HBL is implementing a structured **Hands-on Industrial Training (H.I.T.) Program** to address the need of the Academia and the Industry for practical, high-quality skill development.

This Hands-on Industrial Training (H.I.T.) Program has been designed to cover the major subjects in Industrial Microbiology and Cell Culture Techniques.

TARGET AUDIENCE AND MINIMUM BATCH SIZE:

The target audience for the program shall be students and scholars from the life science streams of various Institutions across the Southern Region and also technicians / job aspirants in the biotech sector who are looking for a hands-on experience.

The participant shall have the option of selecting one module or both the modules and the duration of the session and the costing for the same shall be based on the selection of the modules.

The details of the HIT program and Course Fees

Course Title	**Subject**	**Type of Registration**	**Fees (INR)** (Inc. of 18% GST)
HIT Solo CC	CELL CULTURE TECHNIQUES	Individual	6500
HIT Bundle CC	CELL CULTURE TECHNIQUES	Group (Min 6 – 12 persons)	5900

MODULE 1: CELL CULTURE TECHNIQUES – COURSE CONTENT:

Day	Topic
Day -1	**INTRODUCTION & MEDIA PREPARATION** - Introduction to Animal Cell Culture - Importance and applications - Overview of cell culture lab and safety protocols - Cell Culture Instruments - Types of Cell Culture Media (Basal, Supplemented) - Components of media and their roles - Preparation of complete media (e.g., MEM) - Sterilization and storage of media **Hands-on Training:** - Hands-on preparation of cell culture media - Sterilization techniques (filtration) - Media aliquoting and storage
Day – 2	**CELL COUNTING, VIABILITY, AND REVIVAL FROM CRYOSTORAGE** **Principles of cryopreservation and revival.** - Importance of quick thawing and removal of cryoprotectant (e.g., DMSO). - Hemocytometer usage for counting viable cells **Hands-on Training:** - Revival of cells from liquid nitrogen (LN2) storage - Thawing and initial handling post-thaw (6 vials) - Transfer to a T-Flask. Initial plating and incubation in CO2 incubator. Observation in Inverted Microscope (initial cell state). - Performing cell counts and viability assays (Trypan blue exclusion)
Day – 3	**BASIC HANDLING, ENZYMATIC CELL DISSOCIATION AND CELL PROPAGATION.** - Aseptic techniques and handling of adherent and suspension cells. - Types of cell culture flasks and their characteristics. - Concepts of cell propagation and sub-culturing protocols with calculation. **Hands-on Training:** - Trypsinization and detachment of adherent cells. - Passage and maintenance of cell cultures. - Microscopic examination of cells.
Day – 4	**EQUIPMENT IN BIOTECHNOLOGY ANALYSIS, COMPLETE SUB-CULTURING OF CELLS** - Equipment used in Cell culture based Analysis (on site explanation of principles and application) - Performing a complete Subculture activity individually
Day – 5	**CRYOPRESERVATION, MANUFACTURING PLANT TOUR, RESULTS AND DISCUSSION** - Results observation and discussion - Cryopreservation of cells (stage-wise Freezing) - Manufacturing plant tour. - Issuance of Training material and Certificates. - Evaluation and Feedback

1. MODULE 2: MICROBIOLOGY TECHNIQUES – COURSE CONTENT

Day	Topic
Day -1	**INTRODUCTION & MEDIA PREPARATION** **Introduction and Microbiological Culture Media preparation and Microbial techniques** - Importance and applications of microbiology in Pharma Industry - Overview of microbiology lab and Entry &Exit Procedures - Introduction to Microbiological Culture Media in Pharma industry - Equipment related to the Microbiology Testing - Sterilization, Decontamination and Incubation Procedures of Microbiological media and Cultures - Microbial Culture Reference standards - Storage of media and Growth Promotion test **Hands-on Training:** - Preparation of Microbiological culture media - Sterilization and Media dispensing - Growth promotion test, storage and Incubation
Day - 2	**WATER SAPMLE COLLECTION AND TESTING** - Procedure for water Sampling and Water testing - Procedures for cleaning and sterilization of Sampling bottles for collecting the water samples **Hands-on Training:** - Preparation of the bottles for water sampling - Hands on collecting the Water samples for the testing - Testing of water samples - Total viable count and Pathogens
Day - 3	**ENVIRONMENTAL MONITORING OF SURFACES** - Introduction to Environmental monitoring of Clean rooms - Overview of Aseptic conditions and Purpose of Environmental monitoring - Types of Microbial Contaminants Contamination control. - Methods of Environmental monitoring. **Hands-on Training:** - Gowning procedures - Operation of Air sampler - Surface sampling techniques - Air Sampling Techniques - Continuation of water samples testing of previous days samples
Day - 4	**EQUIPMENT IN MICROBIOLOGY, WATER AND HVAC SYSTEMS IN PHARMACEUTICALS** - Equipment used in microbiology-based Analysis (on site explanation of principles and application).

	- Site visit of Water treatment plants (Pre-treatment, Purified water, WFI and Pure steam). - Site visit of HVAC system and its principle.
Day - 5	**STERILITY TESTING, IVC SITE TOUR, RESULTS AND DISCUSSION** - IVC Site tour - Sterility Testing - Issuance of Training material and Certificates - Evaluation and Feedback.