

**SARDAR PATEL UNIVERSITY**  
**Programme: BSC (BOTANY)**  
**Semester: VI**  
**Syllabus with effect from: November 2013**

<b>Paper Code:</b> US06CBOT05	<b>Total Credit: 3</b>
<b>Title Of Paper:</b> Plant Biotechnology	

Unit	Description in detail	Weighting (%)
<b>1</b>	Plant tissue culture. Historical perspective, composition of media, nutrient and hormone requirement, totipotency, organization, physio-chemical condition for propagation of plant cells and tissues, somatic embryogenesis, protoplast isolation culture and fusion, cybrids, micropropagation, tissue culture applications.	
<b>2</b>	Tools and techniques of genetic engineering: - restriction endonucleases (history, types and role), gel electrophoresis, PCR, restriction mapping, sequencing (Sanger's method), northern and western blotting, construction of genomic library, DNA finger printing (RAPD, RFLP), FISH.	
<b>3</b>	Plant transformation technology. Obtaining gene of interest by different methods, gene constructs, gene transfer-prokaryotic and eukaryotic vectors, agrobacterium-mediated transformation, direct gene transfer methods-electroporation, microinjection, and gene gun, selection of transgenics-marker and reporter genes	
<b>4</b>	Role of biotechnology in agriculture and environment – pest resistant plants (Bt-cotton) herbicide resistance, disease and stress resistant plant, transgenic plants with improved quality traits (flavr-savr tomatoes, golden rice). Role of biotechnology in industry – role of transgenics in degradation of pollutants (super bugs) leaching out of minerals, application of plant biotechnology for production of oil, industrial enzymes, edible vaccines & planti-bodies.	

**Basic Text & Reference Books:**

- Bhojwani S.S and Razdan 2004. Plant Tissue culture and practice.
- Sambrook and Russel Molecular cloning - A laboratory manual (3<sup>rd</sup> edition).
- Smith.R. 2000 Plant tissue culture:techniques and experiment,2<sup>nd</sup> edition; Academic
- Slater,A , Scott.N.W ;Fowler M.R. 2008 plant biotechnology. The genetic manipulation
- Raven P.H,Johnson G.B,Losos J.B and singer S.R. 2005. Biology tata MC Graw hill)
- Chrispel.M.J and Sadava D.E. 1994 plant, genes and agriculture Jones &Barlett publishers.

