

**Indira Gandhi National Open
University (IGNOU), New Delhi, India**

SCHOOL OF AGRICULTURE



OUTLINES

SOA

PGDFSQM

COUNSELLING



Indira Gandhi National Open University (IGNOU)

**A Mega University : Came into Existence: 1985
(Wider access, Education for Disadvantaged Groups and Areas
in a Cost effective Mode and ICT enabled)**

Status as on (2014)

- **Students on roll: 3.0 million**
- **Programmes on Offer: 250**
- **School of Studies: 21**
- **Regional Centres:67**
- **Academic Counsellors:54,234**
- **No. of Overseas Centres:80 in 43**
- **Audio/Video programmes produced:1916/4229**
- **Study Centres: 3380**

(www.ignou.ac.in)



IGNOU: FUNCTIONS

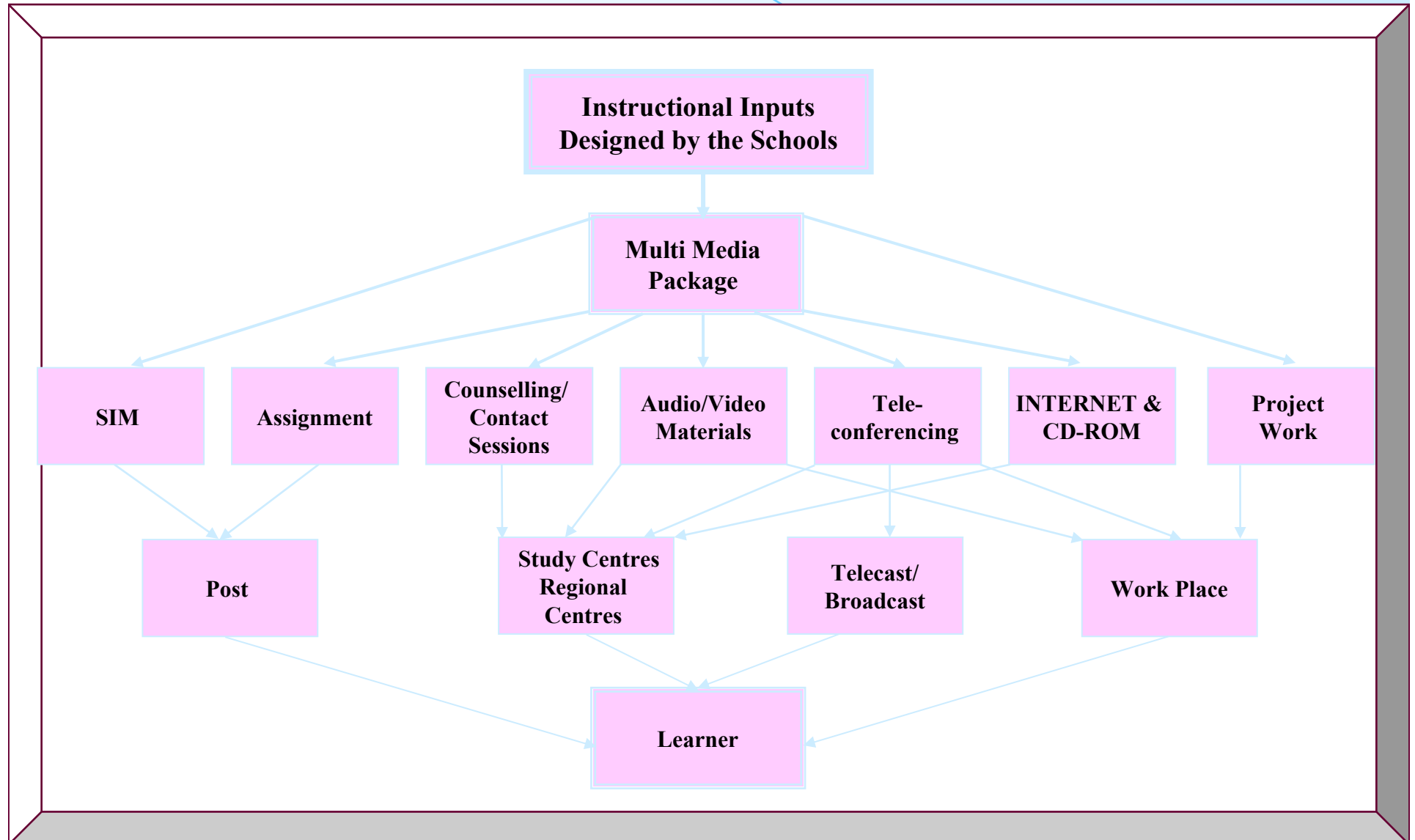
- Offers various academic programmes leading to Certificate, Diploma & Degree.
- Develops and produces courses for delivery through ODL mode.
- Promotes research, training and extension education for ODL System.



DISTINCTIVE FEATURES: IGNOU

- **National jurisdiction**
- **flexible admission rules**
- **individualised study : flexibility, in terms of place, pace and duration of study**
- **use of latest educational and communication technologies**
- **Strong network of student support services**
- **cost-effective programmes**
- **modular programmes**
- **resource sharing, collaboration and networking with other Open Universities**

INSTRUCTIONAL INPUTS AND CHANNELS OF DELIVERY MODES





Characteristics of Self Learning material

- Self-explanatory
- Self-contained
- Self-motivating
- Self-directed
- Self-evaluating

SCHOOL OF AGRICULTURE (SOA)

Came into Existence: January, 2005

Objectives:

- **Extend outreach of Agricultural education for rural masses (particularly disadvantaged areas/groups);**
- **to enhance the job potential of agriculture human resource; and**
- **to strengthen agriculture education system through ODL interventions.**

Type of Programmes

- Awareness
- Vocational and Entrepreneurship
- Continuing Education
- Training
- Appreciation

SOA- Programmes on Offer

- ◆ **Awareness Programme in Dairy Farming**
- ◆ **Awareness Programme in Value added Products from Fruits and Vegetables**
- ◆ **Certificate Programme on Integrated Pest Management Technology in Potato Cultivation**
- ◆ **Training programme for the betel vine farmers**

SOA- Programmes on Offer

- ◆ **Certificate in Sericulture (CIS)**
- ◆ **Certificate in Organic Farming (COF)**
- ◆ **Certificate in Poultry Farming (CPF)**
- ◆ **Certificate in Bee Keeping (CIB)**
- ◆ **Certificate in Water Harvesting and Management (CWHM)**

SOA- Programmes on Offer

- ◆ **Diploma in Value Added Products from Fruits and Vegetables (DVAFPV)**
- **Diploma in Dairy Technology (DDT)**
- **Diploma in Meat Technology (DMT)**
- **Diploma in Production of Value Added Products from Cereals, Pulses and Oilseeds (DPVCPO)**
- **Diploma in Fish Products Technology (DFPT)**
- **Diploma in Watershed Management (DWM)**

SOA- Programmes on Offer

- ◆ **PG Certificate in Agricultural Policy (PGCAP)**
- ◆ **PG Diploma in Food Safety and Quality Management (PGDFSQM)**
- ◆ **PG Diploma in Plantation Management**
- ◆ **Ph.D in Agriculture Extension (PHDAgE)**
- ◆ **Ph.D. in Dairy Science and Technology (PHDDR)**

Sustainability Science (SS)

Programmes on Offer : NON CREDIT COURSE

- **Appreciation Programme in Sustainability Science**
- **Leadership Programme in Nutrition Security and Sustainable Development**
- **Appreciation Programme on Sustainable Management of Wetlands**

SS-CSD- Programmes on Offer

- **Appreciation Programme on Sustainable Management of Ganga- a scientific Approach**
- **Leadership Programme on Himalayan Ecosystem**
- **Appreciation Programme on Sustainable Management of Biodiversity**

SS-CSD- Programmes on Offer

- **CREDIT COURSE**
 - **PG Diploma in Sustainability Science**
 - **PG Certificate in Climate Change and Sustainable Development**

SCHOOL OF AGRICULTURE- Collaborations & Linkages

- Ministry of Agriculture (MOA), Government of India
- Ministry of Rural Development (MORD), Government of India
- Ministry of Food Processing Industries (MFPI), Government of India
- Central Silk Board, Government of India
- Agricultural and Processed Food Products Export Development Authority (APEDA), Government of India
- I.C.A.R.
- Food Safety and Standards Authority of India, GoI
- National Horticulture Mission, Ministry of Agriculture, GoI
- National Institute of Food Technology and Entrepreneurship Management (NIFTEM)

Eligibility for Enrolment

- **Awareness Programmes**
 - Literate Fifth Pass
- **Certificate Programmes**
 - 8th or 10th pass
- **Diploma Programmes**
 - 10+2
- **PG Programmes**
 - Graduates in relevant fields



OUTCOME

- Human resource building at various levels
- Entrepreneurship development in different sectors *viz.*, agriculture, horticulture, animal husbandry, fisheries, poultry, post harvest technology & value added products etc.
- Multi-media information and education materials for agriculture and allied sectors
- Utilization of national and international resources in promoting agricultural education.

Programme Study Centers (PSC)

Agriculture or veterinary Colleges / Universities
KVKs, Private Institutions, Research Centres,
NGOs, Industry

- Number of PSCs: 160



Counselling

Exemplar counselling Schedule for a Diploma programme:

THEORY

Total sessions: 25 - Duration 2 hours / session: Total days: 6

PRACTICAL

- **Total sessions: 80 Duration 4hours / session**
- **Total Days: 40**

Guided Experiments: 32 Days

Un-guided Experiments: 8 Days



Examination and Evaluation Scheme

Modalities for Examination

Theory:

Term-End Examination:

70% once in a year i.e. in the month of the December.

Continuous Assessment: 30%

Practical:

Term-Guided Experiments: 70% and Unguided Experiments: 30%

- **75% Attendance is compulsory for scheduled practical counselling (Guided Experiments)**

Objectives

It seeks to develop India's capability to meet the global food safety and quality requirements and enhance competitiveness of food products.

In long term perspective, it would contribute to ensure consumer safety within and outside the country.

Objectives

The core objective of the programme is to develop professionals

Development, implementation and auditing of Food Safety and Quality Management in the country.

Objectives

This PG programme shall enable the students to:

- Comprehend the issues of safety and quality in food production, handling, processing and trade.
- Build technical proficiency in undertaking food safety and quality assurance in food processing chain i.e., from farm to fork.
- Ensure the safety and quality of food products as per mandatory legal requirements and voluntary standards including export regulations, if required.

Objectives

- Design and implement
 - Good Hygienic Practices (GHP)
 - Good Manufacturing Practices (GMP)
 - Hazard Analysis and Critical Control Point (HACCP)
 - Quality Management Systems (QMS): ISO9001
 - Food Safety Management Systems (FSMS) : ISO 22000
 - Environmental Management Systems: ISO 14001
 - Laboratory Management System: ISO 17025
 - Retail Standards

Objectives

- Be able to effectively plan, conduct, report and audit as per the guidelines of the ISO 19011-2002.
- Undertake Standard Microbiological and Chemical analysis of Food Products.
- Apply Good Hygienic, Manufacturing, Laboratory, Transportation and Retail Practices in Food Processing/ Hospitality industry and Retail outlets.

Employment Opportunity

- Food industry/hospitality institutions as food safety team leader/member, regulatory bodies as food safety officer/inspector
- Government promotional bodies (like APEDA), auditor in certification and inspection bodies
- Trainer/Counsellor in training/counseling bodies, as a member in supply chain management team in retail chain/ industry
- Self-Employment as certifying professionals, counselor, trainer, auditor

Duration

- Minimum - 1 year
- Maximum - 4 years.

Programme Courses

- 1. Food Fundamentals and Chemistry**
- 2. Food Microbiology**
- 3. Food laws and Standards**
- 4. Principles of Food Safety and Quality Management**
- 5. Food Safety and Quality Management Systems**
- 6. Food Safety and Quality Auditing (Practical)**
- 7. Chemical Analysis and Quality Assurance**
- 8. Project Work**

Course I – Food Fundamentals and Chemistry

Block 1 – Introduction to Food Science

Block 2 – Food Chemistry

Block 3 – Food Analysis

**Block 4 – Food Processing and
Preservation**

Course II – FOOD MICROBIOLOGY

**Block 1 – Fundamentals of Food
Microbiology**

**Block 2 – Analytical Techniques in
Microbiology**

Course II – FOOD MICROBIOLOGY

Practical Manual

- 1. Introduction to the Basic Microbiology Laboratory Practices**
- 2. Cleaning and Methods of Sterilization**
- 3. Cultivation and Sub- culturing of Microbes**
- 4. Staining Techniques**
- 5. Standards Plate Count Method**
- 6. Direct Microscopic Examination of Foods**
- 7. Enumeration of Fungi (Yeasts and Molds)**
- 8. Assessment of Air using Surface Impingement Method**

Course II – FOOD MICROBIOLOGY

Practical Manual

- 9. Assessment of Surface Sterilization using Swab and Rinse Method**
- 10. Detection of Coliforms and Indicator Organisms(Most Probable Number)**
- 11. Detection of Coliforms and Indicator Organisms Confirmed and Completed Tests, Membrane filter Techniques**
- 12. Interpretation of Microbiological Data and its Inferences**

Course III – Food Laws and Standards

Block 1 – Indian Food Regulatory Regime

Block 2 – Global Scenario

Block 3 – Export & Import Laws and Regulations

Block 4 – Other Laws and Standards Related to Foods

Course IV – Principles of Food Safety and Quality Management

Block 1 – Food Safety and Quality Management Systems

Block 2 – Risk Analysis

Block 3 – HACCP

Block 4 – Other Food Safety Practices

Course V – Food Safety and Quality Management Systems

Block 1 – Management Systems, Auditing and Accreditation

Block 2 – ISO 9001 : 2008

Block 3 – ISO 22000: 2005

Block 4 – Laboratory Quality Management System

Block 5 – Retailer Standards

Course VI – FOOD SAFETY AND QUALITY AUDITING

Practical Manual

- 1. Visit to the nearby Food Establishment**
- 2. GHP and GMP in a Food Factory: a)
Identifying the key Focus Areas for GHP &
GMP b) Identifying Gaps in its Implementation
c) Closure Plans for Identified Gaps in a Food
Factory/ Food Outlet.**
- 3. Developing the Process Flow for the Food
Establishment Including all the Inputs,
Outputs and Interim Loops**
- 4. Development of Methodology (Decisions Trees)
as per Clause 7.4.4 of ISO 22000 for a Food
Establishment**

Course VI – FOOD SAFETY AND QUALITY AUDITING

Practical Manual

- 5. Developing FSMS (Module 1): a) Data Collection and Hazard Identification (Physical, Chemical and Biological) b) Hazard Analysis (Using FMEA Technique for Risk Assessment)**
- 6. Developing FSMS (Module 2) : a) Development of OPRP (Operational Pre-requisite Programme) and Development of HACCP Plan (Critical Limits including Rationale for Limits), Monitoring Procedure, Correction and Corrective Measures) b) Managing Unsafe Product**

Course VI – FOOD SAFETY AND QUALITY AUDITING

Practical Manual

- 7. Developing FSMS (Module 3) : a) Verification and Validation of Control Measures (OPRP and HACCP Plan) as per Codex Guidelines on Validation b) Emergency Situation, Preparedness and Response Plan c) Communication (External and Internal)**
- 8. Developing FSMS (Module 4): Traceability System as a Tool for, Recall/ Withdrawal (ISO 22005:2007)**
- 9. Application of ISO 9001 Model: a) Understanding Process Approach b) Defining Quality Policy and Objectives c) Correction, Corrective Action and Preventive Action d) Continual Improvement**

Course VI – FOOD SAFETY AND QUALITY AUDITING

Practical Manual

- 10. Food Laws (Module 1) : Identification of Legal Requirements for following Food Groups/Products/Standards: a) Fruits and Vegetable Products b) Dairy products c) Meat and Meat Products d) Cereal/Pulses/Oil Seeds Products e) Fish and Sea Foods f) Ready to Eat Foods**
- 11. Food Laws (Module 2): Hygienic Requirements for Manufacturing Premises as Prescribed by Law**
- 12. Food Laws (Module 3): Design a Label for any Food Product**

Course VI – FOOD SAFETY AND QUALITY AUDITING

Practical Manual

- 13. Matrix Preparation to Find Correspondence between ISO 22000, HACCP Series and BRC and any other Related Standard (Food Retail Management – Basic Requirements)**
- 14. Understanding ISO 17025 Requirements for 9001 and Clause 8.3 in ISO 22000:2005**
- 15. Audit Planning: a) Role and Responsibilities of Auditors and Lead Auditors and Pre-audit Information Required to Plan the Audit (Module 1) b) Preparation of an On-site Audit Plan that is Appropriate to the Audit Scope (Stage 1 and Stage 2) (ISO:22003 and 17021) (Module 2)**

Course VI – FOOD SAFETY AND QUALITY AUDITING

Practical Manual

- 16. Produce and Audit Checklist Including Salient Features of ISO 9001 and FSMS 22000 (Module 3)**
- 17. Document Review as per the Case Study (Module 4)**
- 18. Auditing (Module 5): a) Conducting the Opening Meeting and Closing Meeting (as per ISO:19011) b) Establishing Qualification Criteria for Auditors and Lead Auditors (ISO 17921 and ISO 22003 for a Food Industry)**

Course VI – FOOD SAFETY AND QUALITY AUDITING

Practical Manual

- 19. Mock Audit Exercise to Develop Interpersonal Skills Information Gathering Techniques and Exercising Objectivity in the Review of Evidences Collected (Module 6)**
- 20. Post Audit Activities (Module 7): a) Report Writing, including Writing Valid, Factual and Value adding Non-conformity Report b) Proposals for Corrective Action and Follow Up**

Course VII – Chemical Analysis and Quality Assurance

Practical Manual

- 1. Calibration of glassware.**
- 2. Preparation of standard volumetric solutions.**
- 3. Determination of Moisture In Food Products by Hot Air Oven-drying Method.**
- 4. Determination of Moisture in Food Products by Dean and Stark Method.**
- 5. Determination of Moisture in Food Products Using Karl Fischer Titration Method.**
- 6. Determination of Protein Content In Food Products By Kjeldahl Method.**

Course VII – Chemical Analysis and Quality Assurance

Practical Manual

- 7. Determination of Crude Fat in Foods by Soxhlet Extraction Method.**
- 8. Determination of Total Fat in Foods by Rose Gottlieb Method.**
- 9. Determination of Volatile Oil in Spices.**
- 10. Determination of Starch in Cereal Grains by Acid Hydrolysis Method.**
- 11. Determination of Starch in Cereal Grains by Glucoamylase Method.**
- 12. Determination of Crude Fibre in Food Sample.**

Course VII – Chemical Analysis and Quality Assurance

Practical Manual

- 13. Determination of Total Ash Content in Food Products.**
- 14. Determination of Acid Insoluble Ash in Food Products.**
- 15. Determination of pH of Food Products by Using pH Meter.**
- 16. Determination of Free Fatty Acids and Acid Value in Oils and Fats.**
- 17. Determination of Unsaponifiable Matter in Oils and Fats.**

Course VII – Chemical Analysis and Quality Assurance

Practical Manual

- 18. Determination of Melting Point or Solidification Point of Oils and Fats.**
- 19. Determination of Refractive Index of Oils and Fats.**
- 20. Determination of Specific Gravity of Oils and Fats.**
- 21. Determination of Titre Value of Oils and Fats.**
- 22. Determination of Colour of Oils and Fats by Lovibond Tintometer.**
- 23. Determination of Iodine Value in Oils and Fats.**

Course VII – Chemical Analysis and Quality Assurance

Practical Manual

- 24. Determination of Saponification Value in Oils and Fats.**
- 25. Determination of Acetyl Value and Hydroxyl Value in Oils and Fats.**
- 26. Determination of Allyl Isothiocyanate in Mustard Oil.**
- 27. Determination of Reichert Meissl (RM) Value and Polenske Value (PV) in Oils and Fats.**
- 28. Determination of Peroxide Value of Oils and Fats.**

Course VII – Chemical Analysis and Quality Assurance

Practical Manual

- 29. Determination of Sodium Chloride Content in Butter.**
- 30. Determination of Gluten Content in Wheat Flour.**
- 31. Determination of Sorbic Acid in Food Products.**
- 32. Determination of Copper, Zinc, Lead and Cadmium in Food Products by Atomic Absorption Spectroscopy.**
- 33. Determination of Cholesterol Content in Ghee by GC.**

Course VII – Chemical Analysis and Quality Assurance

Practical Manual

- 34. Determination of Vitamin A Content in Ghee by HPLC.**
- 35. Sensory Evaluation Laboratory.**
- 36. Selection of Sensory Panelists.**
- 37. Sensory Evaluation of Food Products–Hedonic Rating Test.**
- 38. Judging of milk.**

Course VIII – Project Work

**Objective: Study implementation of QMS/ FSMS
in Food Establishments**

**Approaches: Same Topic in various establishments
like Manufacturing, Hospitality,
retail, and Street food hawkers**

Course VIII – Project Work

To be linked with (Attached to) either food industry or consultancy organizations

Should become proficient in designing and implementing GHP, GMP, HACCP. They can choose their own sectors. (15 days)

Course VIII – Project Work

Outlines of the Project Guide:

Check lists (including critical areas) as per 9001, 22000, 17025

Gap Assessment

Designing and Development of Training Module

Formats for HACCP plans and layouts

Internal Auditing

Action plan for implementation of HACCP

Delivery

- Through Programme Study Centers (PSCs)- institutions having sufficient infrastructure and faculty to handle the programme
 - Theory Counselling
 - Practical Counselling
 - Hands on training
 - Project
 - Assignment
- Online

COUNSELLING

THEORY

(i) Total sessions: 25 Duration 2 hours / session,

Total days: 5

PRACTICAL

(ii) Total sessions: 50 Duration 4hours / session

Total Days: 25



Examination and Evaluation Scheme

Modalities for Examination

Theory: Term-End Examination June or December

Continuous Assessment: Assignments

Practical: Guided Experiments: 70% and Unguided Experiments: 30%

- **75% Attendance is compulsory for scheduled practical counselling (Guided Experiments)**

Practical Facilities required for PGDFSQM at Study Centre

- 1. Laboratory for chemical analysis of food samples especially equipped with Proximate analysis equipment. The desirable equipment are: Atomic Absorption Spectrophotometer (AAS), Gas Liquid Gas Chromatograph (GLC), Gas Chromatograph with Mass Spectrometer (GCMS), High Performance Liquid Chromatograph (HPLC), Liquid Chromatograph Mass Spectrometer (LCMS), Karl Fischer Titrator and Fourier Transmission Infra Red (FTIR) Spectrophotometer.**

Practical Facilities required for PGDFSQM at Study Centre

- 2. Laboratory for Microbiological analysis of food samples.**
- 3. Sensory evaluation laboratory for food samples.**
- 4. Association with NABL accredited lab or Govt. certified food testing lab or certification bodies.**
- 5. Access to food industry or consultancy organizations.**
- 6. Association with certifying bodies or Qualified Food Auditors.**

COUNSELLING NORMS

- Theory Rs. 1000/ 2hours
 - Practical Rs. 1000/ 4 hours session
 - Laboratory Assistant Rs. 250/ 4 hours session
 - Laboratory Attendant Rs. 175/ 4 hours session
 - Laboratory Usages: Rs. 600/ day
 - Programme Incharges: Rs. 6000/ month
 - Head of Institution: Rs. 4500/ month
 - Conveyance allowance: Rs. 1000/ month
 - Administrative Support Rs. 10000/ annum (includes typing and secretarial support)
 - *Consumables: Actual subject to Rs. 400/ per learner for 8 sessions on the basis of students enrolled*
- or*
- *70% of the Fee*

QUALIFICATIONS FOR COUNSELLORS

- **Any individual who is trained in ISO:9000/FSMS/HACCP/ISO:17025 and has worked as an Auditor or as Consultant.**
- **PG in Food Science/ Food Technology/ Dairy Science/ Microbiology/ Food Chemistry/ Quality Control.**



Counselling- Practical

Familiarity with the curriculum

- **The Counsellors must be conversant with the following aspects:**
- **course objectives**
- **course contents**
- **human resource requirements for the conduct of experiments/exercises**
- **course related video programme(s) and**
- **assessment scheme**



Counselling- Practical

- **Enthuse the students with the joy of learning by doing.**
- **The students should be encouraged to critically assess their own results, so that they know where the errors creep in and how to avoid them.**



Counselling- Practical

Pre-lab preparations

- **The Counsellors must make a comprehensive planning in order to optimize the time available for practical counselling. The Counsellors must ensure availability of :**
 - **Laboratory supporting staff.**
 - **Raw material, pre-processing of food items ,chemicals, stock solutions, apparatus and equipment (mentioned as requirements in the individual experiments of the laboratory course).**



Evaluation Scheme- Guided Experiments

	Component	Weight.
1	Actual performance of experiment and observation (psychomotor and manipulative skills)	40%
2	Reporting (Problem solving skills)	20%
3	Viva-voce	20%
4	Record	20%



Evaluation Scheme- Un-guided Experiments

	Component	Weight.
	Actual performance of experiment and observation (psychomotor and manipulative skills)	50%
	Reporting (Problem solving skills)	25%
	Viva-voce	25%



●	For Category A	
●	i) Preparation of standard solution	2
●	ii) Titration and Observation	2
●	iii) Reporting	
●	 Calculation	1
●	 Result	1
●	iv) Maintenance of the record	1
●	v) Viva-voce	



Counselling- Practical

For Category B

- Since in this case students do not have to prepare standard solution, therefore, marking pattern may be as follows:
- i) Operation of Instrument 2
- ii) Observations 2
- iii) Reporting
 - Calculation and plotting of graphs 1
 - Result 1
- iv) Maintenance of the record 1
- v) Viva-voce



Examination and Evaluation Scheme

Grd.	Qu.L ev	P.Gr	% Marks
A	Exc.	Above 4.5	Ab 80 %
B	VG	3.50 to 4.49	60-79.9%
C	G	2.50 to 3.49	50-59.9%
D	Av	1.50 to 2.49	40-49.9%
E	UnS.	0 to 1.49	Below 40%



Qualities of a Distant Learner

- **Responsibility**
- **Motivation**
- **Positive Attitude**
- **Setting Goals**



Duties of a Distant Learner

- Time Management Skills
- Planning and scheduling to learn better
- 15 hours a week
- Read with a purpose
 - SQ3R: Survey, Question, Read, Recall and Review
 - Main Theme and Inference
 - Make notes , underline the important points
 - Read faster with understanding



Thanking you