

SARDAR PATEL UNIVERSITY
Programme: MSc (Genetics)
Semester: IV
Syllabus with effect from: June 2010

Paper Code: PS04CGEN01	Total Credits: 4
Title Of Paper: Animal Genetics	

Unit	Description in detail	Weightage (%)
1	Animal Cytogenetics: Principles and techniques of cytogenetics applied to animals system, Blood and fibroblast culturing and harvesting, Karyotyping, Chromosome banding, Cytogenetic mapping and Comparative cytogenetics. Numerical and structural anomalies in domestic animals	25 %
2	Genetics and Animal Breeding: Principles of quantitative genetics applied to improvement of livestock and poultry Artificial animal breeding, Artificial insemination and Germ cell storage. In vitro fertilization and embryo transfer for improved breeding, embryo splitting , embryo sexing and embryo cloning, Techniques of nuclear transplantation Selective animal breeding- pure breeding and cross breeding, Progeny testing Diagnostics for selected genetic diseases (BLAD, Citrullinaemia, Factor XI deficiency syndrome and DUMPS), Percentage verification.	25 %
3	Transgenic Animal Technology, Vaccine Development: The concept of transgene and transgenics Techniques for producing transgenics and somatotransgenic animals (Localized in vitro gene transfer techniques), Production of transgenic cattle by pronuclear injection- Biological, physical and chemical methods ,GFP expression in mouse embryo, Uses of vaccine, Production of vaccine (Killed vaccine, Live vaccine, Genetic vaccine and Sub-unit vaccine), Vaccine expression system	25 %
4	Improvement of Livestock: Gene transfer technique Gene transfer through direct DNA micro injection Gene transfer with Retro viral vector assistance Gene transfer through production of germ line chimeras Breeding with transgenic livestock Applications of transgenic animals – Organ transplant and pharmaceutical proteins.	25 %

Basic Text & Reference Books:

- Animal Biotechnology by M M Ranga, Agrobios, Jodhpur. ISBN- 81-7754-309-1.
- Animal Biotechnology: recent concepts and developments by P Ramadas, MJP Publishers, Chennai. ISBN: 81-8094-042-X.
- Genetics of Livestock improvement by John F. Lasley, Prentice-Hall of India Priv.Ltd. New Delhi. ISBN: 9780133511062.
- Principles and methods of Animal breeding by R B Kelly, Agrobios (India), Jodhpur. ISBN: 8190906526.
- Elements of Breeding and breeds of cattle and Buffalo- P Kanakraj, Jaypee Brothers Medical, ISBN: 978-8180618420.

