



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: RJVECCSDF111 & RJVECCSDF121

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

Value Education Course (VEC) – Green Technology and Sustainable Development

Course Code	Course Title	Course Type	Credits	Duration
• RJVECCSDF111	Green Technology and Sustainable Development	Value Education (Theory)	2	30 Hours

Course Objectives

Sr. No.	Course Objective
1	Understand the multidisciplinary nature of environmental studies and its importance.
2	Explore ecosystem structure, functions, and energy flow.
3	Learn about biodiversity, its conservation, and threats.
4	Analyze environmental pollution types, causes, and effects.
5	Develop awareness of human population impacts and sustainable practices.

Unit-wise Detailed Syllabus

Unit	Detailed Contents	Hours
I	Green Technologies and Ecosystems <ul style="list-style-type: none">• Ecosystems in the Digital Age: Types of ecosystems (natural and tech-integrated), components (biotic/abiotic with IoT sensors), energy flow in green data centers (e.g., renewable-powered servers).• Biodiversity and Tech Conservation: Levels of biodiversity (genetic, species, ecosystem), threats from e-waste and data mining; green tech solutions like AI for wildlife monitoring and blockchain for carbon tracking.• Introduction to Green Innovations: Basics of renewable energy tech (solar, wind integration in smart grids), low-power computing (e.g., energy-efficient algorithms in cybersecurity tools), and ethical considerations in sustainable design (e.g., circular economy principles).• Interactive Discussions: Case studies on green tech in cyber (e.g., sustainable cloud computing to reduce carbon footprint).	15
II	Sustainability Challenges and Solutions <ul style="list-style-type: none">• Pollution and Green Mitigation: Air, water, soil pollution from tech (e.g., server farms, device manufacturing) – Causes, effects, and solutions like green filtration systems and biodegradable materials.• Sustainable Resource Management: Natural resources (water, energy, minerals) – Efficient use in IT (e.g., water-cooled vs. air-cooled data centers), recycling e-waste for rare earth metals.	15

	<ul style="list-style-type: none"> • Sustainable Development and Green Practices: UN SDGs (e.g., SDG 7: Affordable Clean Energy, SDG 13: Climate Action) applied to tech; policies like EU Green Deal and India's National Solar Mission. • Working Model Project (Group Activity, 5 Hours): Design and build a simple prototype for sustainable energy/resources, from recycled e-waste (using old phone parts and basic solar cells); present demo with impact analysis on resource savings (materials: cardboard, LEDs, small solar panel; tools: glue gun, multimeter for testing). 	
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Course Outcomes (CO)

CO No.	Course Outcome	Bloom's Level	PSO Mapped
CO1	Describe the multidisciplinary scope and ecosystem basics.	Remember (L1), Understand (L2)	PSO1, PSO5
CO2	Explain biodiversity threats and conservation strategies.	Understand (L2)	PSO1, PSO3, PSO5
CO3	Apply knowledge of pollution types to real-world examples.	Understand (L2), Apply (L3)	PSO1, PSO3, PSO5
CO4	Analyze human impacts on environment and sustainability.	Apply (L3), Analyze (L4)	PSO1, PSO2, PSO3, PSO5
CO5	Identify sustainable practices for environmental protection.	Understand (L2), Analyze (L4)	PSO1, PSO3, PSO5

Textbooks & References

Sr. No.	Title	Author / Source
1	Environmental Studies: From Crisis to Cure	Rajagopalan / Oxford University Press
2	Textbook for Environmental Studies for Undergraduate Courses of All Branches of Higher Education	Erach Bharucha / UGC
3	Green Technology and Sustainable Development: A Textbook for Environmental Science	Ranjit K. Parmar
4	Green Technology and Sustainable Development	P.C. Joshi / APH Publishing
5	Environmental Pollution Control Engineering	C.S. Rao / Wiley Eastern

SEMESTER II

Value Education – Ethics and Human Values in Cybersecurity

Course Code	Course Title	Course Type	Credits	Duration
RJVECCSDF121	Ethics and Human Values in Cybersecurity	Value Education (Theory)	2	30 Hours

Course Objectives

Sr. No.	Course Objective
1	Understand ethical principles and human values in the context of technology and cybersecurity.
2	Explore the impact of cyber actions on society, privacy, and human rights.
3	Learn professional ethics, integrity, and responsibility in digital forensics and security practices.
4	Analyze case studies of ethical dilemmas in cyber incidents.
5	Develop awareness of Indian constitutional values and global ethical standards (aligned with NEP 2020's focus on value-based education).

Unit-wise Detailed Syllabus

Unit	Detailed Contents	Hours
I	<ul style="list-style-type: none">Foundations of Ethics and Human ValuesIntroduction to Ethics: Normative vs. applied ethics; human values (truth, non-violence, compassion) from Gandhian and Vedic perspectives; relevance to NEP 2020's holistic education.Ethical Theories: Utilitarianism, deontology, virtue ethics; application to cyber decisions (e.g., data privacy vs. security).Human Rights in Digital Age: Right to privacy (Art. 21, Indian Constitution), digital dignity, and equity in access.	15
II	<ul style="list-style-type: none">Professional Ethics in CybersecurityCyber Ethics: Integrity in forensics (chain of custody, non-tampering); professional codes (EC-Council, ISACA); whistleblowing and accountability.Dilemmas and Case Studies: Ethical hacks (white-hat vs. black-hat), surveillance ethics (e.g., Aadhaar privacy debates), bias in AI security tools.	15

	<ul style="list-style-type: none"> Global and Indian Standards: UN Declaration on Cyber Ethics, IT Act 2000 (Sec. 66A lessons); NEP 2020 integration for value-infused tech education. 	
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Course Outcomes (CO)

CO No.	Course Outcome	Bloom's Level	PSO Mapped
CO1	Describe ethical theories and human values in cyber contexts.	Remember (L1), Understand (L2)	PSO1, PSO5
CO2	Explain professional responsibilities and constitutional rights in digital security.	Understand (L2)	PSO1, PSO3, PSO5
CO3	Apply ethical frameworks to resolve cyber dilemmas.	Understand (L2), Apply (L3)	PSO1, PSO3, PSO5
CO4	Analyze case studies for ethical implications in forensics and security.	Apply (L3), Analyze (L4)	PSO1, PSO2, PSO3, PSO5
CO5	Identify strategies for value-based decision-making in technology professions.	Understand (L2), Analyze (L4)	PSO1, PSO3, PSO5

Textbooks & References

Sr. No.	Title	Author / Source
1	Ethics in Information Technology (7th Ed., 2021)	George Reynolds / Cengage Learning
2	Cyber Ethics (2019)	Kirk St.Amant / Routledge
3	Human Values and Professional Ethics	S. K. Gakhar / I.K. International
4	NEP 2020: Value Education Guidelines	Ministry of Education, Govt. of India / Official Document
5	The Constitution of India (Pocket Edition)	Govt. of India / Publications Division