

ADVANCED MICROBIOLOGICAL TECHNIQUES

Course code: 011002

Days: 20

Module code: MICRO-02

Hours: 60

Objective:

After getting training in this module a person can handle the testing's in a pharmaceutical industries

TOPICS:

- ❖ Introduction and safety aspects of microbiology lab
- ❖ Instructions and handling of microbiology equipments & tools such as
 - ★ Autoclave
 - ★ LAF
 - ★ Hot air oven
 - ★ Microscope
 - ★ Incubator
 - ★ BOD incubator
 - ★ Balance
 - ★ pH meter
 - ★ UV-VIS spectrophotometer
 - ★ Zone reader
 - ★ Colony counter
 - ★ Shaker with incubator
 - ★ Micropipette
 - ★ Membrane filtration
- ❖ Sterilization techniques
 - ★ Moist heat
 - ★ Dry heat
 - ★ Chemical
- ❖ Microbial culture media and its importance
- ❖ Isolation of microorganisms from soil, Air and water
 - ★ Soil – Serial dilution Method
 - ★ Air- Viable plate count method
 - ★ Water – Pour plate method
- ❖ Plating techniques
 - ★ Pour plate
 - ★ Spread plate
 - ★ Streak plate
- ❖ Streaking methods
 - ★ Quadrant
 - ★ Simple
 - ★ T- streak
- ❖ Pure culture preparation
 - ★ Sub culturing of microbes in solid and liquid media
- ❖ Screening of desired organism
 - ★ Morphological behavior of microbes
 - ★ Staining techniques
 - ▲ Simple staining
 - ▲ Gram's staining
 - ▲ Spore staining
 - ▲ Capsule staining
 - ▲ Negative staining
 - ★ Identification by Biochemical test

▲ 10 biochemical test

- ❖ Production of secondary metabolites
- ❖ Antibiotic sensitivity assay
 - ★ Liquid study-UV method
 - ★ Disc diffusion
 - ★ well diffusion
- ❖ Isolation and identification of fungi
 - ★ LCB Mount
- ❖ Growth studies of microbial cultures at shake flask –UV-VIS Spectrophotometer Estimation
- ❖ Effect of Physical stress
 - ★ Temp
 - ★ pH
 - ★ Osmotic stress
- ❖ Shake flask Fermentation techniques
- ❖ Upstream and downstream processing
- ❖ Milk analysis & Water analysis