GENETIC ENGINEERING: THEORY AND APPLICATION

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PRE-REQUISITES : General Biology 10+2

INTENDED AUDIENCE : UG/PG/PhD/Scientist in industry

INDUSTRY SUPPORT: Biocon https://www.biocon.com/Jubilant Life Sciences www.jubl.com/ ,Shantha Biotechnics Ltd,Panacea Biotec,Other companies related to biotechnology

COURSE OUTLINE :

In this we discuss about biotechnology, its scope and impact on human life with several customized products. The Development of technology and generation of product has multiple steps and understanding these steps are being covered in this course with a discussion of biotechnology application at the end. By the end of this course, student will be able to understand following aspects of biotechnology:

1. Basic metabolic pathways and their regulation.
2. Microbial growth kinetics with an emphasis on fermentation
3. Basic molecular biology tools used in biotechnology.
4. Basic methodology for product recovery and analysis.

ABOUT INSTRUCTOR :

Prof. Trivedi did his Ph.D. from Central Drug Research Institute, Lucknow in the field of Structural Biology. From his postdoctoral research at the Department of Molecular and Cellular Biology, Harvard University and Molecular Oncology Research Institute, Tufts University, Boston, USA, he gained extensive research experience in the field of cell biology, intracellular signal transduction, and immunology. Currently, his laboratory at Department of Biosciences and Bioengineering has an active group working and exploring questions related to malaria parasite biochemistry, the role of novel proteins, development of anti-malarial agents, and lastly understanding factors playing a crucial role in immunomodulation and host pathology in different organs.

COURSE PLAN :

Week 1: Introduction and Basics of Biological System.

Week 2: Basics of Biological System

Week 3: Basics of Cloning (Part I)

Week 4: Basics of Cloning (Part II)

Week 5: Recombinant DNA Technology (Part I)

Week 6: Recombinant DNA Technology (Part II)

Week 7: Product Recovery and Purification (Part I)

Week 8: Product Recovery and Purification (Part II)

Week 9: Characterization of Isolated Products (Part I)

Week 10: Characterization of Isolated Products (Part II)

Week 11: Biotechnology in Social Welfare

Week 12: Summary & Conclusions