

VPB 321 – ANIMAL BIOTECHNOLOGY 2 + 1
(Lecture Plan)

L.No.	Topic
1.	<ul style="list-style-type: none"> • Definition of Biotechnology • Branches of Biotechnology
2.	<ul style="list-style-type: none"> • Basic concepts of Biotechnology • Scope of Animal biotechnology
3.	<ul style="list-style-type: none"> • Differences between Prokaryotes and Eukaryotes • Molecules in a cell • Subcellular organelles in Prokaryotes and Eukaryote • Macromolecules and Complex macromolecules • Polysaccharides, Lipids, Proteins & Nucleic acids • Glycoproteins, Lipoproteins and Glycolipids
4,	<ul style="list-style-type: none"> • Composition of Nucleic acid • Purines and Pyrimidines • Structure of Purines and Pyrimidines • Base pairing between nitrogenous bases
5.	<ul style="list-style-type: none"> • Structure of DNA and RNA • DNA replication • Transcription
6.	<ul style="list-style-type: none"> • Translation
7.	<ul style="list-style-type: none"> • Recombinant DNA technology / Gene cloning • Steps in recombinant DNA technology / Gene cloning
8.	<ul style="list-style-type: none"> • rDNA / Gene cloning vectors
9.	<ul style="list-style-type: none"> • Recombinant Gene expression Vectors
10..	<ul style="list-style-type: none"> • Transformation • Transfection
11.	<ul style="list-style-type: none"> • Polymerase Chain Reaction • Definition • Principles • Steps • Applications
12.	<ul style="list-style-type: none"> • Genomic library • Steps in construction of genomic library
13.	<ul style="list-style-type: none"> • cDNA library • Steps in construction of cDNA library
14.	<ul style="list-style-type: none"> • DNA sequencing • Methods of DNA sequencing
15.	<ul style="list-style-type: none"> • Principles of transfer of nucleic acid and proteins • Southern blotting
16.	<ul style="list-style-type: none"> • Western blotting • Northern blotting
17.	<ul style="list-style-type: none"> • DNA probes • Types of DNA probes • DNA hybridization

18.	<ul style="list-style-type: none"> • DNA finger printing
19.	<ul style="list-style-type: none"> • In vivo and In vitro embryo production • Cryopreservation of embryos
20.	<ul style="list-style-type: none"> • Sexing of embryos using molecular techniques • Micromanipulation of embryos • Cloning
21.	<ul style="list-style-type: none"> • Production of transgenic animals • Biopharming
22.	<ul style="list-style-type: none"> • Genome mapping • Genome sequencing
23.	<ul style="list-style-type: none"> • Marker assisted selection • Gene banking
24.	<ul style="list-style-type: none"> • Nutritional biotechnology • Bioconversion of lignocellulose
25.	<ul style="list-style-type: none"> • Genetic manipulation of microbes for improved feed utilization and health
26.	<ul style="list-style-type: none"> • Cell culture and Cell lines – Definition • Commonly used cell lines • Applications of cell culture techniques
27.	<ul style="list-style-type: none"> • Tumor markers • Acute phase proteins
28.	<ul style="list-style-type: none"> • Applications of PCR and DNA probes in disease diagnosis
29.	<ul style="list-style-type: none"> • Monoclonal antibody production • Definition • Steps in Monoclonal antibody production • Applications of monoclonal antibodies
30.	<ul style="list-style-type: none"> • Subunit vaccines • Recombinant vaccines • Recombinant vectored vaccines
31.	<ul style="list-style-type: none"> • Fermentation techniques – Definition • Upstream and Down stream processes in fermentaion • Types of fermenters • Application of fermentation techniques
32.	<ul style="list-style-type: none"> • Fermentation process for milk • Fermentation process for meat • Fermentation process for leather
33.	<ul style="list-style-type: none"> • Ehtics and regulatory issues in Biotechnology
34.	<ul style="list-style-type: none"> • Intellectual property rights
35.	<ul style="list-style-type: none"> • Bioinformatics