Course Code : ANB 221

Course Title: Animal Breeding and Biotechnology

Credit Hours : 2(2+0) Full Marks: 50 Theory: 50 Practical: 0

Objective

Upon completion of this course, students will be able to understand basic principle and fundamentals of molecular genetics to understand basic principles and fundamentals of biotechnology for genetic improvement of livestock and to understand application of biotechnology in animal breeding.

Syllabus

Fundamental concepts of biotechnology- isolation and detection of DNA and RNA, PCR, cloning of gene and expression of protein. Production of transgenic animals. Applications of biotechnology in animal reproduction.

Course Breakdown

Theory

S.N.	Topic	No. of Lectures
1.	Introduction of basic molecular biology	1
2.	Isolation of DNA and RNA, radiolabelling of nucleic acids	2
3.	Nucleic acid hybridization, Gel electrophoresis.	2
4.	DNA sequencing	1
5.	Restriction enzymes, DNA modifying enzymes and DNA ligase	2
6.	Host cell types, plasmid, bacteriophage and other vectors.	2
7.	Cloning strategies: cloning from mRNA, genomic DNA	2
8.	Expression of cloned genes	1
9.	The polymerase chain reaction	1
10.	Selection screening and analysis of recombinants	1
11.	Analysis of gene structure and function, making proteins	1
12.	Transformation of genes	1
13.	Molecular breeding approaches in domestic animals	2
14.	Recent advances in AI, ET, NT.	2
15.	Transgenic animal production and its role in genetic improvement	2
16.	Genetic principle of disease resistance and gene therapy	2
17.	Animal biotechnology in Nepal	3
18.	Genetic progress achieved through biotechnological approaches	2
	Total	**30**

References

Lasley, J.F. 1987. Genetics of Livestock Improvements. Prentice-Hall, Inc Engle wood Cliffs, N.J.2

Purohit, S.S. and S.K. Mathur. 1990. Biotechnology, Fundamentals and Applications. Agro Botanica Pub & Dis Delhi. India.

Warwick, E.J. and J.E. Legates. 1979. Breeding and Improvements of Farm Animals (7th edition). McGraw-Hill Book Company, New York.

Klug, W.S, M.R. Cummings, C.A. Spencer and M.A. Palladiono. 2016. Concepts of Genetics, 11th edition. Pearson Education, England.

Snustad, D.P. and M.J. Simmons. 2012. Principles of Genetics. 6th edition. John Wiley and Sons Inc., USA.