

COLLEGE OF FISHERIES, KISHANGANJ
BIHAR ANIMAL SCIENCES UNIVERSITY, PATNA

Lecture plan for course FGB 505 (Conservation of Fish Genetic Resources)

Credit – 3 (2+1)

Batch- 2025

Semester- 2nd

Sl. No.	Topic	Name of course teacher	No. of classes
THEORY			
1.	Fish genetic resources; Sample survey and distribution, threatened aquatic species of India and the world	Ms. Aishwarya Sharma	2
2.	Assessing threats to species and populations, Conflicts between nature conservation and other goals of society.	Ms. Aishwarya Sharma	1
3.	Evolutionary Genetics - Genetic diversity, Importance, influencing factors, Characterizing Genetic diversity, Evolution in large and small populations, Maintenance of genetic diversity.	Ms. Aishwarya Sharma	2
4.	Conservation and preservation of aquatic species; Effect of population size, Loss of genetic diversity in small population, Inbreeding.	Ms. Aishwarya Sharma	2
5.	Population fragmentation, Issues and strategies, Risk status/population viability analysis and classification, Breeding strategies of threatened species for restocking and live gene bank.	Ms. Aishwarya Sharma	3
6.	Taxonomy and related issues, DNA barcoding, Characterization and identification of stock.	Ms. Aishwarya Sharma	2
7.	Identification of farm escapees, Interaction between farmed and wild population.	Ms. Aishwarya Sharma	2
8.	Application of nanobiosensor for tracking of fish - Genomics in Conservation: Effect of climatic change on biodiversity.	Ms. Aishwarya Sharma	2
9.	Importance of mutation, Migration and their interaction with selection in conservation. Application of molecular genetic tools for management of small populations for conservation.	Dr. Sachin O. Khairnar	2
10.	Gene bank: Concepts, Objectives, Resources, Uses, Institutes and Societies associated with conservation.	Dr. Sachin O. Khairnar	1
11.	Impact of inbreeding on genetic diversity and conservation.	Dr. Sachin O. Khairnar	1
12.	Evolutionary potential and heritability; Genetics and management of wild and captive populations, Introduction, domestication and acclimatization.	Dr. Sachin O. Khairnar	2
13.	Genetic management for reintroduction; In situ and ex-situ conservation.	Dr. Sachin O. Khairnar	1
14.	Gene pool concept - Primary, Secondary and Tertiary gene pool, and Gene introgression.	Dr. Sachin O. Khairnar	2
15.	Cryopreservation of sperm, Eggs and embryos.	Dr. Sachin O. Khairnar	1
16.	Effective population size and population structure; Factors threatening indigenous species. IPR issues of genetic resources.	Dr. Sachin O. Khairnar	2
17.	Regulations regarding introduction of exotic germplasm; export-import rules and regulations on conservation of aquatic genetic resources	Dr. Sachin O. Khairnar	2
18.	Fish quarantine – status, procedures, scope and significance – Convention on Biodiversity and National Biodiversity Authority of India	Dr. Sachin O. Khairnar	2
Total number of classes (Theory)			32

PRACTICAL			
1	Tagging methods for population	Dr. Sachin O. Khairnar	2
2	Estimation of gene and genotypic frequencies	Dr. Sachin O. Khairnar	2
3	Estimation of genetic diversity and relatedness using morphometric and molecular information	Dr. Sachin O. Khairnar	2
4	Application of molecular genetic markers for estimation of effective population size	Dr. Sachin O. Khairnar	2
5	Rate of inbreeding and genetic bottleneck	Ms. Aishwarya Sharma	2
6	Analysis of genetic variance in population	Ms. Aishwarya Sharma	2
7	Morphometric analysis of stocks	Ms. Aishwarya Sharma	2
8	Studies on Domestic and international quarantine process; its weaknesses and measures for its strengthening	Ms. Aishwarya Sharma	2
9	Case studies on rescue and release of animals.	Dr. Sachin O. Khairnar	1
Total number of classes (Practical)			17
Total number of classes (Theory+ Practical)			49




(Dr. S. O. Khairnar & Ms. Aishwarya Sharma)

