

CORE COURSE – XIII (CC) – MICROBIAL BIOTECHNOLOGY

UNIT – I

Biotechnology – Definition – concepts – history and development.

UNIT – II

Enzyme production technology through microbes: Problems and applications – enzyme immobilization and its applications.

UNIT – III

Microalgal technology – Industrial cultivation methods of Spirulina – biotechnological potentials of microalgae – food – feed – fuel production – pharmaceutically valuable compounds from microalgae.

UNIT – IV

Principles and applications of recombinant DNA technology and strain improvement (rDNA technology).

UNIT – V

Production of biotechnological products. Food-SCP (algae, yeast, mushroom). Biofertilizer – (Cyanobacteria, Rhizobia, Azospirillum, Azotobactre, Frankia , VAM). Bioinsecticide (Bacillus thuriengiensis). Fuel – ethanol. Pharmaceuticals – antigens, interferons, vaccines, insulin, hormones, gene therapy methods. Hybridomas and monoclonal antibodies.

Reference:

- Desmond, S.T. Nicholl (2002). An Introduction to Genetic Engineering.(2nd edition).Cambridge university press.
- Eric's Grace.(1997). Biotechnology unzipped-promises and realities. Joseph Henry press, Washington.
- Glick, B.R. and Pasternak, J.J. (2001). Molecular Biotechnology, ASM press, Washington DC.
- Helen Kreuzer and Adrienne Massey.(1996). Recombinant DNA and Biotechnology, American Society for Microbiology, Washington.
- Old R.W. and S.B.,Primrose. 1994. Principles of Gene Manipulation, 4th Ed., Blackwell Scientific Publications, London.
- Prave, P., Paust, V., Sitting, W. and Sukatasch, D. 2000. Fundamentals of Biotechnology. VCH verlagsgesellschaft - mbH, Weinheim.
- Treva, M.D, Boffey, S. Coulding K.H. and Stanbury, P. (1990). Biotechnology – The basic principles – Tata McGraw Hill edition.
- Watson, J. D. Gilman, M., Witkowski, J., Zoller, M. (1992). Recombinant DNA- 2nd edition, Scientific American Books.