

ಡಾ. ಮನಮೋಹನ್ ಸಿಂಗ್
ಬೆಂಗಳೂರು ನಗರ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ



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No.MSBCU/BoS/Syllabus/Science/ 107 /2026-27

Date: 29.06.2026

NOTIFICATION

Sub: Syllabus for the V & VI Semester Under Graduate Courses in the Faculty of Science -reg

- Ref: 1. Government Order No. ED 166 UNE 2023 Bengaluru dated. 08.05.2024
2. Recommendations of the Boards of Studies in the Faculty of Science
3. Approval of the Academic Council in its meeting held on 08.06.2026
4. Orders of Vice-Chancellor dated.29.06.2026

The Syllabus prepared by the Boards of Studies for the different Subjects of V & VI semester Under Graduate Courses, in the faculty of Science based on the Guidelines and Curriculum Structure issued by the Government under ref(1) have been approved by Academic Council meeting held on 08.06.2026.

Accordingly, the CBCS Syllabus for the V & VI Semester UG Courses of Science Faculty in respect of following subjects are hereby notified for implementation from the academic year 2026-27.

Sl. No.	Subjects
1.	Botany– V & VI Semester
2.	Chemistry– V & VI Semester
3.	Zoology and Genetics– V & VI Semester
4.	BoS in Fashion and Apparel Design i. FAD – V & VI Semester ii. IDD– V & VI Semester
5.	Geography– V & VI Semester
6.	Mathematics– V & VI Semester
7.	Physics – V & VI
8.	BoS in Home Science i) Home Science – V & VI ii)Nutrition & Dietetics – V & VI iii)Clinical Nutrition & Dietetics – V & VI iv)Food Technology – I & II Sem

p.t.o

9.	Criminology and Forensic Science– V & VI
10.	Psychology– V & VI Semester
11.	Electronics – V & VI
12.	Statistics – V & VI
13.	Microbiology– V & VI
14.	Biotechnology– V & VI
15.	Environmental Science– V & VI

The detailed Syllabi for above subjects are notified in the University Website:
www.bcu.ac.in for information of the concerned.


REGISTRAR

Copy to;

1. The Registrar(Evaluation), Dr. Manmohan Singh Bengaluru City University
2. The Dean, Faculty of Science, MSBCU.
3. The Principals of the concerned affiliated Colleges of MSBCU- through email.
4. The P.S. to Vice-Chancellor/Registrar/Registrar (Evaluation), MSBCU.
5. Office copy / Guard file / University Website: www.bcu.ac.in



Dr. MANMOHAN SINGH
BENGALURU CITY UNIVERSITY

CHOICE BASED CREDIT SYSTEM
[As per SEP]

Syllabus for B.Sc.
Environmental Science

2026-27 onwards

BANGALORE CITY UNIVERSITY
Distribution of Courses/ Papers in Undergraduates Programme V to VI
Semester as per State Education Policy (SEP) Proposed for B.Sc., Courses
B.Sc., Environmental Science: SYLLABUS: (Major with General) effect
from 2026-27

Semester	Course Title	Theory/ Practical	Credits	Teaching hours/ week	Paper Title	Marks		
						S.A.	I.A.	Total
I	EVSC1-T	Theory	3	4	Ecology and Environment	80	20	100
	EVSC1-P	Practical	2	4	Ecology and Environment	40	10	50
II	EVSC2-T	Theory	3	4	Atmosphere and Climate Change	80	20	100
	EVSC2-P	Practical	2	4	Atmosphere and Climate Change	40	10	50
III	EVSC3-T	Theory	3	4	Natural Resources and Management	80	20	100
	EVSC3-P	Practical	2	4	Natural Resources and Management	40	10	50
IV	EVSC4-T	Theory	3	4	Environmental Chemistry and Environmental Pollution	80	20	100
	EVSC4-P	Practical	2	4	Environmental Chemistry and Environmental Pollution	40	10	50
	EVS4CP/CS - 1	Dissertation 1	2	4	Dissertation 1	40	10	50
V	EVSC5-T	Theory	3	4	Environmental Engineering	80	20	100
	EVSC5-P	Practical	2	4	Environmental Engineering	40	10	50
	EVSC6 - T	Theory	3	4	Environment, Social Governance	80	20	100
	EVS5CP/CS - 2	Dissertation 2	2	4	Dissertation 2	40	10	50
VI	EVSC7-T	Theory	3	4	Solid Waste Management	80	20	100
	EVSC6-P	Practical	2	4	Solid Waste Management	40	10	50
	EVSC8-T	Theory	3	4	Environmental Impact Assessment and Environmental Auditing	80	20	100
	EVS6CP/CS - 3	Minor Project 3	2	4	Minor Project 3	40	10	50

Programme Outcomes (POs):

PO's	Content
POs O1	Ability to recognize the need for learning the topic and develop foundational knowledge on the topic
POs O2	Acquisition of knowledge on structure, to develop critical thinking and problem-solving skills to solve interdisciplinary issues related to the topic
POs O3	Understanding of various relationships between natural and manmade systems
POs O4	Understanding of the major elements of variation that exist in the living world through apply technical methods and innovative techniques in classroom, field and laboratory to analyze scientific data
POs O5	Ability to develop lifelong learning and professional skills
POs O6	Ability to design and execute a scientific project, write scientific reports, and develop research
POs O7	Ability to spread awareness about the environment around us, development and conduct outreach activities
POs O8	Internalization of the concept of conservation and evolution through the channel of spirit of inquiry
POs O9	Ability to gain empirical knowledge on the topic and contribute in decision-making processes
POs 10	To recognize human activities, to identify trends and patterns, environmental data globally by using effective communication.
POs 11	Find solution to environmental and Human issues.
POs 12	Conflicts of interest and other factors interaction, management of physical and human environments to bring environmental sustainability

**5th Semester B.Sc.
Environmental Science**

Programme	B.Sc. Environmental Science
Semester	Fifth
Course Title	Paper – V –Environmental Engineering
Course Code	EVSC5 - T
Credits	03
Contact Hours	4 hours/Week, Total – 56 hours
Duration of Exam	03 hours
Formative Assessment	20 Marks
Summative Assessment	80 Marks

COURSE OUTCOMES (COs): Students are able to	
COs 01	Explain the concepts of Air pollution and pollutants
COs 02	Discuss water engineering concepts for controlling the water pollution.
COs 03	Acquire contemporary understanding and skills leading to pollution identification and mitigation.
COs 04	Gain knowledge on meteorological parameters.
COs 05	Infer the existing treatment technologies and scope of developing these methods.

Unit	Content	Hours
I	Environmental Sampling: Definition and purpose, Importance in environmental monitoring and assessment, Types of environmental media (air, water, soil, biota). Sampling Design and Planning: Random vs. systematic sampling, Stratified sampling, Sample size determination, Representative sampling and data quality objectives Water Sampling Techniques: Surface water and groundwater sampling, Grab and composite sampling, Use of sampling bottles and field filtration, In-situ measurements (pH, temperature, DO, etc.). Soil and Sediment Sampling: Core sampling, auger sampling, Depth-specific collection, Field logs and documentation Air Sampling Techniques: Passive and active sampling, Particulate and gaseous sampling methods, Use of high-volume samplers and personal air monitors. Sample Preservation and Transport: Holding times and preservation techniques, Chain of custody, Field and laboratory quality control	14
II	Air Pollution Control Engineering: Monitoring and Control of Air Pollution: Scope and significance. Air Sampling: Ambient, Indoor and Stack - Gaseous and particulates. National Ambient Air Quality Monitoring Programme (NAQMP) – Introduction, Guidelines for Sampling and Measurement of notified Ambient Air Quality Parameters (NAAQS), National Ambient Air Quality Standards. Bharat Stage Emission Standards (BSES) – Introduction, Timeline of Implementation of BSES in India. Current Emissions norms. Air Quality Indices. Concept of Air Pollution Tolerance Index and Industrial Greenbelts. Gaseous – Absorption, Adsorption and Condensation. Particulate – Settling Chambers, Inertial Separators, Cyclones, Filters (Baghouse), Electrostatic Precipitators and Scrubbers. Salient features of Air Pollution (Prevention and Control) Act, 1981 and latest amendments; National Clean Air Programme 2019 and latest amendments.	14

III	Water and Wastewater Engineering: Physical, chemical and Biological characteristics of water and wastewater Preliminary and Primary treatment: Screening (fine, medium and coarse – stationary, moving and movable – disposal of screenings), pumping, grit removal (sedimentation tank and detritus tank – types; disposal of detritus) and skimming. Secondary treatment: Activated Sludge Process and Trickling filters. Sludge management. Tertiary treatment: Reverse Osmosis, Activated Carbon, Chlorination.	14
IV	Advanced treatment methods: Filtration, ion exchange, activated carbon adsorption, electro dialysis, nitrification, de-nitrification and Phosphorous removal. Other treatment methods: Oxidation ponds and oxidation of ditches; septic tanks Anaerobic lagoons, Anaerobic filter reactors and Up-flow anaerobic digesters. Treatment of Industrial Effluents: Dairy and Electroplating industry. Monitoring of water pollutants: Scope and significance. Salient features of Water Pollution (Prevention and Control) Act, 1974. Water Quality Standards – Drinking water - IS 10500 & Inland Surface water - IS 2296.	14

Course Articulation Matrix: mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs)/ Program Outcomes (POs)	Program Outcomes (POs)											
	01	02	03	04	05	06	07	08	09	10	11	12
CO 1	3	2	3	2	2	2	3	2	2	3	3	2
CO 2	3	3	2	2	2	2	2	2	2	2	3	2
CO 3	2	3	3	2	2	3	3	2	3	3	3	3
CO 4	3	2	3	2	2	1	2	2	2	3	2	2
CO 5	2	3	2	3	2	3	2	2	3	2	3	3

Pedagogy:

Teaching Strategies: Use of Digital tools and platforms for teaching, learning and research/ dissertation analysis. Inquiry-based learning, group discussions, Interactive Lectures, quiz, group work, Field –oriented studies, Study trip, case studies and debates, hands on training.

Continuous Assessment and Evaluation: Formative and Summative Assessments, Feedback and oral examinations.

EVSC5-P: Environmental Engineering

Number hrs/week	Duration of the exam	Total hours	Credits
4 hours	3 hours	30	2
Formative Assessment	Test = 05	Summative assessment	Exam = 30
	Attendance = 05		Viva = 05
			Record = 05
	Total = 10		Total = 40

List of Practicals:

1. Sampling techniques of air
2. Determination of Particulate Matter
3. Determination of Sulphur-di-oxide in ambient air
4. Determination of Nitrogen-di-oxide in ambient air
5. Determination of Carbon-di-oxide in ambient air
6. Calculate Air Quality Indices
7. Sampling techniques of wastewater
8. Determination of total solids in wastewater
9. Determination of Chromium in liquid effluents
10. Determination of Copper in liquid effluents
11. Determination of Iron in liquid effluents
12. Determination of BOD
13. Determination of COD
14. Water treatment plant – Field Visit

Reference

1. Anjaneyulu Yerramilli. (2019). Air Pollution Prevention and Control Technologies. BS Publications. 1-828.
2. Garg, S.K. (1990). Environmental Engineering Vol I &II Sewage Disposal and
3. Air Pollution Engineering, Khanna Publ. Delhi.
4. Harrison, R. M. and Perry, R. 1986. Handbook of Air Pollution Analysis. Chapman and Hall.
5. Kazi, M. 1969. Measurement of Air Pollutants. WHO.
6. NEERI Manual. 1982. Air Quality Monitoring. NEERI Publications.
7. Paul Guyer. J. (2021). An Introduction to Air Pollution Control Engineering. UNICORN Publishing Group. 1-182.
8. Sawyer, C. N. and Mc Carty, P. L. 1978. Chemistry for Environmental Engineering. McGraw – Hill International.
9. Stern, A. C. 1986. Air pollution Vol. I – VIII. Academic Press Inc
10. Standard Methods for Examination of Water and Wastewater. 2012. APHA – WEF.
11. NEERI Manual. 1982. Air Quality Monitoring. NEERI Publications.

Programme	B.Sc. Environmental Science
Semester	Fifth
Course Title	Paper VI – ENVIRONMENT, SOCIAL GOVERNANCE
Course Code	EVSC6 - T
Credits	03
Contact Hours	4 hours/Week, Total – 56 hours
Duration of Exam	03 hours
Formative Assessment	20 Marks
Summative Assessment	80 Marks

COURSE OUTCOMES (COs): Students are able to	
COs 01	To understand the concept of corporate sustainability and CSR
COs 02	To identify and understand environment dimension and sustainability
COs 03	To identify and understand social dimension of sustainability
COs 04	To identify/stakeholder engagement in environmental protection
COs 05	To understand ESG reporting framework in corporate governance

Unit	Content	Hours
I	Fundamentals of corporate sustainability and CSR: Corporate Sustainability: Definition, Scope and Importance. Relevance in the Indian and global context. Triple bottom line: People, Planet, Profit. Corporate Sustainability vs. Corporate Responsibility. Introduction to responsible investing; ESG investing; Impact and Social investing Corporate Social Responsibility (CSR): Concept, history and evolution of CSR. Drivers of CSR: Legal, ethical, philanthropic and strategic. Sustainable Development Goals (SDGs) and CSR. CSR in India: Provisions under the Companies Act, 2013; Applicability, spending norms and implementation	14
II	Environmental and Social Dimensions of Sustainability Environmental responsibility: Key environmental concepts: Climate change, mitigation and adaptation. Business and the environment: Environmental risks and opportunities Circular economy and clean innovation. Blue Economy: Definition and business potential. Environmental reporting: Ecological footprint; Importance of environmental disclosures.	14
III	Social Responsibility and Stakeholders: Social factors: Human capital, employee welfare, community development. Health & safety, product liability, consumer rights. Stakeholder engagement: Customers, employees, investors, communities Social reporting and impact assessment: Social Return on Investment (SROI). Governance - Corporate governance: Meaning and importance. Governance components: Board structure, diversity, executive pay.	14

	Transparency, accountability, and business ethics. Role of auditors in corporate governance. Governance codes: OECD Principles.	
IV	ESG reporting and integrated frameworks: Meaning, importance and rise in relevance. Integrated reporting: Benefits and components. ESG disclosure drivers: Investors, regulators, consumers. Key international ESG frameworks: GRI, CDP, SASB, UN Global Compact, TCFD, Science-Based Targets. Indian Framework: SEBI's Business Responsibility and Sustainability Report (BRSR). Assurance and stakeholder engagement: Basics of assurance and verification in ESG reporting. Engaging with stakeholders and collaborative industry initiatives.	14

Course Articulation Matrix: mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs)/Program Outcomes (POs)	Program Outcomes (POs)											
	1	2	3	4	5	6	7	8	9	10	11	12
CO 1	3	2	2	1	2	1	1	1	1	1	1	1
CO 2	3	2	2	1	2	1	1	1	2	2	1	1
CO 3	3	3	2	2	2	2	1	1	2	2	2	2
CO 4	2	3	2	3	2	3	2	2	2	3	2	2
CO 5	2	3	3	3	3	3	3	3	3	3	3	3

Pedagogy:

Teaching Strategies: Use of Digital tools and platforms for teaching, learning and research/dissertation analysis. Inquiry-based learning, group discussions, Interactive Lectures, quiz, group work, Field –oriented studies, Study trip, case studies and debates, hands on training. Continuous Assessment and Evaluation: Formative and Summative Assessments, Feedback and oral examinations.

Formative Assessment for Theory	
Assessment type	Marks
Sessional Tests- 1	10
Attendance	05
Assignment/Seminar	05
Total	20 marks
Formative Assessment as per SEP Guidelines	

References

Aras, G. (2016). *A handbook of corporate governance and social responsibility*. CRC Press.

Baxi, C. V., & Prasad, A. (Eds.). (2005). *Corporate social responsibility: Concepts and cases: The Indian experience*. Excel Books India.

Dadhich, G., & Atrey, R. R. (2022). *Benchmarking ESG & CSR: A Compendium of Best Practices in ESG & CSR in India*. Taxmann.

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- Dadhich, G., & Atrey, R. R. (2024). *Taxmann's Embracing ESG in India: Case Studies of Torch Bearers, Promoters & Initiators of Change*. Taxmann.
- Gupta, D. (2022). *Casebook of Strategic Corporate Social Responsibility*. Springer Singapore.
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- Matos, P. (2020). ESG and responsible institutional investing around the world: A critical review.
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- Parikh, K. M. (2025). *ESG & BRSR Reporting* (2nd ed.). Taxmann Publications.
- Prabakaran, S. (2010). *Business ethics and corporate governance*. Excel Books India.
- Rajan, M. G., & Kumar, R. (2021). *Outlast: How ESG Can Benefit Your Business*. HarperCollins India.
- Ravichandran, K. S. (2024). *CSR, ESG & Charitable Institutions* (2nd ed.). Wadhwa Book Company.
- Rezaee, Z., Tsui, J., Cheng, P., & Zhou, G. (2019). *Business sustainability in Asia: Compliance, performance, and integrated reporting and assurance*. John Wiley & Sons.
- Schaper, M. (Ed.). (2016). *Making ecopreneurs: Developing sustainable entrepreneurship*. CRC Press.
- Singhal, S. K., & Mehra, P. (2023). *Navigating Sustainability: Path to a Sustainable Future*. Bloomsbury India.
- Solomon, J. (2020). *Corporate governance and accountability*. John Wiley & Sons.
- Tricker, R. I. (2015). *Corporate governance: Principles, policies, and practices*. Oxford University Press, USA.
- Visser, W., Matten, D., Pohl, M., & Tolhurst, N. (2010). *The A to Z of corporate social responsibility*. John Wiley & Sons.

EVS5CP/CS -2(Compulsory Practical/Compulsory Skill): Dissertation* 2

Number hrs/week	Duration of the exam	Total hours	Credits
4 hours	30minutes Presentation	30	2
Formative Assessment	Viva = 05	Summative assessment	Report = 30
	Attendance = 05		Viva = 10
	Total = 10		Total = 40
Grand Total			50

*Research topic to be decided in consultation with guide and students

**6th Semester B.Sc.
Environmental Science**

Programme	B.Sc. Environmental Science
Semester	Sixth
Course Title	Paper VII – Solid Waste Management
Course Code	EVSC7-T
Credits	03
Contact Hours	4 Hours/week, Total- 56 hours
Duration of Exam	3 Hours
Formative Assessment	20 Marks
Summative Assessment	80 Marks

COURSE OUTCOMES (COs): Students are able to	
COs 01	Explain the sources, types, and characteristics of different waste streams (municipal, C&D, biomedical, hazardous, e-waste), and the regulatory framework governing their management in India.
COs 02	Describe and compare various waste collection, storage, and processing systems, including recycling strategies, source reduction techniques, and extended producer responsibility.
COs 03	Evaluate treatment and disposal technologies such as composting, bio-gasification, incineration, sanitary landfills, and specific methods for biomedical, hazardous, and e-waste.
COs 04	Analyze the role of innovation and technology in waste monitoring and management, including smart systems, GIS, drones, and IoT tools for optimizing collection and treatment.
COs 05	Assess community-based approaches and case studies involving awareness programs, PPP models, biomining, landfill rehabilitation, and circular economy initiatives for sustainable waste management.

Unit	Content	Hours
I	Introduction to Solid Waste: Definition and classification of solid waste, Waste generation trends: urban vs. rural, Sources and types: Municipal solid waste (MSW), Construction & Demolition (C&D), Biomedical, Hazardous, and E-waste. Characteristics & Quantification: Physical, chemical, and biological properties of solid waste. Estimation of generation rates: per capita generation, density, moisture content. Sampling and analysis methods Functional Elements of Waste Management: Collection systems: Primary and secondary collection. Design of collection routes and frequency. Transfer stations: location, design, and operation. Storage: types of containers, community bins Source Reduction and Recycling: Principles and strategies of waste minimization. Material recovery facilities (MRFs). Composting, vermicomposting, anaerobic digestion. Mechanical and biological processing. Extended Producer Responsibility (EPR) and take-back programs.	14
II	Treatment & Disposal Technologies Treatment Technologies: Incineration: types, advantages, and emissions. Refuse-Derived Fuel (RDF). Energy recovery: WTE (waste-	

	to-energy) plants. Drying and mechanical volume reduction techniques. Disposal Technologies: Design and operation of sanitary landfills- Site selection, liners, leachate and gas collection systems, Landfill capping and post-closure care. Secure landfills for hazardous waste. Biomedical waste treatment: autoclaving, microwaving, chemical disinfection, pyrolysis. E-waste dismantling, refurbishment, LCA (Life Cycle Assessment) concept. Technological Innovations in Waste Management: Smart bins and sensor-based collection. IoT-enabled waste tracking systems. Drone surveillance and mapping of dumpsites. GIS-based route optimization and fleet management. Mobile apps for citizen reporting and feedback	14
III	Community-Based Approaches: Role of communities in waste segregation at source. Awareness campaigns, street plays, door-to-door engagement. Public-Private Partnerships (PPP) in waste services. Role of SHGs and cooperatives in waste collection and recycling. Emerging Concepts: Zero waste and circular economy models. Urban mining and biomining of legacy waste. Climate-smart waste management. Carbon credits and GHG mitigation through waste diversion	14
IV	National & International Regulatory Framework: Solid Waste Management Rules (2016), Biomedical Waste Rules (2016), Hazardous Waste Rules (2016), E-Waste Rules (2016), Plastic Waste Management Rules: Polluter Pays Principle, Extended Producer Responsibility (EPR), User charges, Urban local bodies' role: Basel Convention, SDGs and waste, UN-Habitat guidelines Institutional Roles & Stakeholders: Role of CPCB, SPCBs, ULBs, NGOs, RWAs, informal sector. Case study: Urban composting initiatives (e.g., Pune, Mysuru). Indore's success story in segregation and cleanliness. International: San Francisco Zero Waste goal, Sweden's WTE model	14

Course Articulation Matrix: mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs)/ Program Outcomes (POs)	Program Outcomes (POs)											
	01	02	03	04	05	06	07	08	09	10	11	12
CO 1	3	2	2	1	2	1	2	2	2	2	3	3
CO 2	2	3	2	2	2	2	2	1	2	2	3	3
CO 3	2	3	3	2	2	2	2	2	3	2	3	3
CO 4	2	3	2	3	3	3	2	1	2	3	3	3
CO 5	2	2	3	2	3	2	3	2	3	3	3	3

Pedagogy:

Teaching Strategies: Use of Digital tools and platforms for teaching, learning and research/ dissertation analysis. Inquiry-based learning, group discussions, Interactive Lectures, quiz, group work, Field –oriented studies, Study trip, case studies and debates, hands on training.

Continuous Assessment and Evaluation: Formative and Summative Assessments, Feedback and oral examinations.

EVSC6-P: SOLID WASTE MANAGEMENT

Number hrs/week	Duration of the exam	Total hours	Credits
4 hours	3 hours	30	2
Formative Assessment	Test = 05	Summative assessment	Exam = 30
	Attendance = 05		Viva = 05
			Record = 05
	Total = 10		Total = 40

List of Practicals:

1. Sampling techniques of Municipal waste.
2. Characterization of Municipal solid waste.
3. Estimation of Solid Waste Generation in a Local Area/Campus or Household.
4. Determination of Moisture content of the Municipal Solid Waste.
5. Determination of crude and bulk density of Municipal Solid Waste.
6. Composting/vermicomposting of organic waste.
7. Estimation of oxidizable organic carbon in compost.
8. Estimation of pH of the leachate.
9. Estimation of sulphates in leachate.
10. Estimation of phosphates in leachate.
11. Study of characteristics and use of biochar.
12. Visit to a Municipal Solid Waste Segregation unit or Landfill Site.

References

- Bhide, A. D., & Sundaresan, B. B. (2001). Solid Waste Management in Developing Countries. INSDOC, New Delhi.
- Cheremisinoff, N. P. (2003). Handbook of Solid Waste Management and Waste Minimization Technologies. Butterworth-Heinemann.
- CPHEEO (2016). Manual on Municipal Solid Waste Management. Ministry of Housing and Urban Affairs, Government of India.
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- National Green Tribunal (NGT) Reports & NDMA Guidelines on waste management in emergencies.
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Programme	B.Sc Environmental Science
Semester	Sixth
Course Title	Paper VIII – Environmental Impact Assessment and Environmental Auditing
Course Code	EVSC8 -T
Credits	03
Contact Hours	4 Hours/week, Total-56 hours
Duration of Exam	3 Hours
Formative Assessment	20 Marks
Summative Assessment	80 Marks

COURSE OUTCOMES (COs): Students are able to	
COs 01	Explain the definition, purpose, principles, historical evolution, and regulatory framework of EIA in India and globally.
COs 02	Describe the stages and methodologies of the EIA process, including screening, scoping, impact identification, and public participation.
COs 03	Analyze baseline environmental data and evaluate different project alternatives for physical, biological, social, and economic impacts using standard EIA tools.
COs 04	Assess various case studies of industrial, infrastructural, and development projects to understand EIA applications and decision-making frameworks, including EIS preparation and clearance procedures.
COs 05	Interpret key environmental laws and policies in India relevant to EIA, including major acts and rules on pollution control, biodiversity, forest conservation, and hazardous waste management.

Unit	Content	Hours
I	Basics of EIA and Regulatory Framework: Introduction to EIA, definition, purpose, and importance of EIA. Basic principles and characteristics of EIA. Global evolution and history of EIA. Types of EIA (Rapid, Comprehensive, Strategic). EIA in India: Stages of the EIA process: Screening, Scoping, Impact Analysis, Mitigation, and Reporting. Key participants in the EIA process: project proponents, consultants, regulators, and the public. EIA Notification (2006) and its amendments. Terms of Reference (ToR) and EIA in the project life cycle.	14
II	EIA Process and Methodologies: Impact Identification Methods: Ad-hoc, Checklists, Matrices (Leopold, Network), Overlays Data collection: Environmental baseline data (air, water, soil, flora-fauna), project and alternative data Types of impacts: Physical, biological, social and economic. Impact Evaluation and Mitigation. Impact prediction and significance analysis. Mitigation measures and environmental management plans. Public participation and stakeholder engagement Reporting and Review: Environmental Impact Statement (EIS) – structure and contents. Environmental Clearance (EC) – process, categories of projects (A, B1, B2). Role of Environmental Appraisal Committees (EACs). Criteria for EIA report review and approval.	14

III	Environmental Policies and Legal Aspects: National Environment Policy (NEP) and role of MoEFCC. Challenges in EIA implementation: Legal, technical, and administrative issues. Importance of public consultation and transparency. Case studies and Decision making Sector-Specific Case Studies: - Industrial projects: Sugar mills, distilleries, paper industry. - Infrastructure projects: Highways, SEZs, building construction, mining, river valley projects. Waste management projects: CETPs, landfills, incinerators, TSDFs.	14
IV	Environmental Audit: Concept, Aims and Objectives; Elements of Environmental audit - Internal and External audit. Types of Environmental Audit: Environmental Compliance Audits, Environmental Management Audits and Functional Environmental Audits. Water audit, Energy audit, Health & Safety audit and Waste & Waste Minimisation audit. Audit procedure: Pre-audit activities, On-site activities and Post-audit activities. Evaluation of Audit data and Preparation of audit report. Auditor profile. Environmental Audit Notifications (with latest amendments) ISO 14010 - EA- General Principles of Environmental Auditing ISO 14011 - EA- Auditing of Environmental Management Systems ISO 14012 - EA- Qualification Criteria for Environmental Auditors ISO 14013 - Management of Environmental Audit Programmes	14

References

- Environment and Pollution Law, Mohanty. S. K., (2011), Universal Law Publishing Co.Pvt. Ltd.
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- Environmental Law in India, Singh Gurdip, (2004), Mcmillan& Co.
- Environmental Law, (2nd Edn.), Shastri S C, (2008), Eastern Book Company, Lucknow
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EVS6CP/CS -3(Compulsory Practical/Compulsory Skill): Minor Project* 3

Number hrs/week	Duration of the exam	Total hours	Credits
4 hours	30minutes Presentation	30	2
Formative Assessment	Viva = 05	Summative assessment	Report = 30
	Attendance = 05		Viva = 10
	Total = 10		Total = 40
Grand Total			50

*Minor Project topic to be decided in consultation with guide and students

**THEORY EXAMINATION QUESTION PAPER PATTERN FOR MAJOR
SUBJECTS**

I/II/III/IV/V/VI Semester B. Sc. Examination,MONTHYEAR

(Semester Scheme: New Syllabus: -2026-27 onwards)

Subject: Environmental Science

Paper title:

Duration: 3 Hrs

Max Marks: 80

Instruction: Answer all Sections. Section- A is compulsory

SECTION – A

Q. 1. Answer ALL of the following.

10 × 2 = 20

- a.
- b.
- c.
- d.
- e.
- f.
- g.
- h.
- i.
- j.

SECTION – B

Answer any SIX of the Following

06×05=30

- Q.2
- Q.3
- Q.4
- Q.5
- Q.6
- Q.7
- Q.8
- Q.9

SECTION – C

Answer any THREE of the Following

03×10=30

- Q.10
- Q.11
- Q.12
- Q.13
- Q.14

Note: While drawing questions, all the units in the syllabus must be given equal weightage.