

School:		Program:		Semester:
Course Title:		<u>Cell Culture Lab</u>		
Course Code:		<u>BTP 6176</u>		
Course Coordinator:		<u>Prof. Sharda Potukuchi and Dr. Vinod Singh</u>		
L-T-P:		Credits: 0-0-3		
Evaluation Scheme (Total Marks 100)				
Lab Exam (40 Marks)		Lab Record	Viva-Voice	Total
Written	Lab- Performance	30 Marks	30 Marks	100 Marks
WEEKS		DETAILS OF EXPERIMENTS TO BE PERFORMED		
Week1		Study morphology of flowering plants		
Week 2		Acquaintance to aseptic technique and cell culture laboratory equipment		
Week 3		Study Sterilization methods, preparation of glassware and cotton plugs		
Week 4		Preparation of different cell culture media		
Week 5		Study the process of in vitro seed germination		
Week 6		Study in vitro shoot regeneration by using shoot tip explants		
Week 7		Study the process of callus induction using various explants		
Week 8		Study the process of preparation of synthetic seeds		
Week 9		Identification, analysis of various culture morphology, preparation of sections and observations under a microscope		
Week10		Study process of haploid cultures by inoculation of anthers as explants		
Week 11		Study establishment of primary cell culture		
Week12		Study maintenance and sub culturing of cultured cells, cell counting, cell viability testing, cryopreservation and thawing of cells		
Week13		Study measurement of cell growth, detection of apoptosis and cell cloning in microtitration plates		
Week 14		Study measurement of cell growth, detection of apoptosis and cell cloning in microtitration plates		
Week 15		Extraction of plant secondary metabolites, qualitative and quantitative analysis by TLC and demonstration by HPLC		

Week16	Extraction of plant secondary metabolites, qualitative and quantitative analysis by TLC and demonstration by HPLC
Week 17	Lab Exam

Course Outcomes:

CO1: Prepare media, glassware and reagents for cell culture.

CO2: Learn the concept, scope, instrumentation, basic requirements for cell culture.

Recommended Books:

- 1. Culture of Animal cells, 8th Edition, R Ian Freshney, Wiley-Blackwell Publications.**
- 2. Plant Tissue Culture: Theory and Practice, Revised Edition, SS Bhojwani & MK Razdan, Elsevier Science Publishers, 2014.**
- 3. Experiments in Plant Tissue Culture, 3rd Edition, John H Dodds and LW Roberts, Cambridge University Publishers.**
- 4. Methods in Plant Tissue Culture, Kumar A, Agribios Publishers.**
- 5. Plant Cell and Tissue Culture, IK Vasil & TA Thorpe, ISBN-07923-24934.**

Signature of Course Coordinator: