

Janardan Bhagat Shikshan Prasarak Sanstha's
Changu Kana Thakur Arts, Commerce and Science College, New Panvel
(Autonomous),

Re-accredited A++ Grade by NAAC (Fourth Cycle-CGPA-3.52), 'College with Potential for Excellence'
 Status Awarded by UGC, 'Best College Award' by University of Mumbai

Department of Chemistry

Class: S.Y.B.Sc.

Academic Year: 2025-26

Subject: Certificate Course in Environmental Biochemistry

All the following teachers of chemistry department are hereby informed that the work distribution for the **Certificate Course in Environmental Biochemistry** is as follows,

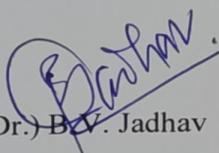
Paper-I: Introduction to the Ecosystem and Pollution of Air, Water and Soil in the Environment

Unit No.	Topic No.	Topic
		Dr. V. S. Kamble
I	1.0	Introduction to air pollution and types of air pollutants Sources, fate and effects of sulphur oxides, nitrogen oxides and carbon monoxide in the environment.
		Dr. J.S. Thakur
II	2.1	Sampling, monitoring, analysis and control of sulphur oxides, nitrogen oxides and carbon monoxide
	2.2	Air quality standards-an overview
		Prof. Dr. B.V. Jadhav
III	3.0	Formation, effect and control of photochemical smog
		Dr. J.S. Vajekar
IV	4.0	Greenhouse gases, greenhouse effect, causes, consequences and abatement, Ozone depletion, Causes, mechanism, consequences and abatement (CFCs to be included)
		Prof. Dr. B.D. Aghav
V	5.1	Water resources: Introduction to
	5.1.1	Surface and ground water.
	5.1.2	Water quality parameters i.e. potability
	5.1.3	Water treatment and distribution
		Dr. J.M. Pawara/ Miss. P.A. Patil
VI	6.1	Water quality monitoring techniques: (only theory to be covered, procedures done in practicals)
	6.2	Physical and biological parameters; pH, specific conductance, TS, TSS, TDS, E.Coli and total bacteria, MPN.
	6.3	Chemical parameter: acidity, alkalinity, sulphates, phosphates Nitrates/nitrites, chlorides, flurides, hardness, DO, BOD, COD
		Dr. D.K. Patil
VII	7.1	Water pollution: Types of pollutants:

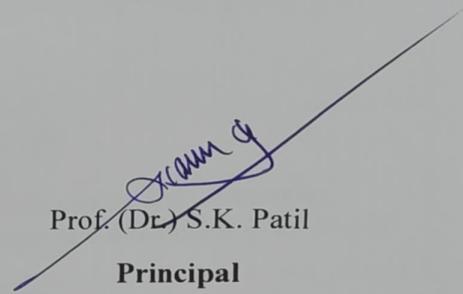
	7.2 7.3 7.3.1 7.3.2	Domestic Industrial Metal –Pb /Hg /Cd /Cr. Organic- paper and pulp /tanning/soaps and detergents/oil refinery/cane sugar(one example from each category)
		Dr. S. A. Shaikh
VIII	8.0	Waste water treatment, water quality assessment, bioremediation.
		Dr. D.K. Patil
IX	9.1 9.2	Soil profile and composition (organic and inorganic) Properties of soil- color, density, permeability, water retention, pH, soil quality indicators.
		Dr. V.A. Suryawanshi
X	10.1	Instrumental techniques in environmental chemical analysis: Atomic adsorption spectroscopy, TLC, GLC, HPLC, Ion selective electrodes.



Dr. J.S. Vajekar
Course Coordinator



Prof. (Dr.) B.V. Jadhav
Head
Department of Chemistry



Prof. (Dr.) S.K. Patil
Principal
C.K. Thakur A.C.S. College,
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Paper II- An introduction to Toxicology an Environmental Protection

Unit No.	Topic No.	Topic
		Dr. V.A. Suryawanshi
I	1.0	Industrial Toxicology
	1.1	Polymers and plastics, their uses, classification and characteristics (in brief) environmental consequences, abatement procedures for polymer and plastic pollution.
	1.2	Food additives and contaminants: Uses, classification, risk analysis of sodium nitrate and nitrite, BHA and BHT, Brominated vegetable oils, saccharin, monosodium glutamate.
		Dr. J.S. Vajekar
II	2.0	Agriculture toxicology
		Dr. S.N. Vajekar
III	3.0	Pesticides: classification on the basis of mode of entry, mode of action, chemical nature.
		Dr. S.N. Vajekar
IV	4.0	Uptake, conversions and elimination of pesticides (only general routes, no specific pesticide to be covered)
		Mr. R.N. Patil
V	5.0	Antidotal therapy
		Dr. J.M. Pawara/ Miss. P.A. Patil
VI	6.1	Toxicity tests
	6.2	Types of toxicity tests (definition of mutagenesis, teratogenesis, carcinogenesis) LD ₅₀ , LC ₅₀ .
	6.3	Teratogenicity Test: Characteristics mechanism, procedure, evaluation and

	6.4	analysis.
	6.5	Carcinogenicity: types of carcinogens, test, evaluation
	6.6	Ames test
		Current issues, environmental restoration and legislation.
		Prof. V.D. Patil
VII	7.0	Earth Summit (1991) (to be covered as assignments, seminars group presentations)
		Dr. V.S. Kamble
VIII	8.0	Economic and legal questions: economics of pollution cost of a clean environment, legal aspects of pollution. Agenda 21 of the UN resolution.
		Dr. S.A. Shaikh
IX	9.0	Environmental action: National and International problems and programs, environmental protection agencies.
		Prof. Dr. V.D. Patil
X	10.1	A detailed report on the requirements to set up a fully functional environmental safety / testing laboratory. The report should be prepared by students in groups of not more than three students. Details of the finances, minimum space required, instruments, consumables (budgeting only) personnel etc. should be specified. Consultation with any exiting environmental labs or departments is recommended OR A detailed proposal for a specific project should be planned. The proposal should show details of the financial requirement, economic viability and feasibility, of the project

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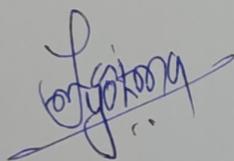
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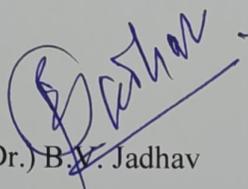
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Sr.No	Practicals	
	1. Prof. Dr. V.D. Patil 2. Dr. J.S. Vajekar 3. Dr. D.K. Patil/ Mr. R.N. Patil 4. Dr. S.A. Shaikh	Batch C Batch B Batch A Batch D
1	Volumetric Estimation: Aim: To determine total Hardness of water sample.	
2	Analysis of Commercial Sample: Aim: To determine the acidity of water from given water sample.	
3	pH meter: Aim: To determine the pH of water sample.	
4	Grams staining: Aim: To stain organism in the given suspension, by grams staining method.	
5	Dissolved Oxygen: Aim: To determine amount of dissolve oxygen in the given water sample by Winkler iodometric method.	
6	Food Adulteration:	

	Aim: To determine food adulteration from given food materials.
7	Turbidity of Water: Aim: To determine the turbidity of given water sample.
8	Conductometry: Aim: To determine the amount of strong acid present in the given solution by conductometrically.

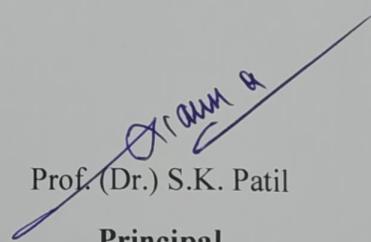


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