SCHEME AND SYLLABUS

For

CERTIFICATE COURSE

In

VEDIC MATHEMATICS

SESSION 2024-2025 onwards

Add on Course

Offered by

DEPARTMENT OF MATHEMATICS & STATISTICS

Himachal Pradesh University

Shimla (H.P.)

Himachal Pradesh University

CERTIFICATE COURSE IN VEDIC MATHEMATICS

COURSE CODE: CVM

AIMS AND OBJECTIVES

The main aims and objectives of the certificate course in vedic mathematics are:

- To instill love and remove the fear of Mathematics.
- To promote Indian Mathematics.
- To enhance computational skills in students.
- To improve clarity on mathematical concepts.
- To develop analytical thinking through Vedic Mathematics.
- To enable further research in Indian Mathematics.
- To conduct seminars on the subject and bringing together scholars in Mathematics.
- To develop online study courses on Indian Mathematics.

Programme Specific Outcomes

After the successful completion of this certificate course, the students will be able to:

- Cultivate an interest for numbers and eliminates the math-phobia present in the students.
- Develop Left and Right Sides of brain by increasing visualization and concentration abilities.
- Sharpen mind, increases mental agility and intelligence.
- Improve memory and boosts self-confidence.
- High Speed Vedic Mathematics is 10-15 times faster than normal Mathematics.
- Better and Much Improved Academic Performance in school and instant Results.
- Enhance mental calculations which increases speed and accuracy.
- Develop the understanding of objectives and features of Vedic Mathematics.
- Recognize the meaning of mathematical sutras in Sanskrit.

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CERTIFICATE COURSE IN VEDIC MATHEMATICS

Certificate Course in Vedic Mathematics can be offered by the University twice in an academic session.

Number of Credits: 04

Eligibility: Being Add-On Courses, a student pursuing any degree can simultaneously opt for Certificate Course in Vedic Mathematics.

Procedure for Registration and Admission: Admissions to the Certificate course in Vedic Mathematics can be made twice in a year, in the months of February/March and June/July. A student shall register for an Add-On Course offered by submitting a duly filled-in Registration Form. The admission shall be made on the basis of merit of the marks obtained in Graduation.

Attendance: A minimum attendance of 75% in each paper, in each semester, shall be mandatory, failing which the student will not be permitted to write the End-Semester Examination. The rules for relaxation in the requirement shall be in accordance with the University Ordinance.

Fee Structure: Sub fee heads (For both boys and girls)

Sub fee heads	**Certificate Course in Vedic Mathematics (Six Months Course)**
Tuition Fee (@ 150/- per month)	900/-
Admission Fee	100/-
Total	1000/-

Note: The total semester fee will be charged at the time of admission.

Course Structure:

Course Code	Name of the Course	Credits	Teaching Hours	Examination Scheme		Total Marks
				Internal Assessment	End Term Theory Exam	
CVM101	Vedic Arithmetic	2	30	20	30	50
CVM102	Vedic Algebra	2	30	20	30	50
Total		04	60	40	60	100

The minimum pass marks in each Internal Assessment/ end term Exams shall be 40% of the total marks allotted in each course separately.

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CERTIFICATE COURSE IN VEDIC MATHEMATICS

Course Code	CVM101
Credits= 2	L-2, T-0, P-0
Name of the Course	Vedic Arithmetic
Number of hours required for this course	30 hrs.
Continuous Comprehensive Assessment: Based on Minor Tests(2), Class tests, Assignments, Quiz, Seminar and Attendance (Marks Attendance: 5 marks to be given as per the regulations)	Max. Marks: 20
Tutorials : Solving Problems and exercises	1 Credit per 15 hours
Semester Term End Examination	Max Marks: 30 Maximum Time: $1\,^{1}/_{2}$ hrs.
Lectures to be Delivered (One Hour Each)	30

Instructions

1. **Instructions for paper setter:** The question paper will consist of three Sections A, B & C of 30 marks and the examiner shall set 5 questions from both sections (I & II) of the syllabus in total. Each question shall carry 10 marks. Section C will be Compulsory and have 7 short answer type questions from both sections (I &II). Section A will have two questions from section I and Section B will have two questions fromsection II of the syllabus respectively.

2. **Instructions for Candidates:** Candidates are required to attempt 3 questions in all. Section C is Compulsory from which students shall have to attempt 5 questions. They are required to attempt one question from each of the Section A and B of the question paper.

Course Objectives:

The main objectives of the course are

1. To understand the concept multiplication of two or three digit numbers.
2. To comprehend the easy steps of division by two and three digit divisors.
3. To check the divisibility by two or three digit numbers without actual division.
4. To distinguish between squaring numbers ending in 5 and numbers near 50.
5. To apply reverse squaring to find square roots of numbers.
6. To identify cube and cube roots.
7. To acknowledge the contributions of Indian Mathematicians in Vedic Arithmetic.

SECTION - 1

Multiplication

- Ekadhikenpurven method (multiplication of two numbers of two digits)
- Eknuenpurven method (multiplication of two numbers of three digits)
- Urdhavatriagbhyam method (multiplication of two numbers of three digits)
- Nikhilam Navtashcharamam Dashtaha (multiplication of two numbers of three digits)
- Combined Operations

Division

- Nikhilam Navtashcharamam Dasthaha (two digit divisor)
- Paravartya Yojyet method (three digits divisor)

Section-II

Divisibility

- Ekadhikenpurven method (two digits divisor)
- Eknuenpurven method (three digits divisor)

LCM and HCF, Power and Root

- LCM and HCF
- **Power (i)** square (two digit numbers) **(ii)** Cube (two digit numbers).
- **Root (i)** square root (four digit numbers) **(ii)** cube root (six digit numbers)

Course Outcomes:

At the end of the course the students will be able to:

1. Multiply two or three digits numbers.
2. Compute the division by two and three digit divisors.
3. Check the divisibility by two or three digit numbers without actual division.
4. Evaluate square, cubes, square roots and cube roots of larger numbers within no time.

Essential Reading:

1. Elements of Vedic Mathematics, Udayan S. Patankar and Sunil M. Patankar, TTU Press.

Suggested Readings:

1. Vedic Mathematics, Motilal Banarsi Das, New Delhi.
2. Vedic Ganita: Vihangam Drishti –I, Siksha Sanskriti Uthana Nyasa, New Delhi.
3. Vedic Ganita Praneta, Siksha Uthana Nyasa, New Delhi.
4. Vedic Mathematics: Past, Present and Future, Siksha Sanskriti Uthana Nyasa, New Delhi.
5. Leelavati, Chokhanbba Vidya Bhavan, Varanasi.
6. Bharatiya Mathematicians, Sharda Sanskrit Sansthan, Varanasi.

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CERTIFICATE COURSE IN VEDIC MATHEMATICS

Course Code	CVM102
Credits= 2	L-2, T-0, P-0
Name of the Course	Vedic Algebra
Number of hours required for this course	30 hrs.
Continuous Comprehensive Assessment: Based on Minor Tests(2), Class tests, Assignments, Quiz, Seminar and Attendance (Marks Attendance: 5 marks to be given as per the regulations)	Max. Marks: 20
Tutorials : Solving Problems and exercises	1 Credit per 15 hours
Semester Term End Examination	Max Marks: 30 Maximum Time: $1\,^{1}/_{2}$ hrs.
Lectures to be Delivered (One Hour Each)	30

Instructions

1. **Instructions for paper setter:** The question paper will consist of three Sections A, B & C of 30 marks and examiner shall set 5 questions from both the sections (I & II) of syllabus in total. Each question shall carry 10 marks. Section C will be Compulsory and have 7 short answer type questions from both the sections (I &II). Section A will have two questions from section I and Section B will have two questions from section II of the syllabus respectively.

2. **Instructions for Candidates:** Candidates are required to attempt 3 questions in all. Section C is Compulsory from which students shall have to attempt 5 questions. They are required to attempt one question from each of the Section A and B of the question paper.

Course Objectives:

The main objectives of the course are:

1. To understand the concept multiplication of quadratic expressions of single variable.
2. To comprehend the easy steps of division of linear expressions of single variable.
3. To factorize the quadratic expressions of single variable.
4. To find the Solution of Linear Simultaneous Equations.
5. To acknowledge the contributions of Indian Mathematicians in Vedic Algebra.

Section- I

Multiplication (Quadratic Expressions of Single Variable)

i) Urdhavatriagbhyam method
ii) Combined Operations

Division and Factorization

i) Division (Divisor: Linear Expression of Single Variable)
ii) Factorization (Quadratic Expression of Single Variable)

Section-II

Solution of Linear Simultaneous Equations

Contributions of Indian Mathematician (in light of algebra)

(i) Varahmihir
(ii) Bhaaskaracharya
(iii) Neelkanth Somayya
(iv) Bharti Krishan Tritha

Course Outcomes:

At the end of the course the students will be able to:

1. Multiply quadratic expressions of single variable.
2. Divide linear expressions of single variable.
3. Factorise the quadratic expressions of single variable.
4. Find the Solution of Linear Simultaneous Equations.
5. Acknowledge the contributions of Indian Mathematicians in Vedic Algebra.

Suggested Readings:

1. Vedic Ganita: Vihangam Drishti –I, Siksha Sanskriti Uthana Nyasa, New Delhi.
2. Vedic Mathematics, Motilal Banarsi Das, New Delhi.
3. Vedic Mathematics: Past, Present and Future, Siksha Sanskriti Uthana Nyasa, New Delhi.
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6. Beejganitam, Chokhanbba Vidya Bhavan, Varanasi