

Title of Skill Course: Microbiological Lab Instrument Expert

1. Department: Department of Microbiology
2. Title: Microbiological Lab Instrument Expert
3. Sector: Life Sciences
4. Year of implementation: 2024

Course Structure

Skill Level	Theory Hours	Practical Hours	Total Hours	Credits	No. of students in batch
7	15	30	45	02	30

Syllabus**Course Objectives:**

Student should be able to:

1. understand validation of equipment
2. learn qualification of analytical instruments

Theory Syllabus (Contact Hrs: 15, Credits: 01)**Unit I: Introduction, Qualification and validation of instruments****(10 hrs)**

Definition of Qualification and Validation, Advantage of Validation

User Requirement Specification, Design Qualification, Installation Qualification (IQ), Operational Qualification (OQ), Performance Qualification (PQ) of Instruments.

Validation of analytical method used in cleaning of Equipment.

Unit II: Qualification of analytical instruments and Laboratory equipments (10 hrs)

Electronic balance, pH meter, UV-Visible spectrophotometer, autoclave, hot air oven, laminar air flow

Qualification of Glassware: Volumetric flask, pipette, Measuring cylinder, beakers and burette.

Practical Syllabus (Contact Hrs: 30, Credits: 01)

List of Experiments ----- 30 hrs

1. Study of calibration of electronic balance
2. Study of calibration of pH meter
3. Important of autoclave sterility testing
4. Biological indicator for autoclave validation
5. Study of sterilization of glassware and Instrument (LAF)

6. Study of OQ and IQ of UV Visible spectrophotometer
7. Study of OQ and IQ Laminar air flow
8. Study of calibration of glassware's- pipettes, burette, and volumetric flask

Case study/ Field Visit/ Industrial Visit-

Course Outcomes:

Students will be able to :

1. carry out calibration of various lab instruments and glasswares
2. Explain method of validation of equipments.

Reference Books:

1. Ira R. Berry, Robert A.Nash. 1993. Pharmaceutical process validation, (CRC press, first. 1)
2. Suresh Jain, Dr.Vipin Saini, Dr.Naitikkumar D. Trivedi ,. 1995. A practical book on calibration of analytical instruments. Nirali Prakashan.
3. Aakanchha Jain, Richa Jain and Sourabh Jain 2020, Basic Techniques in Biochemistry, Microbiology and Molecular Biology (Humana press,) pp 93-99

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