



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL
OUTCOME BASED CURRICULUM

NAME OF THE PROGRAMME: COMMON TO ALL BRANCHES

Name of Scheme :OCBC -19

COURSE CODE : 6806

COURSE TITLE : ENVIRONMENTAL ENGG AND SAFETY

SEMESTER-I

COURSE OUTCOMES (COs)

- C102.1 Explore the components of biosphere and impact of human activity on environment.
- C102.2 Summarize the causes and sources of pollutants, and their impact on global environment.
- C102.3 Develop ethics and scientific awareness about waste generation and treatment.
- C102.4 Identify sources and types of wastes and its management.
- C102.5 Understand noise, noise pollution and control.

CO-PO MAPPING

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
C102.1	3	1	1	1	3	2	3
C102.2	3	2	2	2	3	1	3
C102.3	2	2	1	1	2	1	2
C102.4	2	2	1	2	2	1	2
C102.5	1	1	1	2	2	1	2

CONTENTS

Unit	topic	contents	
1	Introduction to environment	Definition, scope and importance of environmental studies. Ecosystem, types, structure and function of ecosystem. Energy flow in ecosystem. Biodiversity and its importance, threats to biodiversity and conservation of biodiversity. Natural resources and associated problems. Renewable and non renewable resources, forest resources- Description, benefits, Effects due to deforestation, Water resources –Use and conservation. Mineral resources–mining activity. Role and responsibility of engineer in environmental protection, health and safety. Fire hazards, prevention and precautions. Industrial hazards prevention and protection. Protection from air and noise pollution. Environment protection act Wild life protection act. Forest conservation act. Population growth aspects and importance and effects on environment. Human health and Human rights. Concept of carbon credits	



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2	Air Pollution	<p>Standard definition of air pollution ,Composition of natural air, Names of air pollutants, Classification of air pollutants, primary and secondary pollutants, Classification of source of air pollutants on different bases, Definition of different types of aerosols. Effect of air pollution on: human health, material properties, vegetation. Major toxic metals and their effects., Air (prevention and control of pollution)act.</p> <p>Major environmental phenomenon e.g., acid rain, global warming, green house effect, ozone layer depletion. Air quality standards, Brief description of air pollution laws. Meteorological parameters influencing air pollution Environmental lapse rate, temperature inversion. Role of national green tribunal in India, Function of Regulatory boards like CPCB and State Pollution Control Boards</p>	
3	WATER POLLUTION and WASTE WATER TREATMENT METHOD	<p>Water resources, Classification of water, Origin, composition and characteristics of domestic waste water as well as industrial waste water, Biochemical oxygen demand, Water pollution laws and standards. Water conservation ,watershed management, Rain water harvesting : Definition, methods and benefits. Water (prevention and control of pollution)act, Waste water, Classification of waste water, Chemical oxygen demand. basic processes of water treatment. Meaning of primary, secondary and tertiary treatment. Flow chart of a simple effluent treatment plant, Theory of industrial waste treatment, Volume reduction, neutralization and precipitation methods.</p>	
4	Energy Environment Climate Change	<p>An overview of Bureau of Energy Efficiency (bee), The National Action Plan on Climate Change (NAPCC), Schemes under The National Mission for Enhanced Energy Efficiency (NMEEE), Energy Conservation Building Code (ECBC), Bio diversity and its conservation, Sustainable development, Kyoto Protocol, Conference of Parties (CoP), Clean Development Mechanism (CDM).</p>	



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5	SOLID WASTE MANAGEMENT & NOISE POLLUTION	Sources and classification of solid waste, Public health aspects, Disposal methods – open dumping , sanitary , land fill, Incineration , composting, Potential methods of disposal ,Recovery and recycling of paper, glass, metal and plastic Sources of noise pollution ,Units of Noise pollution measurement, Allowable limits for different areas, Problems of noise pollution and measures to control it, Noise pollution control devices brief discussion	
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LIST OF EXPERIMENTS

S.NO.	NAME OF THE EXPERIMENTS	HRS OF PRACTICAL
	<p>NOISE POLLUTION</p> <p>1 Determination of sound pollution in (a) Auditorium (b) Factories (c) Busy roads (d) Theatre (e) TV rooms (select any three situations)</p> <p>INDUSTRIAL WASTE WATER</p> <p>(Any Two experiment may be selected from this group)</p> <p>2 Determination of pH and alkalinity/ acidity in industrial waste water.</p> <p>3 Determination of solids in industrial waste water.</p> <p>4 Determination of turbidity, colour and temperature of industrial waste water.</p> <p>5 Determine the dissolved oxygen by DO Meter.</p> <p>POLLUTION STANDARDS</p> <p>6 Study of drinking water standards.</p> <p>7 Study of effluent standards for water disposal.</p> <p>8 Study of air pollution standards.</p>	30



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LIST OF ASSIGNMENTS

1. Study of a simple ecosystem like pond, rivers, hill slopes etc
2. Visit a local area and document the environmental assets like rivers, forest, hills, grasslands etc.
3. Prepare a list of plastic articles used daily in our life. Estimate the amount of raw materials used and how does where does come from? What are the disposal methods and predict the impact on environment
4. Estimate water is needed for a person daily and estimate for your town and find the sources that cater the supply and how can we regulate the excess usage of water by changing our habits
5. List out the article that are renewable and non renewable and their impact on environment
6. List out energy sources that we use daily. How can we decrease their use and dependence on them
7. Write an essay on how carbon credit is helping in minimising the pollution
8. Write a note on rain water harvesting
9. Carbon credits and sustainable development
10. Compare the use of renewable and non renewable sources of energy
11. List out some novel methods t reduce solid waste
12. List out the advantages of biodiversity.

SUGGESTED SPECIFICATION FOR QUESTION PAPER DESIGN

UNIT NO	TITLE	TEACHING HRS	TENTATIVE DISTRIBUTION OF MARKS			
			R LEVEL	U LEVEL	A LEVEL	TOTAL
1	INTRODUCTION TO ENVIRONMENT	18	04	08	02	14
2	AIR POLLUTION	18	02	08	04	14
3	WATER POLLUTION and WASTE WATER TREATMENT METHOD	18	04	06	04	14
4	ENERGY ENVIRONMENT CLIMATE CHANGE	18	04	06	04	14
5	SOLID WASTE MANAGEMENT& NOISE POLLUTION	18	04	04	06	14



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REFERENCES

1. Environmental pollution control Engineering by C.S. Rao
2. Air pollution and control by Seth
3. Air pollution by M.N Rao
4. Industrial waste and its treatment by Seth
5. Paryavaran Yantriki Hindi granth akadami
6. Sites to visit: Bureau of Energy Efficiency, Ministry of New and Renewable Energy Sources
7. पर्यावरण अभियांत्रिकी एवं सुरक्षा – डा० शर्मिला जैन, संजय पब्लिकेशन जयपुर ।