



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
(Autonomous Institution, Affiliated to Anna University, Chennai)
Elayampalayam, Tiruchengode – 637 205
DEPARTMENT OF BIOTECHNOLOGY



Course Code / Name : U15BT514 - PLANT BIOTECHNOLOGY

Class (Year / Programme / Department / Section): III/B.TECH/BT

UNIT I - PLANT TISSUE CULTURE TECHNIQUES				
S.No	Topics To Be Covered	Duration in Minutes	Teaching Aid	Books Referred
1.	Amino acids as the building blocks of proteins	45	BB	T1,R2
2.	Amino acid Name, single & triple letter codes for each	45	BB	T3
3.	properties of amino acids	45	PPT	T2
4.	Different bonds in protein formation Introduction	45	BB	T1,T1
5.	Covalent, Ionic,	45	BB	R1
6.	Hydrogen, Coordinate.	45	PPT	R2
7.	hydrophobic	45	BB	R2
8.	Vanderwals interactions.	45	PPT	T1
UNIT-II- PROTEIN ARCHITECTURE				
S.No	Topics To Be Covered	Duration in Minutes	Teaching Aid	Books Referred
9.	Primary structure	45	BB	T1,R3
10.	Secondary structure Alpha helix	45	PPT	R1,T1
11.	Secondary structure β sheets	45	BB	T1,T3
12.	Super-secondary structure	45	PPT	R2
13.	Tertiary structure Alpha domains	45	BB	T1
14.	Tertiary structure β domains	45	PPT	R1.T1

15.	Tertiary structure Alpha β domains	45	BB	R1,R2
16.	Quaternary structure	45	PPT	T1,R2
17.	Ramachandran plot	45	BB	T2,T3
18.	Over view of Protein structures	45	PPT	T1.R1

UNIT-III-DNA BINDING PROTEINS

S.No	Topics To Be Covered	Duration in Minutes	Teaching Aid	Books Referred
19.	DNA-binding proteins	45	PPT	T1,R2
20.	prokaryotic transcription factors, Helix-turn-Helix motif in DNA binding	45	BB	T2,R1,T1
21.	Trp repressor, Eukaryotic transcription factors	45	BB	T1,T3,R1
22.	Zn fingers, helix-turn helix motifs in homeodomain	45	BB	R1,R2
23.	Leucine zippers	45	BB	T1.T2.R1
24.	Membrane proteins: General characteristics	45	BB	R1
25.	Transmembrane segments, prediction, bacteriorhodopsin	45	PPT	R2
26.	Photosynthetic reaction center Immunoglobulins	45	BB	T3
27.	IgG Light chain and heavy chain architecture	45	BB	T2
28.	Abzymes& Enzymes: Serine proteases	45	PPT	R1

UNIT-IV-TECHNIQUES IN PROTEIN ENGINEERING

S.No	Topics To Be Covered	Duration in Minutes	Teaching Aid	Books Referred
29.	Strategies for protein engineering	45	PPT	T1,T2
30.	Random mutagenesis	45	BB	R1,R2
31.	site-directed mutagenesis	45	PPT	T1,T2,T3
32.	Various PCR based strategies	45	BB	R1,R2
33.	Role of low fidelity enzymes in protein engineering	45	PPT	T1,T2
34.	Gene shuffling	45	BB	R1,R2
35.	Directed evolution of proteins	45	BB	T1,T2
36.	Protein backbone changes	45	BB	T1,R2

37.	Antibody engineering	45	BB	R1,R2
38.	de novo protein design	45	PPT	R1
UNIT – V - PROTEIN STRUCTURE ON THE WORLD WIDE WEB				
S.No	Topics To Be Covered	Duration in Minutes	Teaching Aid	Books Referred
39.	Protein sequence databases Uniprot	45	BB	T1,R1,R2
40.	Protein sequence databases Swissprot	45	BB	T1,T2
41.	Protein sequence databases PROSITE	45	BB	R1,T2
42.	Protein sequence databases Pfam	45	PPT	T3
43.	Protein structure databases PDB	45	BB	T2,R1
44.	Protein structure databases SCOP	45	PPT	R1,R2
45.	Protein structure databases CATH	45	BB	R2
46.	Revision of protein structure and sequence databases	45	BB	T3

TEXT BOOKS:

- 1) Adrian Slater, Nigel Scott, and Mark Fowler, Plant Biotechnology, Oxford University Press, New York, 2007.
2. Old R.W. and Primrose S.B., An Introduction to Genetic Engineering, University of California press, 2000.

REFERENCE:

- 1) Satyanarayana, U. Biotechnology, Allied Pvt. Ltd. Kolkata, 2007
- 2) Purohit S.S., Agricultural Biotechnology, Agrobios Indi., Jodhpur, 2002