5.	To sterilize explants with different sterilizing agents
6.	Establishment of cultures from shoot tips of plant
7.	Clonal propagation of plant by induction of adventitious buds.
8.	To isolate and inoculate anthers for haploid production
9.	Demonstration of somatic embryogenesis in plant.
10.	To induce callus from an explant

Books:

S.No.	Name of Book/Author/Publisher
1.	Introduction to Plant Biotechnology by H. S. Chawla Publisher: Oxford and IBH Publishing
2.	An Introduction to Plant Tissue Culture by M.K. Razdan. Publisher: Oxford and IBH Publishing
3.	Gene Cloning and DNA Analysis by T A Brown. Blackwell Publishing

ANIMAL BIOTECHNOLOGY (Department core course-14)

Details of course:-

Course Title	**Course Structure**			**Pre-Requisite**
	L	T	P	
Animal Biotechnology (BT 304)	3	0	2	Nil

Course Objective: To impart the knowledge of the most recent techniques used in animal biotechnology and their application to animal husbandry and biomedical field

Course Outcomes:	
1	Enlist basic principles of animal cell culture.
2	Define animal diseases and outline the therapy and variation of diseases.
3	Assess the intricacies of stem cells
4	Describe the basic principle behind transgenic, knock in and knock out animal.
5	Identify monoclonal antibodies.

S. No.	**Content**	**Contact Hours**

Unit 1	Animal cell culture, basic principles, serum free and serum based media, scaling-up, characterization and preservation of cell lines, cytotoxicity and viability assays	10
Unit 2	Animal diseases, diagnosis, therapy, variations of diseases, modes of transmission of diseases, control and management of disease spreading	8
Unit 3	Stem cells, micromanipulation of embryos, generation of modified stem cells.	7
Unit 4	Transgenic animals, retroviruses and DNA microinjection method, knock in and knock out animals.	10
Unit 5	Monoclonal antibody and hybridoma technology, application of mAb in diagnostics and therapeutics, vaccinology	10
	Total	45

Practicals:

1. Trypan blue dye exclusion assay for cell viability.
2. Different steps in the development of primary cell culture.
3. Animal cell culture techniques
4. Handling of differentiated and cancer cell lines.
5. Transfection of plasmid DNA to cell lines.
6. Cell proliferation assays.
7. Diagnostics of animal-based diseases

Books:

S.No.	Name of Book/Author/Publisher
1.	Gene cloning & DNA Analysis: An introduction by T A Brown, Fourth edition
2.	**Animal Cell Biotechnology, Methods and Protocols** Publisher: Humana Press
3.	Pinkart, C.A., "Transgenic Animal Technology", Academic Press Inc.
4.	Sasidhara, R., "Animal Biotechnology", MJP Publishers