

**CORE COURSE VIII- INTRODUCTORY BIOTECHNOLOGY**

**Unit-I**

History of Biotechnology - Sources and isolation of gene-methods, genomic and DNA Library - Vectors- plasmids – cosmids- phages – viruses-yeast. - Restriction endonucleases-types-functions, ligation-linkers and adaptors

**Unit II**

Gene transfer techniques –physical and biological - Selection and screening – genetic complementation-colony hybridization - immunological screening and reporter gene

DNA sequencing – Sanger and Maxim Gilbert Method, & PCR

DNA finger printing

Human genome project-salient features

**Unit III**

Production of recombinant insulin, growth hormone

Vaccine engineering, enzyme engineering and antibody engineering

Use of RFLP and DNA probes in detection of genetic diseases

Gene therapy-types-protocols-gene therapy against ADA-future and ethical issues

**Unit IV**

Plant tissue culture and application

Gene transfer in plants-transgenic plants and application

Biopesticides, biofertilizers

Terminator gene

Single cell Protein

**Unit V**

Ploidy induction – Production of Transgenic fish.

Biotechnology in Animal Husbandary- Embryo manipulation-embryo transfer-embryo cloning-Transgenic farm animals and applications

Biosafety- implication of GMO

**Recommended Text Books :**

1. DubeyR.C. (2008) A text Book of Biotechnology. S.Chand and Company, New Delhi
2. Sathyanarayana.U.(2005) Biotechnology. Books and Allied P.Ltd. Kolkata.

**References**

1. BROWN, C.M., CAMPBEL, I. and PRIEST, F.G. (1988), Introduction to Biotechnology, Blackwell Scientific Publications, UK.
2. PRIMROSE, S.B. (2000), Modern Biotechnology, Blackwell Scientific Publications, Oxford, London.
3. KESHAV TREHAN (1996), Biotechnology, New Age International Pvt. Ltd. Publishers, New Delhi.
4. Watson et.al. (1999) Recombinant DNA. Freeman and Company, New York
5. IGNACIMUTHU, S. (1998), Basic Biotechnology, Tata McGraw Hill Publishing Co., New Delhi.
6. KUMAR, H.D. (1998), Modern Concepts of Biotechnology, Vikas Publishing House Pvt. Ltd., New Delhi.