

Course Title: Aquatic Pollution and Management

Course Code AEM-505

Credit Hours: 2+1

Course Teacher: Dr. Tapas Paul

Lecture Plan

Theory

S.No.	Topics to be Covered	No. of classes
1.	Aquatic pollution: sources, types and impacts	1
2.	Pollution problems of groundwater resources: arsenic and fluoride	1
3.	Pollution problems of groundwater resources: nitrate and pesticides	1
4.	Sources of contamination and management issues	1
5.	Pollutants: sewage and pesticides	1
6.	Pollutants: hydrocarbons and nutrients	1
7.	Pollutants: metals and radioactive wastes	1
8.	Pollutants: biomedical wastes and hazardous chemicals	1
9.	Pollutants: microplastics and nanoparticles	1
10.	Dispersal and fate of pollutants	1
11.	Air pollution: smoke and smog	1
12.	Photochemical smog and suspended particulate matter (SPM)	1
13.	Soil pollution and its impacts on the aquatic environment	1
14.	Impact of air pollution on the aquatic environment	1
15.	Methods of waste disposal	1
16.	Water quality criteria: national and international standards	1
17.	ISO-14000 (Environmental Management System)	1
18.	Environmental Impact Assessment (EIA)	1
19.	Management strategies for aquatic pollution	1
20.	Emerging issues in the aquatic environment	1

21.	Wastewaters: their nutrient potentials	1
22.	Scope and limitations of wastewater use	1
23.	Wastewater treatment methods	1
24.	Recovery of nutrients from liquid wastes	1
25.	Recovery of nutrients from solid wastes	1
26.	Ecological sanitation and closing the loop	1
27.	Integrated water management	1
28.	Water conservation measures	1
29.	Water use and reuse in aquaculture	1
30.	Water use efficiency	1
31.	Restoration ecology	1
32.	Rehabilitation of aquatic ecosystems	1
Total		32

Practical

S.No.	Topics to be Covered	No. of classes
1.	Collection of flora and fauna of wetlands and degraded aquatic ecosystems	1
2.	Determination of total dissolved solids (TDS) in water	1
3.	Determination of total suspended solids (TSS) in water	1
4.	Determination of biochemical oxygen demand (BOD)	1
5.	Determination of chemical oxygen demand (COD)	1
6.	Determination of ammonia nitrogen (NH ₃ -N)	1
7.	Determination of nitrate nitrogen (Nitrate-N)	1
8.	Determination of nitrite nitrogen (Nitrite-N)	1
9.	Determination of phosphate phosphorus (Phosphate-P)	1
10.	Determination of metals in water	1

11.	Determination of pesticides in water	1
12.	Collection and preparation of water samples for pollution analysis	1
13.	Analysis and interpretation of water quality parameters related to aquatic pollution	1
14.	Study of wastewater characteristics and nutrient potential	1
15.	Visit to a sewage treatment plant	1
16.	Visit to a fish processing unit	1
Total		16