complex numbers</li> </ul>	4
<b>Unit IV: Enlighten Calculus</b>	
<ul style="list-style-type: none"> <li>● Introduction to differentiation</li> <li>● Application of derivatives</li> <li>● Introduction to Integration</li> <li>● Application of Integration</li> </ul>	4

**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.*
- 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 For All Ages, Vandana Singhal, *Motilal Banarsidas Publishers.*
- Vedic Geometry Course, S. K. Kapoor, *Lotus Press*

#### 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*
- Learning Vedic Mathematics, S. K. Kapoor, *Lotus Press Publications*
- Vedic Mathematics Made Easy, Dahaval Bathia, *Jaico Publishing, New Delhi*

#### Assessment Method

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

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**VAC : NATIONAL CADET CORPS – III**

**Credit distribution, eligibility criteria and pre-requisites of the course**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/Practice		
National Cadet Corps -III	2	1	0	1	Pass in Class 12th	Enrolled as NCC Cadet and in semester three.

**Learning Objectives:**

The course aims to:

- Provide understanding about the life history and leadership qualities of great leaders, sportsperson & entrepreneurs.
- Provide understanding of the various aspects of types of mindset.
- Provide understanding of the methods and qualities of public speaking.
- Provide knowledge about the organization related to disaster management and their functioning.
- Provide understanding about the various types of adventure activities.

**Learning Outcomes:**

After completing this course, the cadets will be able to:-

- Admire and get inspired from the accomplishments of leaders from various walks of life.
- Develop public speaking skills.
- Understand the importance of positive mindset and optimistic attitude in life.
- Appreciate the need & requirements for disaster management and their role in disaster management activities.

**SYLLABUS OF NATIONAL CADET CORPS-II**

Unit I: Personality Development

(5 Weeks)

- Group Discussion- Change your Mindset
- Public Speaking

Unit II: Leadership (4 Weeks)

- Case Studies- APJ Abdul Kalam, Deepa Malik, Maharana Pratap, N.R. Narayana Murthy

Unit III: Disaster Management (4 Weeks)

- Organisation of NDMA
- Types of Disasters
- Essential Services
- Types of Assistance

Unit IV: Adventure Activities- (2Weeks)

- Parasailing
- Slithering
- Rock Climbing
- Cycling and Trekking

**Practical Component:** (15 Weeks)

- Drill
- Map Reading/Principles of Flight & Airmanship/Naval Communication, Navigation & Seamanship
- Weapon Training
- Field Craft & Battle Craft
- Social Service & Community Development
- Obstacle Training

Suggested Readings:

- DGNCC Cadet's Hand Book - Common Subjects -All Wings (in English)
- DGNCC Cadet's Hand Book - Common Subjects -All Wings( in Hindi)
- DGNCC Cadet's Hand Book — Specialised Subjects —Army, Navy and Air Wing

**Examination scheme and mode: Subject to directions from the Examination Branch, University of Delhi from time to time.**