Short term training program

1. Microbiology (Module 1)

2. Basic principles, standard operating procedure (SOP) and application of instruments,
3. Types of media, Difference between gram positive and gram-negative bacteria,
4. Serial Dilution techniques,
5. Isolation of bacteria from soil sample,
6. Isolation of pure bacterial colonies,
7. Gram staining technique for bacteria,
8. Motility check with hanging drop method,
9. Lactophenol Cotton Blue (LPCB) staining for fungus,
10. Methylene Blue Reductase Test in Milk.

2. Molecular Techniques (Module 2)

1. Basic of Molecular Biology,
2. Good laboratory practices (GLP),
3. Overview of genomic DNA,
4. Basic instrument handling,
5. Basic concept of Percentage, Basic concept of Molarity and Normality,
6. Micropipette handling (forward and reverse pipetting techniques),
7. Principal, SOP and application of spectrophotometer,
8. Extraction of genomic DNA from onion/banana,
9. Extraction of genomic DNA from Bacteria,
10. Extraction of genomic DNA from Plant,
11. Qualitative Analysis of DNA-Agarose Gel Electrophoresis,
12. Quantitative Estimation of the DNA through UV-VIS spectrophotometer.

3. Natural Product Research (Module 3)

1. Preparation of standardized extracts through maceration,
2. Introduction about phytochemicals,
3. Qualitative Phytochemical analysis (saponin, tannin, flavonoids and alkaloids) of herbal extracts,
4. Qualitative Phytochemical analysis (saponin, tannin, flavonoids and alkaloids) of herbal extracts,
5. Types of media, Media preparation and antimicrobial susceptibility tests (AST) of plant extracts against bacteria,
6. Basic concept of Minimum Inhibitory Concentration test,
7. Basics of chromatography,
8. Thin layer chromatography (TLC) of crude extracts,
9. Antioxidant Potential analysis of Bioactive extracts.

4. Food Technology (Module 4)

1. Demonstration of instruments,
2. Concept of basic calculation,
3. Micropipette handling (forward and reverse pipetting techniques),

4. To extracts caffeine using polar-nonpolar solvent extraction technique and its confirmatory test,
5. Quality analysis of different Fruit Juices (pH, total moisture, solid content),
6. overview of adulteration and this disadvantages according to FSSAI guidelines,
7. Adulterant analysis in different brands of milk (Starch test, water test, formalin test, soap test and sulphate),
8. Spectrophotometric Quantification of carbohydrates in different food samples,
9. Quality analysis of turmeric powder (Metanil yellow, yellow lead salt and starch test),
10. Basic concept of chromatography, Thin Layer Chromatography (TLC).

5. Biochemistry (Module 5)

1. Basic of Biochemistry,
2. Good laboratory practices (GLP),
3. Micropipette handling (forward and reverse pipetting techniques),
4. To perform the isoelectric precipitation of casein present in milk,
5. To Estimate the Saponification value in fats/oils,
6. Qualitative analysis of carbohydrates,
7. Analysis of lactose by mucic test and microscopic view of mucic acid crystals,
8. Biuretic reaction for detection of peptide bond,
9. Principal of DNS reagent, Principle,
10. SOP and application of spectrophotometer,
11. Quantitative estimation of Carbohydrate by DNS Method,
12. standard graph preparation and data interpretation.