

SARDAR PATEL UNIVERSITY
Programme: BSC (GENETICS)
Semester: V
Syllabus with effect from: June 2013

Paper Code: US05CGEN04	Total Credit: 3
Title Of Paper: Plant Biotechnology	

Unit	Description in detail	Weighting (%)
1	PLANT CELL AND TISSUE CULTURE - 1 Definition, Principle and Applications of plant tissue culture, Culture Requirements [A Tissue Culture Laboratory, Nutrient Media, Sterilization techniques], Culture of explants: callus induction, morphogenesis and organogenesis, Somatic embryogenesis, Synthetic seed, Embryo culture, Cell suspension cultures and Secondary metabolite production.	
2	PLANT CELL AND TISSUE CULTURE-2 Micropropagation, Haploid production, Protoplast culture [Isolation, Purification and Regeneration of protoplast, Somatic hybridization: Protoplast fusion methods, Selection and production of somatic hybrids, Cybrids, Use of somatic hybrids, Somaclonal variation	
3	GENETIC TRANSFORMATION Transformation: Vector mediated gene transfer: Ti and Ri plasmid and Agro infection, Vector less gene transfer: Physical and chemical methods, Scorable and selectable gene markers [opine synthase, CAT, GUS, GFP, EPSP, NPT-II, hpt.]	
4	GENETIC ENGINEERING OF PLANTS Development of transgenic plants for crop improvement: Transgenics with biotic and abiotic stress resistance, herbicide resistance, improved quality, Molecular Pharming / Farming or Transgenic plants as bioreactors, edible vaccines, Genetically engineered Male sterility (Barnase / Barstar system)	

Basic Text & Reference Books:

- A Textbook of Biotechnology - R.C. Dubey, S. Chand & Company Ltd.,
- Elements of Biotechnology- P. K. Gupta. 1st Ed, Rastogi Publication
- Introduction to Plant Biotechnology -H.S. Chawala, Oxford &IBH Publishing Pvt. Ltd.
- Biotechnology - U. Satyanarayana, Books & Allied Publishers.
- Cell biology ,Genetics, Molecular biology, Evolution & Ecology-Verma and Agrawal, S. Chand & Company Ltd
- Plant tissue culture - Theory & Practice -S.S. Bhojwani and M.K. Razdan ,Elsevier Science
- An introduction to Plant Tissue Culture - M. K. Razdan, Oxford &IBH Publishing Pvt. Ltd.
- Plant tissue Culture: Techniques &Experiments- Roberta H. Smith, Academic press.

