Uka Tarsadia University

B. Tech.

Semester II

VEDIC MATHEMATICS
UE3033

EFFECTIVE FROM Jan-2025

Syllabus version: 1.00

Subject Code	Subject Title
UE3033	Vedic Mathematics

Teaching Scheme				Examination Scheme			
Hours		Credits		Theory Marks		Practical Marks	Total Marks
Theory	Practical	Theory	Practical	Internal	External	CIE	
3	0	3	0	0	0	50	50

Objectives of the course:

- To Foster love for mathematics and remove its fear and Enhance computation skills in students through Vedic Mathematics.

Course outcomes:

Upon completion of the course, the student shall be able to,

CO1: Comprehend and apply high speed addition and subtraction with Vedic mathematics.
CO2: Comprehend and apply multiplication with Vedic mathematics.
CO3: Comprehend and apply multiplication with Vedic mathematics.
CO4: Describe and solve squares and cubes with Vedic methods.
CO5: Describe and solve algebra and geometry with Vedic methods.
CO6: Outline and associate contributions of Indian mathematicians.

Sr. No.	Topics	Hours
	Unit – I	
1	**High Speed Addition and Subtraction:** History of Vedic Maths and its Features, Vedic Maths formulae: Sutras and Upsutras, Addition in Vedic Maths – Without carrying, Dot Method, Subtraction in Vedic Maths – Nikhilam Navatashcaramam Dashatah.	6
	Unit – II	
2	**Miracle Multiplication – 1:** Multiplication in Vedic Maths - Base Method (any two numbers upto three digits), Multiplication by Urdhva Tiryak Sutra.	8
	Unit – III	
3	**Miracle multiplication – 2:** Any three-digit number by series of l's and 9's, Division by Urdhva Tiryak Sutra (Vinculum method).	8
	Unit – IV	

4	**Lightening Squares and Rapid Cubes:** Squares of any two-digit numbers - Base method, Square of numbers ending in 5 – Ekadhikena Purvena Sutra, Easy square roots – Dwandwa Yoga (duplex) Sutra, Square root of 2 – Baudhayana Shulbasutra, Cubing – Yavadunam Sutra.	9
Unit – V		
5	**Enlighten Algebra and Geometry:** Factoring Quadratic equation – Anurupyena, Adyamadyenantyamanty Sutra, Concept of Baudhayana (Pythagoras) theorem, Circling a square – Baudhayana, Shulbasutra, Concept of pi – Baudhayana Shulbasutra, Concept angles – Baudhayana number.	8
Unit – VI		
6	**Contribution of Indian Mathematicians:** Aryabhatt, Brahmagupt, Mahaveeracharya, Bharti Krishna Tirtha.	6

References:

1. Vedic Mathematics, Motilal Banarsi Das, New Delhi.
2. Vedic Ganita: Vihangama Drishti-1, Siksha Sanskriti Uthana Nyasa, New Delhi.
3. Vedic Ganita Praneta, Siksha Sanskriti Uthana Nyasa, New Delhi.
4. Vedic Mathematics: Past, Present and Future, Siksha Sanskriti Uthana Nyasa, New Delhi.
5. Leelavati, Chokhambba Vidya Bhavan, Varanasi.

Course objectives and Course outcomes mapping:

- To Foster love for mathematics and remove its fear and Enhance computation skills in students through Vedic Mathematics: CO1, CO2, CO3, CO4, CO5, and CO6.

Course units and Course outcomes mapping:

Unit No.	Unit Name	Course Outcomes					
		CO1	**CO2**	**CO3**	**CO4**	**CO5**	**CO6**
1	High Speed Addition and Subtraction	✓					
2	Miracle Multiplication – 1		✓				
3	Miracle multiplication – 2			✓			
4	Lightening Squares and Rapid Cubes				✓		
5	Enlighten Algebra and Geometry					✓	
6	Contribution of Indian Mathematicians						✓

Programme outcomes:

PO 1: Engineering knowledge: An ability to apply knowledge of mathematics, science, and engineering.

PO 2: Problem analysis: An ability to identify, formulates, and solves engineering problems.

PO 3: Design/development of solutions: An ability to design a system, component, or process to meet desired needs within realistic constraints.

PO 4: Conduct investigations of complex problems: An ability to use the techniques, skills, and modern engineering tools necessary for solving engineering problems.

PO 5: Modern tool usage: The broad education and understanding of new engineering techniques necessary to solve engineering problems.

PO 6: The engineer and society: Achieve professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.

PO 7: Environment and sustainability: Articulate a comprehensive world view that integrates diverse approaches to sustainability.

PO 8: Ethics: Identify and demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work.

PO 9: Individual and team work: An ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give/receive clear instructions.

PO 11: Project management and finance: An ability to demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: recognition of the need for, and an ability to engage in life-long learning.

Programme outcomes and Course outcomes mapping:

Programme Outcomes	Course Outcomes					
	CO1	CO2	CO3	CO4	CO5	CO6
PO1	√	√	√	√	√	
PO2	√	√	√	√	√	
PO3						
PO4						

PO5						
PO6						
PO7						
PO8						
PO9						
PO10						
PO11						
PO12		√	√	√	√	√