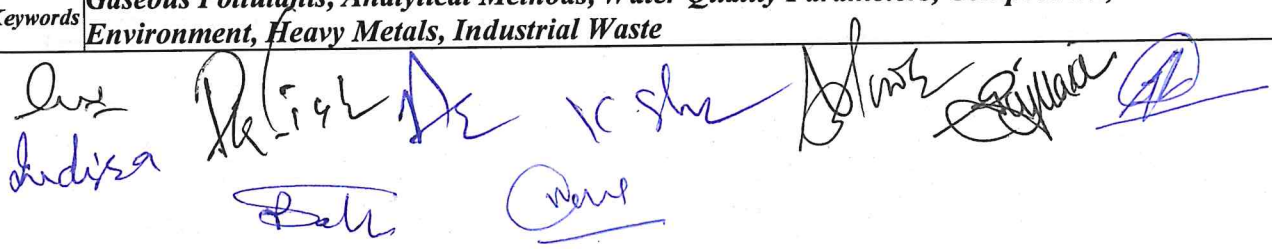


FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF INDUSTRIAL CHEMISTRY
COURSE CURRICULUM

PART-A: Introduction			
Program: Bachelor in Science (Honors/Honors with Research)		Semester -VII	Session: 2024-2025
1	CourseCode	ICSC-07T	
2	CourseTitle	ENVIRONMENTAL POLLUTION ANALYSIS	
3	CourseType	DSC	
4	Pre-requisite(if,any)	As per program	
5	Course Learning Outcomes(CLO)	<ul style="list-style-type: none"> ➤ To Determine the air pollutants ➤ To learn physical, chemical and biological water quality parameters ➤ To analyses the soil composition ➤ To determine the heavy metals. 	
6	CreditValue	3 Credits	Credit = 15 Hours -learning & Observation
7	TotalMarks	Max.Marks: 100	Min Passing Marks:40
PART -B: Content of the Course			
TotalNo.of Teaching-learning Periods(01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics(Coursecontents)		No.of Period
I	Air pollutants: CO, CO ₂ , ozone, CFC, & NO _x , ozone depletion, global warming Harmful effects of pollutants on living and non-living species, Analytical methods for monitoring air pollutants, international and national standards.		12
II	Physical, chemical and biological water quality parameters; their assessment; Water pollution; water pollutants; toxicity aspects; international and national standards; control; Water sampling techniques; Water treatment processes: aeration, solid purification, nanofiltration, chemical treatments, reverse osmosis, desalination. Waste water treatment processes. Water table maintenance & harvesting methods.		11
III	Composition of soil: inorganic and organic components, micro and macronutrients; Soil pollution; Fertilizers, insecticides, pesticides, plastics, toxic metals, dyes, surfactants; toxicity aspects; international and national standards; control.		11
IV	Heavy metal in the environment; Sources of heavy metals; Poisoning of heavy metals in every bite; Mercury, Copper, Chromium, Cadmium, Cobalt, Lead, Arsenic. Industrial waste; toxic aspects, management and disposal; Radioactive, municipal, agricultural and biomedical waste – toxicity hazards. Bhopal gas tragedy, Chernobyl disaster.		11
Keywords	Gaseous Pollutants, Analytical Methods, Water Quality Parameters, Composition, Environment, Heavy Metals, Industrial Waste		



Signature of Convener & Members (CBoS):

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. Jain, S.K. (2012). *Chemical Kinetics*. Vishal Publication.
2. Sharma, B.K. (2005). *Industrial Analysis*. Gael Publication.
3. Shah, R.K., Vora, J.C., Vora, K.P., & Shah, R.S. (2015). *Principles of Analytical Chemistry*: Elsevier.

Reference Books Recommended –

1. Smith, J.M. (1981). *Chemical Engineering Kinetics*. McGraw Hill Book Co.
2. Parsania, P.H. (2011). *Physico-Chemical Exercise*: Nirali Prakashan.

Online Resources–

- <https://swayam.gov.in/course/11228-air-water-and-soil-pollution>
- <https://nptel.ac.in/courses/105/105/105105176/>
- <http://cpcb.nic.in/>
- <https://www.neeri.res.in/>
- <https://www.epa.gov/>
- <https://www.who.int/airpollution/en/>

Online Resources–

- e-Resources / e-books and e-learning portals

PART-D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

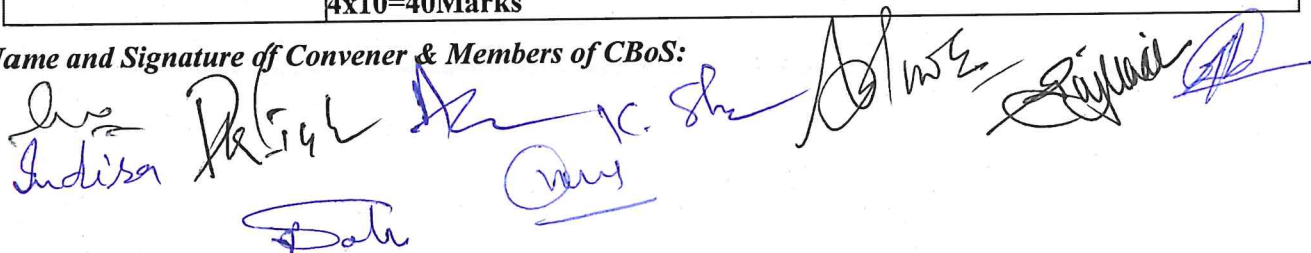
Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 / 20 Assignment/Seminar- 10 Total Marks -30	Better marks out of the two Test / Quiz+ obtained marks in Assignment shall be considered against 30 Marks
End Semester Exam (ESE):	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit- 4x10=40Marks	

Name and Signature of Convener & Members of CBoS:

Indira Prakash Sharma


Signature of Convener & Members (CBoS):

PART-C: Learning Resources		
Text Books, Reference Books and Others		
<i>Text Books Recommended –</i>		
1. Ahluwalia, V. K., and Sharma, R. (2010). <i>Comprehensive Practical Organic Chemistry</i> . Universities Press.		
<i>Reference Books Recommended-</i>		
1. Svehla, G. (1979). <i>Inorganic Qualitative Analysis</i> . Vogel.		
2. Svehla, G. (1989). <i>Organic Preparation</i> . Vogel.		
3. Mann, J. B., and Saunders, B. C. (1949). <i>Organic Qualitative Analysis</i> . Longmans, Green and Co.		
Online Resources–		
➤ https://www.epa.gov/sites/production/files/2015-05/documents/henryslawconstant_table.pdf		
➤ https://www.epa.gov/sites/production/files/2015-05/documents/ionbalance_table.pdf		
➤ https://www.epa.gov/sites/production/files/2021-05/documents/sw-846-update-vi-2019_edition_method-8081b.pdf		
➤ https://www.epa.gov/sites/production/files/2015-07/documents/astm_d3867-04.pdf		
➤ https://www.epa.gov/sites/production/files/2015-05/documents/precipitation_table.pdf		
➤ https://www.epa.gov/sites/production/files/2015-05/documents/winkler_table.pdf		
Online Resources–		
➤ e-Resources / e-books and e-learning portals		
PART-D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: 50 Marks		
Continuous Internal Assessment (CIA): 15 Marks		
End Semester Exam (ESE): 35 Marks		
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10 Assignment/Seminar + Attendance- 05 Total Marks -15	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE):	Laboratory / Field Skill Performance: On spot Assessment P. Performed the Task based on lab. work - 20 Marks Q. Spotting based on tools & technology (written) – 10 Marks R. Viva-voce (based on principle/technology) - 05 Marks	Managed by Course teacher as per lab. status

Name and Signature of Convener & Members of CBoS: