

SHIVAJI UNIVERSITY, KOLHAPUR
CENTRE FOR COMMUNITY DEVELOPMENT

LABORATORY MANAGEMENT AND FOOD ANALYSIS

Objectives

1. To acquire skills for Laboratory Management and routine analysis of food.
2. To improve working ability in analytical laboratory.

Course Duration: 3 Months

Eligibility for Admission: 12th Science pass or equivalent

Medium of Instruction: English

Job Opportunities

1. Can avail the services to general analytical industries.
2. Can start own analytical laboratory.

Course Fees per Student: Rs.1500/- + Rs.150 Evaluation Fee

Objectives

The students after H.S.C. has one of the more exciting and rewarding turning time of life course is designed as a new non-conventional alternative for the future. The course can be completed as part along with the graduation. The certificate obtained will be helpful for obtaining jobs in various fields. The student can start his own business/laboratory or can associate with any kind of laboratory or associated jobs with confidence. There are opportunities in the field of analysis, analytical research, fundamental research, quality control departments, governmental and non-governmental organizations etc. for the technical laboratory personnel. In addition to this the college conducting this course can avail the services to general public and industries and raise funds for development.

1. To acquire skills for Laboratory Management and routine analysis of soil, water and food.
2. To improve working ability in analytical laboratory.

Staff Qualifications:

1. B.Sc. with 3 year's experience in analytical laboratory.
2. M. Sc. or higher qualification in Microbiology, Chemistry, Zoology, Botany, Biochemistry, Environmental Science, Nutrition, Pollution, Management
3. Laboratory attendant with H. S. C. Science Pass or Fail.

Infrastructure and other Requirement

1. Standard laboratory with required equipments with basic facilities of light, Ventilation, Water, gas connection, sinks, firefighting equipments etc.
2. The following equipments are required in working condition: PH meter, Conductivity meter, Oven, Bacteriological incubator, Water still, Vutyro refracto-meter, Muffle furnace, reflux apparatus, photo colorimeter or spectrophotometer, flame photometer, Soxhlet apparatus, Kjeldahl's apparatus, Microscope with oil immersion lens. The apparatus not available in parent institute can be hired from other competent laboratory / college. The consent letters from the institute must be produced during inspection.

- Some of the particles can be conducted in other institutes with previous written M.O.A. between two institutes.

3. The minimum books included as reference books in syllabus must be available. Other books and journals, audio visuals etc. in the subject will be additional preference point for affiliation.
4. Preference will be given to the colleges having microbiology department along with chemistry department.

SYLLABUS

LABORATORY QUALITY MANAGEMENT

1. Basic fundamentals in Analysis (4)
 - A) Analytical Chemistry, Titrimetric, gravimetric, instrumental analysis.
 - B) Analytical Physics, Physical tests.
 - C) Analytical Biology.
2. Instrumentation – Types, Principles, Maintenance, Operation, Working G.C., H.P.L.C., G.L.C., A.A.S., Organic C analyzer (4)
3. Fundamentals in sampling methods, Preparation of reagents & culture media (Simple, Differential & Special) sterilization, inoculation, microbial staining methods (Wet mounting, Gram's staining, Monochrome staining.) (4)
4. Mathematical calculations in analysis- Concentration calculations, PPM, PPb, mg/l, Kg/ha, % normal, Molar Ug/100 gm calculations. (2)
5. Analytical work in various laboratories like Soil, Water, Food, Industry, Pathological, Environmental, Industrial, Fertilizer Industry. (3)
6. Quality control management in laboratory. Standardization of reagents, solutions, cross analysis. (2)
7. Safety and precautions in laboratory. General safety, ventilation, equipment arrangement, safety wares , first aid, handling and disposal of hazardous samples. (3)
8. Accuracy and precision maintenance in laboratory. (2)
9. Report presentation and interpretation of results. (2)
10. Laboratory management and Personality development. (2)

Reference Books

1. Basic concepts of analytical chemistry By S. M. Khopkar.
2. Vogel's textbook of quantitative chemical analysis. (Longman) ELBS) Edn.
3. Handbook of organic qualitative analysis, By Clarke.
4. Vigel's text book of qualitative chemical analysis. (Longman) ELBS) Edn.
5. Basic laboratory studies in college chemistry By herd & Nebergali.
6. Instrumental methods of analysis By Dr. B. K. Sharma.

(3)

FOOD ANALYSIS

1. Human nutrition, Basic food groups, Balanced diet. (1)
2. Food processing, preservation and storage (2)
3. Physico-chemical properties of food, enzymes in food (2)
4. Food adulteration, toxication of food, prevention of food borne diseases. (3)
5. Nutritional value of food. (2)
6. AGMARK, ISI and FPO importance and license obtaining procedures. (3)
7. Fermented food products. (2)
8. Production of nutrient rich foods. (2)
9. Agro-product preservation methods (2)
10. Quality of animal feed and poultry feed (2)
11. Quality control in food processing (2)
12. Quality control for exportable foods. (1)
13. Food microbiology – Contamination of food, spoilage of food & their prevention (4)

Practicals

1. Collection and preservation of food samples for routine analysis.
2. Determination of Protein from Biscuit.
3. Determination of acidity of mild.
4. Determination of Non Volatile Ether Extract of Chilli.
5. Determination of B.R. Of Groundnut oil.
6. Determination of Ash and Acid insoluble ash of Turmeric.
7. Determination of fiber content of poultry feed.
8. Qualitative detection of adulterants in Atta, Maida, Besan, Biscuit, Black pepper, Butter, Ghee, Chilli, Powder, Honey, Tea, Turmeric powder, soft drink.
9. M.B.R.T. of milk.
10. Determination of Standard plate count of Milk Powder.

Reference Books

1. A first course in food analysis By A. Y. Sathe.
2. Hand book of analysis and quality control for fruit & vegetable products
By S. Ranganathan.
3. Handling and storage of food grains by S. V. Pingale.
4. Food science chemistry & experimental food By Dr. M. Swaminathan.
5. Food chemistry by William Hogland Meyer.
6. Food adulotration By Thankamma Jacob.
7. Food Microbiology by William C. Frazier.
8. Preservation of Fruits and Vegetables by Giridharilal.