

CLASS WISE LECTURE OUTLINE
AQUACULTURE ECOSYSTEM MANAGEMENT AND CLIMATE CHANGE
AQC-603 (1+1) PhD

SI No.	TOPIC	No. of Lectures
THEORY		
Unit I: Aquaculture and Ecosystem Relationship		
1	Introduction: Ecosystems and productivity – types and functions	1
2	Biotic interaction within ecosystems and ecological homeostasis	1
3	Climate and weather elements of concern in aquaculture	1
4	Greenhouse gases, global warming and their impact on aquaculture	1
Unit II: Impact of Environment on Aquaculture		
5	Raw water source, physical and chemical characteristics of water	1
6	Contaminants and pollutants: Algae and pathogens – their effect on productivity	1
7	Heavy metals and pesticides and their effect on aquaculture productivity	1
Unit III: Impact of Aquaculture on Environment		
8	Waste water discharge: Its quality and quantity in aquaculture systems	1
9	Impacts of effluents on ecosystems	1
10	Chemical degradation of soil and water due to aquaculture activities	1
Unit IV: Environment Monitoring		
11	Problems and preventive measures of antibiotic and drug residues in aquaculture	1
12	Salinization of soil and water; Eutrophication	1
13	Environment Impact Assessment (EIA) and environmental audit in aquaculture	1
Unit V: Sensor Based Monitoring		
14	Biosensors in aquatic environment – types and application	1
15	Toxicity assessment in aquaculture systems	1
16	Eco-labeling and traceability in aquaculture products	1
17	Environment management strategies in aquaculture	1
Unit VI: Environment Threats		
18	Introduction of exotics and escape of farmed fish – risks and management	1

SI No.	TOPIC	No. of Lectures
19	Pathogens in aquatic environment and safety of aquaculture products	1
20	Role of microbes in aquatic environment	1
21	Assessment of probiotic impact in aquaculture	1
PRACTICAL		
Unit I: Water and Waste Water Analysis		
P1	Waste water analysis – collection, processing and parameter estimation	2
P2	Toxicity assessment studies in aquaculture effluents	2
Unit II: Eco-labelling and Traceability		
P3	Eco-labelling and traceability – concept, documentation and demonstration	2
Unit III: Nutrients and Soil Analysis		
P4	Isolation and nutrients budgeting in aquaculture pond systems	2
P5	Quantification and administration of solid and liquid doses in pond management	2
P6	Physical and chemical characteristics of soil – analysis and interpretation	2
Unit IV: Effluent Treatment and Carbon Budgeting		
P7	Design and construction of effluent treatment plant for aquaculture farms	2
P8	Carbon credit / budgeting – concept, calculation and documentation	2

Course Teacher: Dr. Abhiman