

GENERIC ELECTIVE COURSE
CHEMISTRY IN SERVICE TO MAN

SEMESTER	COURSE CODE	HOURS PER WEEK	CREDIT	EXAM HRS
V	5D01CHE/PCH	2	2	2

Contact hours:36Hrs

Course Outcome

On successful completion of this course, students should be able to

CO1) i) Understand the classification, structure, function and applications of polymers

ii) Understand the importance of biodegradable polymers

CO2) Acquaint with different types of fertilizers and pesticides and understand the effect of fertilizers and pesticides on the environment

CO 3) Explain the classification of fuels and composition of petroleum and familiarise the fuel cells and batteries and Understand their applications in modern life

CO 4) Explain different types of glasses ,their applications and the composition of Portland cement

CO5) Identify the harmful chemicals present in cosmetics and understand their effects in human body

Unit 1. PLASTICS & POLYMERS(10hrs)

Polymers- Types of polymers natural & synthetic polymers-characteristics and examples.

General characteristics and applications of polymers such as Polythene (LDPE & HDPE), polypropylene, PVC, Poly styrene. Artificial fibers -examples

Plastics- Thermoplastics and thermosetting plastics- Characteristics and examples..

Elastomers Natural and synthetic rubbers-Vulcanization(mention only. Biodegradable polymers .examples.

benefits of biodegradable plastics. Importance of plastic recycling.

Unit 2. FERTILIZERS & INSECTICIDES(7hrs)

Natural , synthetic mixed and NPK fertilizers – examples. -Impact of excessive use of fertilizers on environment – Bio fertilizers –Pesticides and their classification- examples. Excessive use of pesticides.

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Environmental hazards.Safe handling of pesticides. Insect repellants

Unit 3. FUELS, CELLS & BATTERIES(7hrs)

Definition and classification of fuels – Characteristics of good fuel – Combustion - Calorific

value – wood- coal - petroleum-origin –different fractions, their composition & uses. Natural gas, Biogas & LPG – their composition and uses.

Pollution due to burning of fossil fuel -Batteries and fuel cells – Different types – Applications in modern life.

Unit 4 CEMENT & GLASS(6hrs)

Cement- Classification – Portland cement – Raw materials – manufacture – setting and

hardening – Glass – Different types – manufacture – raw materials – manufacture of ordinary glass

5. COSMETICS(6hrs)

Cosmetics – Cleansing cream, cold cream, bleaching & vanishing creams, perfumes, talcum powder, tooth paste, deodorants , lipstick –ingredients. Harmful chemicals in cosmetics

References:-

1. J Barrett: Chemistry in your environment-User friendly, Simplified Science.
2. Howard L White: Introduction to Industrial Chemistry
3. David M Targarden: Polymer Chemistry – Introduction to an indispensable science.
4. M.S.Yadav: Synthetic drugs
5. Samuel Delvin: Dyes and Pigments
6. Alexander Findlay: Chemistry in the service of man
7. S. K Honda: Principle of pesticide chemistry
8. M.M.Chakrabarthy: Chemistry and Technology of oils and fats
9. Shalini Sareen: Chemotherapeutic agents
10. P.K.Ray: Pollution and health
11. Vanessa Good ship: Introduction to plastic recycling
- 12.Randy Schmetter and Perry Romanoswski: Beginning cosmetic chemistry.
13. V Jain: Organic polymer chemistry
- 14.V K Selva raj: Advanced polymer chemistry

[Type text]

15. Jr Charles E Carraher: Introduction to polymer chemistry

16. Shashi Chawla: A Text Book of Engineering Chemistry

17. Jain & Jain : Engineering Chemistry

Distribution of Marks for Generic Elective Course

Marks including choice:

Unit	Marks	Unit	Marks
I	9	V	5
II	6		
III	5		
IV	5		

Table 10. Type of Questions & Marks for External Examination – Generic Elective Course

	Total Questions	No. Of Questions to be answered	Mark for each Marks for each Question	Total Marks
Very short answer	5	5	1	5
Short answer	5	3	2	6
Short essay/Problems	5	3	3	9
Total	15	11		20

GENERIC ELECTIVE COURSE**Environmental Studies**

SEMESTER	COURSE CODE	HOURS PER WEEK	CREDIT	EXAM HRS
V	5D03CHE/PCH	2	2	2

Contact hours:36Hrs

Course Outcome

On successful completion of this course, students should be able to

CO 1) Differentiate the environmental segments and understand the importance of environmental segments

CO 2) Identify the types of environmental pollution and the various sources of the pollution

CO 3) Understand the consequences of environmental pollutions

CO 4) Explain the measures of control of environmental pollution

CO 5) Recognise various sustainable energy sources

UNIT1. Environmental segments

6 Hours

Environmental segments – Lithosphere: soil formation – components of soils. Hydrosphere: Hydrological cycle- Biosphere - Atmosphere- Structure and composition

UNIT 2.Air Pollution

9 Hours

Types of pollutants

Air pollution –Sources – pollutants –CO, NO_x, Sox, Hydrocarbons, Particulates. Effect on ecosystem., Ozone layer –importance, Ozone depletion-Control measures- Acid rain-

control of acid rain- Green house effect-global warming,-photochemical smog(Eqns not

needed)- effect pollution on plants and human beings. Control of air pollution Noise Pollution – physiological response to noise – biological effects- carbon foot print

UNIT 3.Water Pollution 7 Hours

Water Pollution – Sources –Industrial effluents- agriculture discharge - oil spills-

heavy metal -pesticides-biomagnifications and bioaccumulations

[Type text]

Dissolved oxygen in water, chemical oxygen demand (COD) and biochemical oxygen demand (BOD) (Definition only)- control of water pollution- ISI/BIS standards of drinking water

UNIT 4. Soil Pollution 8 Hours

Soil Pollution - Sources by industrial and urban wastes, radioactive pollutants, plastics

heavy metals. Poisoning by heavy metals – Minamata and Itai-Itai diseases.

Control of soil pollution.- Solid waste Management -Thermal pollution

definition-sources of thermal pollution, harmful effect of thermal pollution

prevention of thermal pollution.

UNIT 5. Sustainable Energy Sources & Technology

6 Hours

Green energy Sources- Wind-water-solar– use of solar energy in space-

Production of electricity using solar energy- Tidal, Biomass and geothermal energy

References:

1. Text book of Environmental Studies for under graduate courses – Erach Bhar

2. Essential Environmental studies- S. P. Misra – S. N. Pandey

3. Environmental chemistry and pollution control – S.S Dara (2nd Edition)

4. Environmental chemistry- Peter O' Neill

5. Environmental chemistry – B.K. Sharma

6. Fundamental concepts of environmental chemistry – G.S Sodhi

7. Environmental Chemistry. A.K De

Distribution of Marks for Generic Elective Course

Marks including choice:

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I	4	V	4
II	10		
III	7		
IV	5		

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