B.Tech. Biotechnology: Semester-IV BBT 404: rDNA TECHNOLOGY	
Teaching Scheme	**Examination Scheme**
Lectures: 3 hrs/Week	Class Test -12 Marks
Tutorials: 1 hr/Week	Teachers Assessment – 6 Marks
Credits: 4	Attendance – 12 Marks
	End Semester Exam – 70 marks

Course Objective

To give brief introduction about Recombinant DNA Technology .To give complete knowledge about the construction of genomic and cDNA library.To explain the process of gene transfer mechanism in bacteria, plants and animals.To explain the importance of edible vaccines.To explain and emphasize on the production of monoclonal antibody production and its applications.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: To remember Restriction enzymes their types and properties, properties of a Cloning vehicles , plasmids as cloning vectors , viruses (phage lambda and mu) as a cloning vectors.

CO2: To understand the concept of Concept of cloning and HAT selection.

CO3: To apply the techniques of recombinant DNA technology for the production of transgenic plants.

CO4: To analyze Gene transfer mechanisms in bacteria, plants and animals i.e. transformation, conjugation, transduction, particle gun, liposome mediated and microinjection.

CO5: To evaluate the procedure of forming cDNA and genomic library.

CO6: To create edible vaccines from plants using recombinant DNA technology.

CO7: To explain and analyze various applications of microbial genetic engineering in biotechnology.

Unit 1: Introduction to RDT
Introduction of RDT, Restriction enzyme, DNA manipulative enzymes and DNA modifying enzymes, concept of cloning, properties of cloning vehicle, plasmid as cloning vectors, viruses (phage, lambda and mu) as cloning vectors, insertion of a DNA molecule in cloning vector, expression of cloned genes,

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recombinant selection and screening , genomic and cDNA libraries.
Unit 2: Gene transfer mechanisms in bacteria
Principles and applications of transformation, conjugation, transduction, particle gun, liposome mediated and microinjection. Applications of microbial genetic engineering in biotechnology.
Unit 3: Gene transfer mechanism in plants
Agrobacterium mediated. Applications of transgenic plants, edible vaccines from plants. Gene transfer mechanism in animals: transfection of animal cell lines, HAT selection. Selectable markers and transplantation of cultured cells. Expression of cloned proteins in animal cells – expression vectors.

Suggested Readings

- OLD, R.W AND PRIMROSE S.B 1994. Principles of gene manipulation – An introduction to genetic engineering. Fifth edition. Blackwell Scientific Publication.
- T.A BROWN. Gene cloning and DNA analysis. Sixth Introduction. Wiley and Blackwell.
- Recombinant DNA 2nd edition. Watson, James D. and Gilman, M. (2001) W.H Freeman Company, New York.
- An introduction to genetic Engineering 2nd edition Desmond Nicholl S.T (2002) Cambridge University Press.
- Sambrook. Fritsch E.F and Maniatis. 1989. Molecular Cloning – A laborartory.

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