



**Hindi Vidya Prachar Samiti's
Ramniranjan Jhunjhunwala College
of Arts, Science & Commerce
(Empowered Autonomous College)**

Affiliated to

UNIVERSITY OF MUMBAI

Program Code: RJCUCSDF

Syllabus for the

B.Sc Cyber Security & Digital Forensics (under NEP)

Course Codes: RJKSCSDF111

New Program to be started from the academic year 2026-2027

Preamble

The National Education Policy 2020 aims at imparting skill-based learning and caters to the multiple entry and exit facility for the students thus empowering them to acquire knowledge at their pace. In the three-year UG program, the student has two exit options. Students also have the option for choosing the Honors program of four years study in a given discipline and later converting it to five year integrated PG degree program. As undergraduate student, he/she learns the core subject (Major), subject complementing the core subject (Minor), a course from other discipline (OEC or GEC) Vocational and Skill Enhancement course from the Major (VSEC). The remaining verticals under NEP 2020 are IKS (Indian Knowledge System), AEC (Ability Enhancement Course), VEC (Value Enhancement Course) and with progressive three years of UG, student also completes at different levels OJT (On Job Training), FP (Field Projects), CEP (Community Engagement Program) , RP (Research Project) which helps him/her in understanding their roots, application of the knowledge for the benefit of self and the society. Vertical CC (Co-curricular activities and activities related to yoga and human well-being) helps in preparing youth with good character and interpersonal relationships.

SEMESTER I

Indian Knowledge System – Computing in Ancient India

Course Code	Course Title	Course Type	Credits	Duration
• RJKSCSDF111	Computing in Ancient India	Indian Knowledge System (Theory)	2	30 Hours

Course Objectives

Sr. No.	Course Objective
1	Explore ancient Indian mathematical contributions to computing.
2	Understand Vedic mathematics and algorithms.
3	Learn about ancient devices like Yantras.
4	Connect ancient logic to modern cybersecurity.
5	Foster appreciation of Indian heritage in STEM.

Unit-wise Detailed Syllabus

Unit	Detailed Contents	Hours
I	Mathematical Foundations <ul style="list-style-type: none">• Indian Numerals and Decimal System: Evolution from Brahmi to modern digits; role in astronomy and trade; simple conversions (e.g., ancient to decimal).• Zero and Negatives: Aryabhata's placeholder zero (Aryabhatiya); Brahmagupta's arithmetic rules (Brahmasphutasiddhanta); demo: Basic operations with zero in positional notation.• Vedic Sutras: Key formulas (e.g., Ekadhikena Purvena for multiplication); mental math exercises (3-5 problems); ties to efficient algorithms.• Binary-Like Patterns: Pingala's prosody in Chandahshastra; Jain dualistic counting; activity: Map patterns to basic binary strings.	15
II	Devices and Logic <ul style="list-style-type: none">• Yantras: Sulba Sutras' geometric tools (e.g., rope altars for calculations); water/time Yantras; sketch a simple model for measurement.• Nyaya Logic: Gautama's syllogisms (Nyaya Sutras); inference steps; apply to a tech dilemma (e.g., "evidence implies breach").• Ancient Cryptography: Kautilya's secret scripts (Arthashastra); substitution ciphers; decode a basic example manually.• Interconnections: Math-logic-device links; modern echoes (e.g., Vedic speed in AI); ethical note on knowledge sharing.	15

Course Outcomes (CO)

CO No.	Course Outcome	Bloom's Level	PSO Mapped
CO1	Recall core mathematical concepts like zero and Vedic sutras.	Remember (L1), Understand (L2)	PSO1, PSO5
CO2	Explain Yantras and Nyaya logic as computing precursors.	Understand (L2)	PSO1, PSO3, PSO5
CO3	Apply ancient techniques to simple modern problems.	Understand (L2), Apply (L3)	PSO1, PSO3, PSO5
CO4	Analyze historical cryptography's relevance to security.	Apply (L3), Analyze (L4)	PSO1, PSO2, PSO3, PSO5
CO5	Identify cultural impacts on ethical tech development.	Understand (L2), Analyze (L4)	PSO1, PSO3, PSO5

Textbooks & References

Sr. No.	Title	Author / Source
1	History of Computing in India	Subrata Dasgupta / Pearson
2	Vedic Mathematics	Bharati Krishna Tirthaji / Motilal Banarsidass
3	Ancient Indian Logic and Ontology	Bimal K. Matilal / Motilal Banarsidass
4	The Wonder That Was India	A.L. Basham / Picador
5	Indian Mathematics: Engaging with the World from Ancient to Modern Times	George Gheverghese Joseph / World Scientific