

# Hands-on Industrial Training on Basic & Advanced Molecular Biology"

**DURATION:** 1 MONTH

**TARGET GROUP :** Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech - Biotech B Pharma / M Pharma / D Pharma /PhD

**PROVIDER:**



**SHRM BIOTECHNOLOGIES. PVT LTD**

## COURSE OUTLINE

- ✓ Working in Molecular Biology Laboratory.
- ✓ General and Safety Instructions
- ✓ Good Laboratory Practices.
- ✓ Principle and Handling of Laboratory Equipments.
- ✓ Basics of Calculations, Weighing and Measurements.
- ✓ Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
- ✓ Process of Sterilization and Decontamination.
- ✓ Extraction and Purification of Genomic DNA from Various Parts of Plants
- ✓ Electrophoresis of Genomic DNA.
- ✓ Determination of Concentration of DNA by Spectrophotometer.
- ✓ Extraction and Purification of Genomic DNA from Microbes
- ✓ Extraction and Purification of Plasmid DNA from *E. coli*..
- ✓ RNA Extraction from Plants.
- ✓ Determination of Purity of RNA.
- ✓ Southern Blotting for DNA.
- ✓ Northern Blotting for RNA.
- ✓ Restriction Digestion of DNA by Restriction Endonucleases.
- ✓ Ligation of Restriction Fragments into Plasmid.
- ✓ Competent Cell Preparation.
- ✓ Transfer of DNA into *E. coli*.
- ✓ Screening of the Transformed Cells.
- ✓ Effect of Physical and Chemical Mutagen on Growth of Microbes.
- ✓ Blue-White Selection of Bacterial Colonies.
- ✓ Polymerase Chain Reaction (PCR).
- ✓ SDS Page
- ✓ Primer Designing
- ✓ Gene Sequencing
- ✓ Karyotyping

# Training on Agriculture Applications

**DURATION:** 1 MONTH

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**PROVIDER:**



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## COURSE OUTLINE

- ✓ Introduction
- ✓ Seed storage Protein
- ✓ Evaluation of Pesticides
- ✓ Evaluation of Fungicides
- ✓ Alkalinity and Acidity of soil
- ✓ Estimation of Presence of Chlorine and Phosphate in soil
- ✓ Tissue culture – Root culture, Anther culture, callus culture and meristem culture
- ✓ Isolation of plant DNA
- ✓ Isolation of Plant Proteins
- ✓ Estimation of Flavanoids and phenols in healthy and diseased plants
- ✓ Column chromatography for plants pigments
- ✓ Assay of Bio Fertilizers
- ✓ Production of Synthetic Seeds
- ✓ Production & Testing of Animal Feed

# Training Programme on Bio-Chemistry

**DURATION:** 1 MONTH

**TARGET GROUP :** Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech - Biotech B Pharma / M Pharma / D Pharma /PhD

**PROVIDER:**



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## COURSE OUTLINE

- ✓ Introduction
- ✓ Identification of Carbohydrate, Protein and Fat.
- ✓ Colorimetric Estimation of Protein (Biuret & Lowry)(Preparation of Standard Curve and Estimation).
- ✓ The titration curve of buffer using pH meter.
- ✓ Colorimetric Estimation of Sugar (Preparation of Standard Curve and Estimation).
- ✓ Colorimetric Estimation of Nucleic Acid (Preparation of Standard Curve and Estimation).
- ✓ Detection of Phenol Co-efficient.
- ✓ Determination of Total Alkalinity of Water.
- ✓ Determination of Chlorine Content of Water.
- ✓ Water Analysis by Standard Plate Count (SPC).
- ✓ Presumptive Test for Coliform Bacteria and Determination of Most Probable Number Confirmed & Complete Test for Coliform Bacteria.
- ✓ Enzymatic Test of Milk by Methylene Blue Reductase Test.
- ✓ Detection of Calcium and Phosphorus in Milk etc.
- ✓ Estimation of Acid Value of Oil.
- ✓ Sugar determination by DNS Method
- ✓ Pepsin Assay
- ✓ Determination of iron content of given sample

# "Hands-on Industrial Training with Advanced Bioinformatics

**DURATION:** 1 MONTH

**TARGET GROUP :** Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech – Biotech, B Pharma / M Pharma / D Pharma /PhD

**PROVIDER:**



**SHRM BIOTECHNOLOGIES. PVT LTD**

## COURSE OUTLINE

### **Advanced Bioinformatics (CRT: AM-1)**

(Introduction to Bioinformatics and overview of Biological Research, Biological databases and database searching, Data Mining and Sequence Retrieval, Motif & Domain assignment, Proteomics, Protein threading and interaction, Pair wise and Multiple Sequence Alignment, Sequence Analysis (BLAST, FASTA, CLUSTAL W), Phylogenetic analysis, Ab initio structure prediction, Visualization tools, Other relevant Confirmatory Tools, Homology Modeling).

### **Chemoinformatics and Rational Drug Designing (CRT: AM-2)**

(Introduction of Bioinformatics, Introduction to Drug Designing, Disease Identification, Responsible Gene Ontology, Coding Protein Identification, Protein Structure Finding, Active Site Prediction, Chemical and Drug Database, Chemo-informatics, Docking, Toxicity Prediction with Lipinski Rule of Five, Relevant Software and Tools and Practical Sessions).

### **Molecular Modeling with Phylogenetic Analysis (CRT: AM-3)**

(Introduction of Bioinformatics, Literature Mining, Protein Name identification, Target Amino Acid Primary Sequence Identification, Sequence Analysis (Blast, Fasta), Secondary Structure Blast, Multiple Template Selection, Modeling, Procheck, Ramachandran Plot, Loop Modeling, Structure Analysis, Verification and Energy Minimization, Sequence Analysis (Blast, Fasta, ClustalW), Comparative Phylogenetic Analysis using MEGA and Phylip).

### **Molecular Modeling and Computer Aided Drug Designing (CRT: AM-4)**

(Introduction to chemoinformatics and Drug Development, Chemical and Drug Database, Proteomics, Sequence analysis of Receptor molecule, Structural Bioinformatics in Drug Development, Small molecule hits, Designing chemical structures, Homology Modeling Pathways studies and Drug Targeting, Lead design with Geometry optimization and Energy Minimization).

# Training on Clinical Microbiology

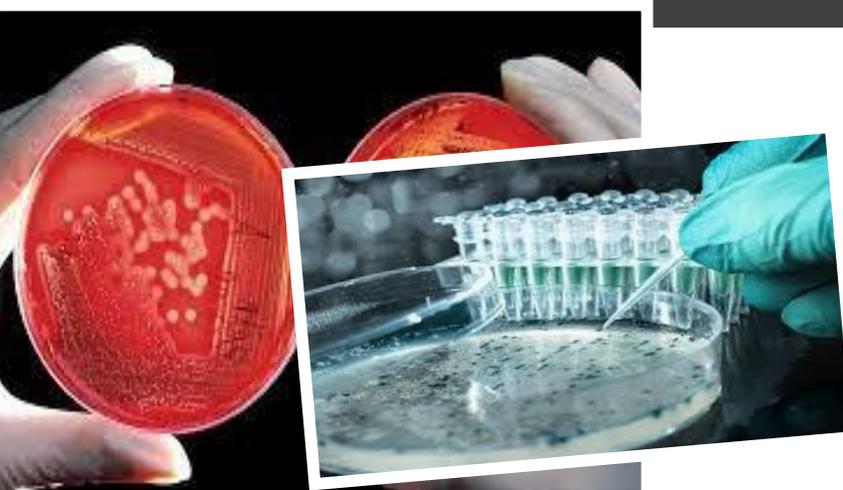
**DURATION:** 15 Days

**TARGET GROUP :** Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech - Biotech B Pharma / M Pharma / D Pharma /PhD

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## COURSE OUTLINE

- ✓ **Micro organism and Application of Clinical Microbiology – Lab and GLP.**
- ✓ **Sterilization Method Media Preparation.**
- ✓ **Gram Staining and Microscopy.**
- ✓ **Acid fast stain (Ziel-Heelsen's stain).**
- ✓ **Hanging drop preparation MIC (minimum inhibitory concentration- for Antibiotics).**
- ✓ **Oxidase test.**
- ✓ **Antibiotic susceptibility test.**
- ✓ **VDRL Test.**
- ✓ **Immuno techniques (class) and Immuno Electrophoresis .**

# Hands-on Industrial Training on Enzymology

**DURATION:** 1 MONTH

**TARGET GROUP :** Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech - Biotech B Pharma / M Pharma / D Pharma /PhD



**PROVIDER:**

**SHRM BIOTECHNOLOGIES. PVT LTD**

## COURSE OUTLINE

- ✓ **General and Safety Instructions.**
- ✓ **Good Laboratory Practices.**
- ✓ **Principle and Handling of Laboratory Equipments**
- ✓ **Basics of Calculations, Weighing and Measurements.**
- ✓ **Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.**
- ✓ **Process of Sterilization and Decontamination.**
- ✓ **Introduction to Enzymology.**
- ✓ **Pure Culture Preparation.**
- ✓ **Screening of Cultures for Enzyme Production.**
- ✓ **Extraction of Crude Enzyme.**
- ✓ **Partial Purification of Enzyme.**
- ✓ **Precipitation of Enzyme (Salt & Solvent).**
- ✓ **Dialysis.**
- ✓ **Characterization of Purified Enzyme**
- ✓ **Total Protein Estimation.**
- ✓ **Bradford's Method.**
- ✓ **Lowry's Method.**
- ✓ **Enzyme Kinetics.**
- ✓ **Effect of pH on Enzyme Activity.**
- ✓ **Effect of Temperature on Enzyme Activity.**
- ✓ **Effect of Substrate Concentration on Enzyme Activity.**
- ✓ **Effect of Activator on Enzyme Activity.**
- ✓ **SDS PAGE.**

# Training Programme on Food Biotechnology

**DURATION:** 15 Days

**TARGET GROUP :** Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech - Biotech B Pharma / M Pharma / D Pharma /PhD

**PROVIDER:**



**SHRM BIOTECHNOLOGIES. PVT LTD**

## COURSE OUTLINE

- ✓ Introduction to Food Biotech
- ✓ Isolation of yeast from rotten banana.
- ✓ Isolation of Fungi from citrus fruits
- ✓ Determination of quality of milk sample by MBRT.
- ✓ Alcohol Fermentation.
- ✓ Detection of no. bacteria in milk by Hemocytometer.
- ✓ Curd Production.
- ✓ Water Analysis Test
- ✓ Role of yeast in bread making

# Hands-on Industrial Training on

# HPLC



**DURATION:** 1 MONTH

**TARGET GROUP :** Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech - Biotech B Pharma / M Pharma / D Pharma /PhD



**PROVIDER:**

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## COURSE OUTLINE

- ✓ Introduction to Chromatographic Techniques.
- ✓ Types of Chromatographic Techniques.
- ✓ Explanation of Titrimetric Calculations.
- ✓ Introduction to HPLC Components.
- ✓ Types of Pumps and Functions of their Components.
- ✓ Reservoirs and their Uses.
- ✓ Types of Injectors & their Functions
- ✓ Types of Detectors & their Functions
- ✓ Types of Mobile Phase to Separate the Compounds.
- ✓ Types of Stationary Phase to Separate the Compounds.
- ✓ Types of Column.
- ✓ Preparation of Mobile Phase to Separate the Compounds.
- ✓ Method Development for the Separation of Unknown Compounds.
- ✓ How to Select the Mobile Phase.
- ✓ How to Select the Stationary Phase.
- ✓ How to Select the Flow Rate.
- ✓ How to Select the Gradient & Isocratic Methods.
- ✓ How to Select the Sample Volume.
- ✓ How to Select the Wave Lengths or Detectors.
- ✓ Discussions.

# Training on Immunotechnology

**DURATION: 1 MONTH**

**TARGET GROUP** : Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech – Biotech, B Pharma / M Pharma / D Pharma /PhD

**PROVIDER:**



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## COURSE OUTLINE

- ✓ Introduction to immunological quantitative methods including Western Blotting and ELISA
- ✓ Agglutination and precipitation techniques (Blood Grouping)
- ✓ Ouchterlony Double Immuno-diffusion method
- ✓ Radial Immuno diffusion technique
- ✓ Immuno electrophoresis
- ✓ Countercurrent Immuno electrophoresis
- ✓ Human blood group determination
- ✓ Rocket Immuno electrophoresis
- ✓ Blood film preparation and staining
- ✓ Quantitative estimation of proteins in blood by Follins Lowry's method
- ✓ Thin Layer Chromatography
- ✓ Western Blotting
- ✓ Single Radial Immuno Diffusion

# Hands-on Industrial Training on Basic & Advanced Industrial Microbiology



**DURATION:** 1 MONTH

**TARGET GROUP :** Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech - Biotech B Pharma / M Pharma / D Pharma /PhD



**PROVIDER**

**SHRM BIOTECHNOLOGIES. PVT LTD**

## COURSE OUTLINE

- ✓ General and Safety Instructions for Working in Microbiology
- ✓ Bio-Instrumentation for Wet Lab.
- ✓ Working with Autoclave, Hot-Air Oven, Laminar Air Flow, Microscope and other Microbiological Laboratory Instruments.
- ✓ Handling of Micropipettes, Petri plates, Spreaders, Inoculation Loop and other Microbiological Tools
- ✓ Identification and Classification of Microbes.
- ✓ Culturing of Microbes.
- ✓ Media Preparation.
- ✓ Solid and Liquid Media Preparation.
- ✓ Preparation of Cotton Plug, Plugging for Bacterial Cultures.
- ✓ Sterilization Process.
- ✓ Chemical Sterilization Process.
- ✓ Physical Sterilization Process
- ✓ Pouring of Media on Plates.
- ✓ Isolation and Culturing of Microbes from Water Sample (Through Serial Dilution Method). Isolation and Culturing of Microbes from Soil Sample (Through Serial Dilution Method).
- ✓ Isolation and Culturing of Microbes from Air (Through Pouring of Media on Plates Exposure
- ✓ Pure Culture Technique.
- ✓ Pour Plate Technique.
- ✓ Spread Plate Technique.
- ✓ Various Streaking Methods.
- ✓ Pure Culture Preparation through Solid Media
- ✓ Maintenance of Pure Culture.
- ✓ Slant Preparation & Sub Culturing of Microbes.
- ✓ Morphological Behavior of Microbes
- ✓ Staining Techniques. (A) Gram Staining. (B) Endospore Staining.
- ✓ Biochemical Tests. (A) Catalase Test. (B) Mannitol Fermentation Test. (C) VP Test etc.
- ✓ Optimization of Culture Conditions of Microbes.
- ✓ Study of Growth Pattern of Microbes.
- ✓ Primary Screening of Active Microbes.
- ✓ Secondary Screening of Active Microbes.
- ✓ Fermentation Techniques.
- ✓ Isolation and Characterization of Antibiotics from Microbes
- ✓ Evaluation and Determination of Minimum Inhibitory Concentration (MIC).
- ✓ Effect of pH, Temperature, Salinity, Precursors, Inhibitors and Elicitors on Growth of Microbes.
- ✓ Effect of Physical and Chemical Mutagen on Growth of Microbes.

# LIFE SCIENCE SKILL SECTOR DEVELOPMENT COUNCIL



We undergo Training Course for a duration of 3 months in following areas:-

- ✓ Lab Technician
- ✓ Medical Sales Representative
- ✓ Quality Control Chemist – Microbiologist

**Certified by:- NSDC, Govt. of India.**

# Training Programme on Microbiology

**DURATION: 1 MONTH**

**TARGET GROUP** : Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech - Biotech B Pharma / M Pharma / D Pharma /PhD

**PROVIDER:**



**SHRM BIOTECHNOLOGIES. PVT LTD**

## COURSE OUTLINE

- ✓ Introduction Industrial Microbiology & it's Application
- ✓ Quantitative Estimation of milk and water by SPC method
- ✓ Enumeration of bacteria and presumptive test for coliforms in both milk and water
- ✓ Quality analysis of milk by MBRT method
- ✓ Confirmed and Completed test for coliform bacteria
- ✓ Determination of BOD and COD of water
- ✓ Determination of total alkalinity and chlorine content of water
- ✓ Demonstration of fermentation by using yeast
- ✓ Demonstration of Wine production using grape-juice
- ✓ Curd Preparation
- ✓ Isolation of Amylase producing bacteria
- ✓ Isolation of phosphate solubilizing bacteria
- ✓ Isolation of an antibiotic producer
- ✓ IMViC
- ✓ MIC

# ONLINE TRAINING PROGRAMMES

**DURATION:** 1 MONTH

**TARGET GROUP :** Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech - Biotech B Pharma / M Pharma / D Pharma /PhD

**PROVIDER:**



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## COURSE OUTLINE

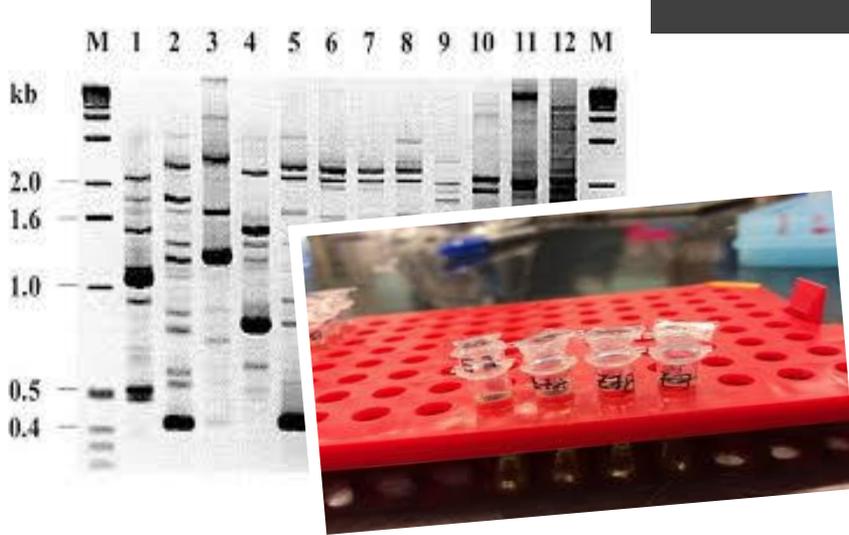
- ✓ Introduction to good lab practice
- ✓ Introduction to good production practices
- ✓ Aseptic and sterilization method
- ✓ Up stream processes and cell banking
- ✓ Down stream processes and chromatography and purification
- ✓ Up Stream Processes Cell Culture
- ✓ Down Stream Processes Sterility Assurance Level
- ✓ The Power of Pen Writing – for Successful Scientists.

**GLOBAL CERTIFICATE COURSE**

**BY SEAWAY LABORATORIES,SINGAPORE &**

**SHRM BIOTEHNOLOGIES,INDIA**

# Hands-on Industrial Training on PCR



**DURATION:** 7 Days

**TARGET GROUP :** Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech - Biotech B Pharma / M Pharma / D Pharma /PhD



**PROVIDER:**

**SHRM BIOTECHNOLOGIES. PVT LTD**

## COURSE OUTLINE

- ✓ **Extraction and Purification of Ultra Pure PCR Grade DNA from Plants.**
- ✓ **Electrophoresis of Genomic DNA.**
- ✓ **Determination of Concentration of DNA & Dilution to Unity for PCR.**
- ✓ **Polymerase Chain Reaction (PCR)**
- ✓ **Optimization of Protocol for PCR.**
- ✓ **Principle, Handling & Precautions of PCR Machine**
- ✓ **Discussions.**

# Hands -on Industrial Training on Basic & Advanced Biochemical Techniques & Proteomics"

**DURATION:** 1 MONTH

**TARGET GROUP :** Students undergoing or completed BSc / MSc - Biotechnology, Zoology, Microbiology, Botany, Bio Chemistry, Physiology, bioinformatics, and any Life science./B Tech / M Tech - Biotech B Pharma / M Pharma / D Pharma /PhD



**PROVIDER:**

**SHRM BIOTECHNOLOGIES. PVT LTD**

## COURSE OUTLINE

- ☐ General and Safety Instructions.
- ☐ Good Laboratory Practices
- ☐ Principle and Handling of Laboratory Equipments
- ☐ Basics of Calculations, Weighing and Measurements.
- ☐ Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
- ☐ Process of Sterilization and Decontamination.
- ☐ Isolation of Proteins from Plants and Microbial Systems.
- ☐ Extraction of Total Protein from Various Parts of Plants.
- ☐ Partial Purification of Plant Proteins by Precipitation Method.
- ☐ Separation and Characterization of Various Proteins.
- ☐ SDS-PAGE.
- ☐ Western Blotting for Purified Proteins.
- ☐ Extraction and Estimation of Bioactive Compounds from Various Plants.
- ☐ Determination of Potency of Bioactive Compounds.
- ☐ Extraction of Antibiotics from Active Microbes. ☐ Determination of Efficacy and Potency of Antibiotics ☐ Salt Precipitation.
- ☐ Dialysis.
- ☐ Solvent Precipitation.
- ☐ Thin Layer Chromatography (TLC). ☐ Paper Chromatography.
- ☐ Column Chromatography ☐ Fermentation techniques – Theory