

DEPARTMENT OF ANIMAL GENETICS AND BREEDING
Shourabh College of Veterinary Science,
 Kheda, Hindaun City, Karauli

LECTURE SCHEDULE – THEORY AND PRACTICAL
B.V.Sc. & A.H. – 2nd Year

ANIMAL GENETICS AND BREEDING

Credit Hours : (3 +1)

w.e.f. 14/10/2024

Lecture Duration: One hour

Teacher's name: Dr. Babita Kumari and Dr. Suman

UNIT -1
(BIOSTATISTICS AND COMPUTER APPLICATION)

S.No.	Date	Topics
1.	18/10/2024	Introduction and Importance of statistics and biostatistics:Elementry statistical definition.
2.	19/10/2024	Introduction and Importance of statistics and biostatistics:Elementry statistical definition.
3.	24/10/2024	Classification and Tabulation of Data, Parameter, Statistic and Observation
4.	7/11/2024	Classification and Tabulation of Data, Parameter, Statistic and Observation
5.	8/11/2024	Graphical (Histogram, Frequency polygon, Ogive) and diagrammatic (Bar diagram, Pie diagram) representation of data
6.	9/11/2024	Graphical (Histogram, Frequency polygon, Ogive) and diagrammatic (Bar diagram, Pie diagram) representation of data
7.	14/11/2024	Measure of central tendency (simple and grouped data) Concept: Mean, Median, Mode, Weighted mean, Geometric mean, Harmonic mean
8.	16/11/2024	Measure of central tendency (simple and grouped data) Concept: Mean, Median, Mode, Weighted mean, Geometric mean, Harmonic mean
9.	21/11/2024	Measure of dispersion (Simple and grouped data) Concept: Range, Inter quartile range, Mean deviation
10.	22/11/2024	Measure of dispersion (Simple and grouped data) Concept: Range, Inter quartile range, Mean deviation
11.	23/11/2024	Standard deviation, Variance, Standard Error, Coefficient of Variance
12.	28/11/2024	Standard deviation, Variance, Standard Error, Coefficient of Variance
13.	29/11/2024	Elements of Probability: definition and its laws
14.	30/11/2024	Probability distribution: Binomial, Poisson, Normal
15.	5/12/2024	Moments, Skewness, Kurtosis
16.	6/12/2024	Correlation: Introduction, Concept, types, Properties and its uses. Rank Correlation
17.	7/12/2024	Regression: Introduction, Concept, Properties and its uses

18.	12/12/2024	Introduction to sample methods: Simple Random Sampling (SRS), Stratified sampling, Systematic sampling, Cluster sampling, etc.
19.	13/12/2024	Testing of hypothesis: Simple and composite hypothesis, Null hypothesis, types of error, one tailed and two tailed, test, confidence interval, Power test
20.	14/12/2024	Testing of hypothesis: Simple and composite hypothesis, Null hypothesis, types of error, one tailed and two tailed, test, confidence interval, Power test
21.	19/12/2024	Test of hypothesis: t-test for single mean, difference of mean and paired t-test, testing of correlation coefficient
22.	20/12/2024	Test of hypothesis: t-test for single mean, difference of mean and paired t-test, testing of correlation coefficient
23.	21/12/2024	Z-test, Chi-Square test for goodness of fit and test of attributes
24.	26/12/2024	Analysis of variance: One way classification
25.	27/12/2024	Analysis of variance: One way classification
26.	28/12/2024	Analysis of variance: Two way classification
27.	2/1/2025	Analysis of variance: Two way classification
28.	3/1/2025	Design of Experiments: Concept and Principles (Replication, Randomization, Local control)
29.	4/1/2025	Complete Randomized Design (CRD)
30.	9/1/2025	Randomized Block Design (RBD), F-TEST OF Significance
31.	10/1/2025	Randomized Block Design (RBD), F-TEST OF Significance
32.	11/1/2025	Introduction to Non-parametric tests (Rank test, Median, Mann-Whitney)
33.	16/1/2025	Introduction to Non-parametric tests (Rank test, Median, Mann-Whitney)
34.	17/1/2025	Introduction to Non-parametric tests (Rank test, Median, Mann-Whitney)
35.	18/1/2025	Computer Application: Introduction to Computer languages
36.	23/1/2025	Data Base Management
37.	24/1/2025	Review of MS-Office and its components (MS-Word, Excel, Power Point and Access)
38.	25/1/2025	Review of MS-Office and its components (MS-Word, Excel, Power Point and Access)
39.	1/2/2025	Analysis of data using MS-Excel
40.	6/2/2025	Concept of computer networks, Internet and e-mail
41.	7/2/2025	Concept of computer networks, Internet and e-mail

UNIT -2
(PRINCIPLES OF ANIMAL AND POPULATION GENETICS)

42.	8/2/2025	History of Genetics
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43.	13/2/2025	History of Genetics
44.	19/2/2025	Mitosis v/s Meiosis
45.	15/2/2025	Chromosome numbers and types in livestock and poultry
46.	20/2/2025	Overview of Mendelian principles
47.	21/2/2025	Overview of Mendelian principles
48.	22/2/2025	Modified Mendelian inheritance
49.	27/2/2025	Pleiotropy, Penetrance and expressivity
50.	28/2/2025	Multiple alleles
51.	1/3/2025	Lethals
52.	6/3/2025	Sex-linked inheritance
53.	7/3/2025	Sex limited inheritance and sex influenced inheritance
54.	8/3/2025	Sex determination
55.	20/3/2025	Linkage and construction of linkage map
56.	21/3/2025	Crossing over
57.	22/3/2025	Mutation
58.	27/3/2025	Cytogenetics
59.	28/3/2025	Chromosomal aberrations
60.	29/3/2025	Extra-chromosomal inheritance
61.	3/4/2025	Gene concept, Molecular genetics
62.	4/4/2025	Nucleic acids - structure and function
63.	5/4/2025	DNA and its replication
64.	11/4/2025	RNA and its types
65.	12/4/2025	Protein synthesis and gene expression
66.	17/4/2025	Introduction to molecular techniques
67.	19/4/2025	Introduction to population genetics
68.	24/4/2025	Individual v/s population
69.	25/4/2025	Genetic structure of population: Gene and genotypic frequency
70.	26/4/2025	Hardy-Weinberg law and its application
71.	3/5/2025	Forces changing gene and genotypic frequencies (e.g., Selection and drift)
72.	8/5/2025	Quantitative v/s qualitative genetics
73.	1/5/2025	Forces changing gene and genotypic frequencies (e.g., Mutation, migration)
74.	2/5/2025	Forces changing gene and genotypic frequencies (e.g., Mutation, migration)
75.	9/5/2025	Concept of average effect and breeding value
76.	10/5/2025	Concept of average effect and breeding value
77.	15/5/2025	Components of Variance
78.	16/5/2025	Concept of correlation and interaction between Genotype and Environment
79.	17/5/2025	Genetic and Phenotypic Correlations
80.	22/5/2025	Heritability
81.	23/5/2025	Repeatability

UNIT -3
(Principles of animal breeding)

82.	24/5/2025	History of Animal Breeding
83.	29/5/2025	Classification of breeds
84.	30/5/2025	Classification of breeds
85.	31/5/2025	Classification of breeds
86.	5/6/2025	Economic characters of cattle, buffalo, sheep, goat and their importance
87.	6/6/2025	Economic characters of pig, poultry and their importance
88.	12/6/2025	Selection, types of selection
89.	13/6/2025	Selection, types of selection
90.	14/6/2025	response to selection and factors affecting it
91.	19/6/2025	Bases of selection: individual, pedigree
92.	20/6/2025	Bases of selection: family, sib,
93.	21/6/2025	Bases of selection: progeny and combined, indirect selection
94.	26/6/2025	Method of selection, Single and Multi trait
95.	27/6/2025	Classification of mating systems
96.	28/6/2025	Classification of mating systems
97.	3/7/2025	Inbreeding coefficient
98.	4/7/2025	Coefficient of relationship
99.	5/7/2025	Genetic and phenotypic consequences of inbreeding, inbreeding depression, application of inbreeding
100.	10/7/2025	Out breeding and its different forms
101.	11/7/2025	Genetic and phenotypic consequences of outbreeding, application of outbreeding,
102.	12/7/2025	Heterosis
103.	17/7/2025	Systems of utilization of heterosis; Selection for combining ability (RS and RRS)
104.	18/7/2025	Breeding strategies for the improvement of dairy cattle and buffalo
105.	19/7/2025	Breeding strategies for the improvement of sheep, goat, swine and poultry
106.	24/7/2025	Sire evaluation
107.	25/7/2025	Open nucleus breeding system (ONBS)
108.	26/7/2025	Development of new breeds or strains
109.	31/7/2025	Current livestock and poultry breeding policies and programmes in the state and country
110.	1/8/2025	Methods of conservation- livestock and poultry conservation programmes in the state and country
111.	2/8/2025	Application of reproductive and biotechnological tools for genetic improvement of livestock and poultry
112.	7/8/2025	Breeding for disease resistance
113.	8/8/2025	Classification of dog and cat breeds
114.	14/8/2025	Pedigree sheet, selection of breeds and major breed traits
115.	21/8/2025	Breeding management of dogs and cats
116.	22/8/2025	Common pet birds seen in India and their breeding management
117.	23/8/2025	Population dynamics and effective population size of wild animals in captivity or zoo or natural habitats

118.	28/8/2025	Planned breeding of wild animals
119.	29/8/2025	Controlled breeding and assisted reproduction
120.	30/8/2025	Breeding for conservation of wild animals

PRACTICAL SCHEDULE

UNIT -1 **BIOSTATISTICS AND COMPUTER APPLICATION**

S.No	Date	Topics
1.	A-22/10/2024 B-16/10/2024 C-21/10/2024	Collection, compilation and tabulation of data
2.	A-22/10/2024 B-16/10/2024 C-21/10/2024	Graphical and diagrammatical representation of data.
3.	A-29/10/2024 B-23/10/2024 C-28/10/2024	Estimation of measured of Central Tendency for simple and grouped data :Mean, Median, Mode
4.	A-5/11/2024 B -30/10/2024 C-4/11/2024	Estimation of measured of Central Tendency for simple and grouped data :Mean, Median, Mode
5.	A-12/11/2024 B-6/11/2024 C-11/11/2024	Estimation of measured of dispersion for simple and grouped data Range, mean deviation, Standard deviation, Standard error, Variance, Coefficient of Variance
6.	A-19/11/2024 B-13/11/2024 C-18/11/2024	Estimation of measured of dispersion for simple and grouped data Range, mean deviation, Standard deviation, Standard error, Variance, Coefficient of Variance
7.	A-26/11/2024 B-20/11/2024 C-25/11/2024	Estimation of correlation and regression.
8.	A-3/12/2024 B-27/11/2024 C-2/12/2024	Simple Probability problems
9.	A-10/12/2024 B-4/12/2024 C-9/12/2024	Normal Distribution. Test of significance: 2-test
10.	A-17/12/2024 B-11/12/2024 C-16/12/2024	Normal Distribution. Test of significance: 2-test
11.	A-24/12/2024 B-18/12/2024 C-23/12/2024	Test of significance student t-test for single mean, differerice of mean and paired t-test
12.	A-31/12/2024 B-1/1/2025 C-30/12/2024	Test of significance: Chi-Square test
13.	A-7/1/2025 B-8/1/2025	Test of significance: Chi-Square test

	C-30/12/2024	
14.	A-21/1/2025 B-15/1/2025 C-13/1/2025	Test of significance: F-test
15.	A-28/1/2025 B-22/1/2025 C-20/1/2025	Completely Randomized Design (C.R.D.)
16.	A-4/2/2025 B-29/1/2025 C-27/1/2025	Completely Randomized Design (C.R.D.)
17.	A-11/2/2025 B-5/2/2025 C-3/2/2025	Randomized Block Design (R.B.D.)
18.	A-18/2/2025 B-12/2/2025 C-10/2/2025	Randomized Block Design (R.B.D.)
19.	A-25/2/2025 B-19/2/2025 C-17/2/2025	Computer Basics and components of computer, Simple operations, entry of biological data
20.	A-4/3/2025 B-5/3/2025 C-24/2/2025	Internet and e-mail. Entering and saving biological data through MS-Office, MS-Excel.
21.	A-11/3/2025 B-12/3/2025 C-3/3/2025	Internet and e-mail. Entering and saving biological data through MS-Office, MS-Excel.

UNIT -2
PRINCIPLES OF ANIMAL AND POPULATION GENETICS

22.	A-18/3/2025 B-19/3/2025 C-10/3/2025	Monohybrid cross ratio & its modifications
23.	A-25/3/2025 B-26/3/2025 C-17/3/2025	Diybrid cross ratio & its modifications
24.	A-1/4/2025 B-2/4/2025 C-24/3/2025	Problems based on Multiple alleles & Sex linked inheritance
25.	A-8/4/2025 B-9/4/2025 C-7/4/2025	Problems based on Linkage and crossing over
26.	A-15/4/2025 B-6/4/2025 C-21/4/2025	Demonstration of Karyotyping in farm animals
27.	A-22/4/2025 B-23/4/2025 C-28/4/2025	Calculation of gene and genotypic frequencies
28.	A-29/4/2025	Testing a population for Hardy-Weinberg equilibrium

	B-30/4/2025 C-5/5/2025	
29.	A-6/5/2025 B-7/5/2025 C-12/5/2025	Calculation of effects of various forces that change gene frequencies
30.	A-13/5/2025 B-14/5/2025 C-19/5/2025	Computation of population mean, average effect of gene and gene substitution
31.	A-20/5/2025 B-21/5/2025 C-26/5/2025	Computation of breeding value
32.	A-27/5/2025 B-28/5/2025 C-2/6/2025	Estimation of repeatability
33.	A-3/6/2025 B-4/6/2025 C-9/6/2025	Estimation of heritability (Half-sib correlation method)
34.	A-10/6/2025 B-11/6/2025 C-16/6/2025	Estimation of heritability (ISRDR)
35.	A-17/6/2025 B-18/6/2025 C-23/6/2025	Estimation of genetic and phenotypic correlations

UNIT -3
PRINCIPLES OF ANIMAL BREEDING

36.	A-24/6/2025 B-25/6/2025 C-30/6/2025	Computation of selection differential and intensity of selection, Generation interval, expected genetic gain
37.	A-1/7/2025 B-2/7/2025 C-7/7/2025	Computation of correlated response, EPA
38.	A-8/7/2025 B-9/7/2025 C-14/7/2025	Computation of Most probable producing ability (MPPA)
39.	A-15/7/2025 B-16/7/2025 C-21/7/2025	Estimation of inbreeding coefficient
40.	A-22/7/2025 B-23/7/2025 C-28/7/2025	Estimation of relationship coefficient
41.	A-29/7/2025 B-30/7/2025 C-4/8/2025	Estimation of heterosis
42.	A-5/8/2025 B-6/8/2025 C-11/8/2025	Computation of sire indices

