सत्यमेव जयते

MOFPI

PM Formalisation of
Micro Food Processing Enterprises
(PM-FME) Scheme

IIFPT

Training guide for Training of Master Trainers Under PM FME Scheme

AATMANIRBHAR BHARAT

Organized by

Indian Institute of Food Processing Technology (IIFPT)
Ministry of Food Processing Industries, Government of India

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Capacity Building Component

Under PMFME Scheme, training is one of the important components of capacity building program, the objectives of training program are to import the knowledge to trainers in domain skills and platform skills. The training materials, syllabus, and trainers guide will be designed according to meet the guidelines given by the ministry. The trainers will be undergoing training session in each domain with specific course duration to meet the requirement and the assessment will be done by FICSI for the same.

Training of master trainer and training of trainer is to provide the domain specific knowledge on the particular food sub sector and its allied areas right from the introduction of PMFME scheme followed with equipment and machineries, plant layout required for the smooth operation, processing and preservation methods involved in the specific foods and food safety regulation and standards to be maintained as per the specific processing methods and packaging technologies are involved in general for the particular food sub sector as per the current market. This training guide is made to provide the better understanding to the trainers while conducting the session as per the training schedule.

The guide will be used by the master trainer as well as trainers of trainer with the handbook for better understanding about the topic in each session the participants are requested to share their view and examples during the concerned topic. We hope the guide will be useful for pleasing and flourishing experience.

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Trainers Guide on Master Trainers – Domain Skills

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Trainers Guide on Fruits and vegetables – Domain Skills

Module – Introduction
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

- Overview of PMFME scheme, guidelines, capacity building framework and its implementation, status, market size and scope of fruit and vegetable processing industry in India; Selection, procurement and supply chain management of fruits and vegetables for processing industry.

Learning outcome:

- Awareness about Indian food sector, andstatus and challenges in micro food sector
- Wakefulness session on PMFME Scheme objectives and implementation through various levels of training.
- Learn about salient features of PMFME scheme
- Understanding of role of incubation center and activities.
- Awareness about marketing scope and primary processing of F&V
- Learn about the selection and supply chain management of F&V

Module –Plant layout and maintenance
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Food plant design plant location, location factors, site selection, layout, objectives, classical and practical layout, preparation of process chart and machinery layout, product layout and process layout, repair and maintenance of equipment, preventive and breakdown maintenance, replacement of equipment.

Learning outcome:

- Awareness session on legal requirement – Role of FSSAI in food establishment industries
- Learn about the basic layout and design for food establishment premises
- Learn about the different flow diagram for safe food production

Module - Equipment and specification on machineries
Duration - Online – 3 hr, Self-learning – 4hr

Learning objective:

Equipment involved in unit operations of fruits and vegetables. Specifications of machineries involved in fruits and vegetables processing. CIP: cleaning & sanitization of processing equipment's: objectives, frequency, procedures, mechanical cleaning aspects, CIP system & program.

Learning outcome:

- Awareness on food safety measures for equipment and containers used in F&V
- Learn about the list of cleaning and disinfection of equipment available
- Awareness of color coding system to avoid contamination in food production zone
- Learn about the air quality, lighting facilities,Sanitation and maintenance of establishment premises
- Learn about the importance and implementation of drainage and waste disposal system in industry
- Awareness about the maintenance and replacement of machines

Module - Value addition of fruits and vegetables
Duration - Online – 2hr, Self-learning – 4hr

Learning objective:

Sugar conserves: Jams, jellies, marmalades. Beverages: Juices (carbonated and non-carbonated), squashes, syrups, nectars, RTS, crushes, cordial, fruit wine. Preparation of concentrates-puree, sauces, ketchups, soup, and paste. Preparation of pickles, and chutneys. Waste and by-products utilization.

Learning outcome:

- Learn about the Processing of fruits pulp/puree in F&V
- Learn about the Jams, jellies, osmotic dehydration of dehydrated product, sauce, ketchup, pickles, chutneys, fruit juices.
- Learn different techniques of Preservation chemicals used in fruits and vegetable processing

Module - Packaging of fruits and vegetable products
Duration - Online – 2 hr, Self-learning – 2 hr

Learning objective:

Advance in packaging, different packaging materials, methods and machineries involved (primary, secondary and tertiary) in packaging of fruits and vegetables products. Selection of packaging materials standards for fruits and vegetable products. Recent packaging techniques to extend the shelf life of the product-aseptic packaging, tetra pack, convenient and smart packaging. Advances in storage of fruits and vegetables

Learning outcome:

- Awareness on different functions of packaging, packaging material and its properties
- Learn about the Special packing system, like modified atmospheric packaging of fruits and vegetables
- Awareness on mechanical injuries of fruits and vegetable
- Learnthe importance of shelf life of packaged food and its determination.
- Learn about the storage of fruits and vegetables

Trainers Guide on Dairy Processing – Domain Skills

Module – Introduction
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Overview of PMFME scheme, guidelines, objectives, capacity building framework and its implementation. Status, market size and scope of dairy processing industry in India; Selection, procurement and supply chain management of milk for dairy processing industry

Learning outcome:

- Awareness on the status, market size and scope of dairy processing industry in India
- Awareness and brief about Agricultural process in India
- Awareness on current market size of the Indian dairy industry and the global dairy sector
- Mindfulness session on dairy processing in India
- Learn about the value addition for increasing farmer's income

Module – Plant layout and maintenance
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Introduction to food plant design - plant location – location factors, site selection - layout - objectives, classical and practical layout – preparation of process chart and machinery layout – product layout and process layout –repair and maintenance of equipment – preventive and breakdown maintenance – replacement of equipment

Learning outcome:

- Effective Learning about the dairy plant design – principles of layout
- Awareness on plant layout design for – liquid milk processing, dahi processing, paneer production section, khoa and peda production section, ghee making section, integrated product plant.
- Learn about the space requirement for dairy plant and different section in dairy plant, steam requirement and refrigeration requirement

Module - Equipment and specification on machineries
Duration - Online – 3 hr, Self-learning – 4hr

Learning objective:

Equipment involved in unit operations of milk processing. Specifications of machineries involved in dairy industry. Selection and installation of storage tank, heat exchangers-chillers, pasteurizers, evaporators, plate heat exchangers; homogenizer; centrifuge; packaging machine. Refrigeration and chilling towers. Steam generation, supply and selection of boilers. Process control equipment and accessories for a complete milk processing plant.CIP: Cleaning & sanitization of processing equipment's: objectives, frequency, procedures, mechanical cleaning aspects, CIP system & program

Learning outcome:

- Wakefulness session on dairy equipment maintenance – principles of preventive maintenance
- Learn about the plant maintenance program, common maintenance procedures, and maintenance of basic equipment in dairy processing
- Awareness session on cleaning and sanitation of dairy equipment – cleaning agents, methods
- Learn about the Hygiene control of dairy equipment

Module – Processing and Value addition of milk
Duration – Online – 2hr, Self-learning – 4hr

Learning objective:

Processing of fluid milk- chilling, standardization, homogenization, pasteurization, cream separation, and packing. Sensitization about types of processed fluid milk- standardized milk, toned, double toned and skimmed milk. Aseptic processing of milk.
Manufacturing of milk products- principle and procedures for preparation of curd, cream, butter, ghee, condensed milk, dried milk/milk products, ice-cream, khoa, paneer, cheese, buttermilk, skimmed milk powder, traditional Indian dairy products, and by-products utilization. Waste and byproducts utilization.

Learning outcome:

- Learn about the milk processing steps and flow chart
- Awareness about the processing and flow diagram on
    1. Reconstituted milk
    2. Flavored milk
    3. Butter
    4. Cheese
    5. Frozen dessert
    6. Condensed milk and dried milk
- Learn about the technology of khoamanufacturing
- Learn about the methods of paneer manufacturing

Module - Packaging of milk and milk products
Duration - Online – 2 hr, Self-learning – 2 hr

Learning objective:

Advances in packaging, different packaging materials, methods and machineries involved (primary, secondary and tertiary) in packaging of milk and milk products. Selection of packaging materials, standards for milk and milk products. recent packaging techniques to extend the shelf life of the product-aseptic packaging, convenient and smart packaging. Advances in storage of milk and milk products.

Learning outcome:

- Awareness on different material used for dairy product packing
- Learn about different packing techniques and its importance
    1. Aseptic packing
    2. Modified atmospheric packing
    3. Shrink packing
    4. Active packing
    5. Intelligent packing
- Learn about the characteristic of dairy product and their packing requirement

Trainers Guide on Grain Processing – Domain Skills

Module – Introduction
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Overview of PMFME scheme, guidelines, objectives, capacity building framework and its implementation. Status and scope of grain processing; Preprocessing of cereals and pulses: drying, cleaning, grading and detection of extraneous matter. Effect of different factors on various properties.

Learning outcome:

- Awareness about the holistic approach on PMFME Scheme on ODOP and institutions responsible for the scheme
- Learn the scope of grain processing on – rice, pulses, coarse grain and its detailed techniques
- Learn about the wheat processing and quality parameters
- Awareness about the different machineries involved in wheat processing

Module – Plant layout and maintenance for grain processing
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Introduction to food plant design - plant location - location factors, site selection - layout - objectives, classical and practical layout – preparation of process chart and machinery layout – product layout and process layout - repair and maintenance of equipment – preventive and breakdown maintenance – replacement of equipment.

Learning outcome:

- Learn about how to select the location for the plant and different site selection process based on the capacity
- Learn about the list of factors affecting plant layouts in details and different types of layouts used in industry
- Learn about the types of maintenance program
    i. Preventive maintenance
    ii. Condition based maintenance
    iii. Predictive maintenance
    iv. Corrective maintenance
    v. Predetermined maintenance

Module - Equipments and specifications of machineries grain processing
Duration - Online – 3 hr, Self-learning – 4hr

Learning objective:

Production of whole wheat flour-atta/ maida, Suji, dalia- process and equipment: tempering, break and reduction, purifiers and sifters, flour blending comparison of milling of hard common wheat, soft wheat and durum wheat. flour classification and grading. Nutritional consequences of flour milling and flour enrichment. Turbo grinding and air-classification, flour grades and their suitability for baking purposes, assessment of flour quality and characteristics. Determination of dry and wet gluten content of flour.

Learning outcome:

- Awareness on different filling machineries used in liquid and dry products

Learn about different equipment's used in the packaging are

- Package making equipment
- Unit packing

- Cartoningequipment
- Overwrapping
- Shrink tunnels
- Capping equipment
- Labelling

Module –Value addition and processing of grain
Duration - Online – 2 hr ,Self-learning – 4hr

Learning objective:

Corn processing: Production corn flour-wet milling and dry milling method, corn pops and quality evaluation of popped corn. Preparation corn syrup. Paddy processing: Parboiling and milling of paddy, aging of rice, rice enrichment, processed rice products. Pulse milling: Pre-treatment in dal milling like cleaning, grading, soaking, and drying. Milling pulses for production of dal, e.g. pigeon pea, green gram, Bengal gram. Cereal based snack foods- and breakfast cereals pasta and noodle products. Preparation of expanded & puffed rice from raw and parboiled materials. Extruded products.

Learning outcome:

- Awareness on different milling processes
- Wheat processing and its quality parameters, maize milling
- Modern rice milling technology – cleaning, de-stoning, de-husking, shelling, husk separation, paddyrice separation.
- Pulse milling – pulse production in India, composition of pulses, unit operation in pulse processing, milling methodologies,
- Learn about the novel rice products – germinated rice, low glycemic rice, micronutrient fortified rice, extruded rice.
- Learn about the different products from rice flour and novel breakfast cereals from millets

Module - Packaging of grains and value added products
Duration - Online – 2 hr, Self-learning – 2 hr

Learning objective:

Advance in packaging, different packaging materials, methods and machineries involved (primary, secondary and tertiary) in grain processing and their value-added products. Selection of packaging materials and standards for grain products. Recent packaging techniques to extend the shelf life of the product technologies - Aseptic packaging, tetra pack, MAP, hermetic packaging, convenient intelligent and smart packaging.

Learning outcome:

- Learn about the nature and deterioration characteristic of cereal flours/sugar
- Awareness on packing requirement of grains/ flour and sugar
- Learn about the current trends in packing of whole grains, bulk storage of grains

Trainers Guide on Fish and Marine Processing – Domain Skills

Module – Introduction
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Overview of PMFME scheme, guidelines, objectives, capacity building framework and its implementation. Status, market size and scope of fish and marine food processing industry in India; Selection, procurement and supply chain management of fish and marine food for processing industry.

Learning outcome:

- Wakefulness session on PMFME scheme, one district one product approach, funding pattern, upgradation of processing unit, eligibility criteria
- Lean about the creation of common infrastructure, capacity building and research and partner institution
- Awareness on implementation and monitoring mechanism and sea food export scenario.
- Learn about the trends and market concepts driving international seafood trade
- Awareness on the fish supply chain in India

Module – Plant layout and maintenance
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Introduction to food plant design - plant location - location factors, site selection - layout - objectives, classical and practical layout – preparation of process chart and machinery layout – product layout and process layout - Repair and maintenance of equipment – preventive and breakdown maintenance – replacement of equipment.

Learning outcome:

- Learn about the detailed hygiene plant design concepts in fish processing.
- Lean about the details of factory site selection and layout for fishery processing plant.

Module - Equipments and specifications of machineries in F&M processing
Duration - Online – 3 hr, Self-learning – 4hr

Learning objective:

Equipment involved in unit operations of Fish and Marine food processing. Specifications of machineries involved in fish and marine food processing. CIP: Cleaning & sanitization of processing equipment's: objectives, frequency, procedures, mechanical cleaning aspects, CIP system & program.

Learning Outcome:

- Awareness on machinery for pre-processing of fish, size grading and washing machine, descaling, filleting machine, fish skinner and other machinery used in meat processing operations.

Module - Value addition of fish and marine
Duration - Online – 2 hr, self-learning – 4hr

Learning objective:

Handling and preservation - salt curing and smoking – drying of fish - freezing preservation - freezing methods– block frozen, IQF and cooked forms. minced products - surimi process – fish meal- fish oil. waste and byproducts utilization.

Learning outcome:

- Detailed learning of handling and preprocessing,transportation, freezing systemof fish and marine products and transportation
- freezing system
- Awareness on physical changes during frozen storage, different smoking technique and drying, potential hazards in smoked fish and thermal processing of fish.
- Awareness about the surimi processing industry overview
- Learn about the coated fish product processing
- Learn about the advanced fish processing technologies
- Awareness about fishery by products and high value products from fish waste, utilization of prawn shell waste

Module - Packaging of fish and marine products
Duration - Online – 2 hr, Self-learning – 2 hr

Learning objective:

Advance in packaging, different packaging materials, methods and machineries involved (Primary, secondary and tertiary) in packaging of fish and marine products. Selection of packaging materials standards for fish and marine products. Recent packaging techniques to extend the shelf life of the product-aseptic packaging, convenient and smart packaging. Advances in storage of fish and marine products.

Learning outcome:

- Awareness on types of packing material used in the fish processing - packaging of fresh fish, packaging of frozen fish, packaging of IQF fish products and packaging of thermal process fish products.
- Learning to know the packaging of fishery products – vacuum packing, MAP, Smart packing, active packaging.

Trainers Guide on Meat and Poultry Processing – Domain Skills

Module – Introduction
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Overview of PMFME scheme, guidelines, objectives, capacity building framework and its implementation. Status, market size and scope of meat and poultry processing industry in India; Selection, procurement and supply chain management of meat and poultry for processing industry.

Learning outcome:

- Awareness on introduction about different meat sector, Livestock and meat supply chain in India, marketing of meat.
- Learn about the issues in livestock and meat supply chain
- Learn about the pre and post-harvest loses in livestock produce

Module – Plant layout and maintenance
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Introduction to food plant design - plant location – location factors, site selection - layout - objectives, classical and practical layout – preparation of process chart and machinery layout – product layout and process layout –modern abattoirs – repair and maintenance of equipment – preventive and breakdown maintenance – replacement of equipment.

Learning outcome:

- Awareness on selection of site to establish an abattoir
- Know about abattoir design, construction, and sections of slaughterhouse

Module - Equipments and specifications of machineries in M&P processing
Duration - Online – 3 hr, Self-learning – 4hr

Learning objective:

Equipment involved in unit operations of meat and poultry processing. Specifications of machineries involved in meat and poultry processing. CIP: Cleaning & sanitization of processing equipment's: objectives, frequency, procedures, mechanical cleaning aspects, CIP system & program.

Learning outcome:

- Knowing about equipment required for establishing a slaughterhouse
- Learning the features of meat processing machineries, slaughtering equipment's for different species of food animals
- Learn about the equipment's for maintaining cold chain
- Learn about the machineries for processing of meat products, machineries for cooking of meat

Module - Value addition of meat and poultry
Duration - Online – 2 hr , Self-learning – 4hr

Learning objective:

Dried and smoked meat products. Comminuted meat products: sausages, semi dry sausages, dry sausages. Cured meat products. Restructured meat. Fried, Broiled, Roasted meat products. Braising and Stewing of meat products. Curries, bacon, ham, cutlet-mix, chicken-n-ham and salami. Egg powder production, uses of egg powder in bakery and confectionary, noodles and pasta, mayonnaise and salad dressings.
Waste and byproducts utilization.

Learning outcome:

- Knowing how to do primary meat processing and different processed meat products.
- Learn about the meat processing steps and ingredients used
- Learn about the different value added meat products in market – sausage, restructured meat products, ground meat, cured meat, dried meat.
- Awareness on utilization of animal byproducts

Module - Packaging of meat and poultry products
Duration - Online – 2 hr, Self-learning – 2 hr

Learning objective:

Advances in packaging, different packaging materials, methods and machineries involved (primary, secondary and tertiary) in packaging of meat and poultry products. Selection of packaging materials standards for meat and poultry products. Recent packaging techniques to extend the shelf life of the product-aseptic packaging, convenient and smart packaging. Advances in storage of meat and poultry products.

Learning outcome:

- Awareness on aerobic packaging machines (impulse sealers)
- Awareness on vacuum packaging machines
- Awareness on modified atmospheric packaging
- Learn about the different packaging techniques for fresh, frozen, dried meat products
- Knowing the current Indian scenario in food packaging

Trainers Guide on Bakery and Confectionary Processing – Domain Skills

Module – Introduction
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Overview of PMFME scheme, guidelines, objectives, capacity building framework and its implementation. Status, market size and scope of bakery and confectionery industries in India- raw materials for bakery and confectionery products specifications, compositions, role of raw materials - flour, types of flour, quality assessment of flour, sugar, shortenings, leavening agents, egg, salt, water, moistening agent, cocoa products, fruits, nuts, improvers, flavoring and coloring agents.

Learning outcome:

- Awareness on overview of PM FME scheme and implementation, support for common infrastructure and branding and marketing support
- Knowing capacity building & research program
- Awareness on frequently asked questions regarding the PMFME project
- Knowing the scope of banking industry in India
- Knowing market potential and future trends of bakery industry
- Awareness on bakery products regulations as per FSSAI guideline

Module – Plant layout and maintenance
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Introduction to food plant design - plant location - location factors, site selection - layout - objectives, classical and practical layout – preparation of process chart and machinery layout – product layout and process layout - repair and maintenance of equipment – preventive and breakdown maintenance – replacement of equipment.

Learning outcome:

- Learn about the hygiene engineering concepts, building design, zoning and air handling design
- Learn about the equipment design and installation for bakery processing

Module - Bakery machinery and equipment
Duration - Online – 3 hr, Self-learning – 4hr

Learning objective:

Identification and selection of bakery and confectionary equipment's-weighing equipment- manual scale, automatic weigh, liquid measuring. Mixing- blenders, horizontal and vertical planetary, continuous. Make up equipment, divider, rounder, proofer, moulder. Baking equipment – different oven, slicer. Confectionary products machines.

Learning outcome:

- Knowing introduction and role of primary bakery equipment
- Learn different types of ovens in bakery industry
- Knowing the different types of bakery refrigeration available in the market

Module - Production of bakery and confectionery products

Duration - Online – 2 hr , Self-learning – 4hr

Learning objective:

Bread making- methods- specification for various types of breads- manufacturing process of biscuit, cookies-crackers- Buns- preservation of bakery products. Frozen bakery products. Production of chocolate, fondant, caramels, fudge and toffee and cakes and pastries.

Learning outcome:

- Awareness on detailed description and role of bakery ingredients
- Learn the formulation and method of bread making
- Learn the bread and bun processing
- Learn the quality control points of breads and bun.
- Awareness on classification and production of biscuit
- Learn the primary and secondary processing of cocoa
- Learn the unit operation of caramel/ toffee processing

Module - Packaging of bakery and confectionery products

Duration - Online – 2 hr, Self-learning – 2 hr

Learning objective:

Advance in packaging, different packaging materials, methods and machineries involved (primary, secondary and tertiary) in packaging. Selection of packaging materials and standards for baked products. Recent packaging techniques to extend the shelf life of the product. Technologies-MAP, hermetic packaging, convenient intelligent and smart packaging.

Learning outcome:

- Learn the packaging criteria and functions of packaging
- Know the packaging components
- Awareness on packaging material used for different bakery products.
- Learn the shelf life of packaged bakery goods

Trainers Guide on Fat and Oil Seed Processing – Domain Skills

Module – Introduction
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Overview of PMFME scheme, guidelines, objectives, capacity building framework and its implementation. Status, market size and scope of fats and oil seed processing industry in India; Selection, procurement and supply chain management of fats and oil seed for processing industry.

Learning outcome:

- Knowing the objectives and approach towards PMFME scheme
- Knowing procedure of applying the scheme
- Awareness on guidelines and contact for PMFME scheme

Module – Plant layout and maintenance
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Introduction to food plant design - plant location - location factors, site selection - layout - objectives, classical and practical layout – preparation of process chart and machinery layout – product layout and process layout - repair and maintenance of equipment – preventive and breakdown maintenance – replacement of equipment.

Learning outcome:

- Knowing the general design consideration of plant layout, types of layout problems and situations
- Awareness on different plant layout patters
- Learn the detailed plant layout for oil processing

Module - Equipments and specifications of machineries in fats and oil seed processing
Duration - Online – 3 hr, Self-learning – 4hr

Learning objective:

Equipment involved in unit operations of fats and oil seed processing. Specifications of machineries involved in fats and oil seed processing. CIP: Cleaning & sanitization of processing equipment's: objectives, frequency, procedures, mechanical cleaning aspects, CIP system & program.

Learning outcome:

- Learn the different oil processing methods – mechanical expelling and solvent extraction and refining processes
- Learn the hydrogenation and interesterification processing
- Learn the different aeration and drying methods used in oil seed processing
- Awareness on pest control procedures and fire risk management
- Awareness on different cleaning methods in oil processing – solvent cleaning, lubrication system.
- Knowing the maintenance of screw press/ expeller

Module - Processing of fats and oil seeds

Duration - Online – 2 hr ,Self-learning – 4hr

Learning objective:

Milk and animal fats: Production, characteristics, composition, processing and utilization of milk fats and butter, animal fats such as lard and tallow, fish and marine oils and waste and byproducts utilization. Edible oil sources: coconut, palm, palm kernel, olive, cocoa butter, sunflower, safflower, sesame, groundnut, mustard, rapeseed, canola, soybean, linseed, castor, rice-bran, cottonseed, corn. Processing of oils seeds and refining oil. By product utilization of oil milling industries.

Learning outcome:

- Knowing the micro encapsulation of fats, microencapsulation of vitamins and protein, fish oil, flaxseed oil, garlic oil.
- Learn the technologies for refining edible oil and fat
- Learn the quality aspect of canola and groundnut oil
- Learning the quality parameters for different cooking oil
- Knowing advanced method of fortification of fat and oil
- Awareness on trans-fat from the Indian context
- Learn the different methods of preparation of protein flours, concentrates and isolates.
- Learn the processing techniques for extraction of essential oil
- Knowing the innovations in production technologies for animal origin fats and oils and their processing

Module - Packaging of fats and oils

Duration - Online – 2 hr, Self-learning – 2 hr

Learning objective:

Advance in packaging, requirements, different packaging materials, methods and machineries involved (primary, secondary and tertiary) in packaging of fats and edible oils. Selection of packaging materials standards for fats and oils. Advances in storage of fats and oils. - changes during storage –rancidity – causes – atmospheric oxidation and enzyme action – free fatty acid – color.

Learning outcome:

- Awareness on packaging selection and geometry, Oil package interaction and filling and capping
- Learn the different packing options available in the market for fat and oil packing.
- Learn the modern storage technologies of fat and oilseeds

Trainers Guide on Spices and Plantation Crop Processing – Domain Skills

Module – Introduction
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Overview of PMFME scheme, guidelines, objectives, capacity building framework and its implementation. Status, market size and scope of spices and plantation crop processing industry in India; Selection, procurement and supply chain management of spices and plantation crop for processing industry.

Learning outcome:

- Awareness on introduction about the present status of area, production and productivity of major plantation crops
- Awareness on harvesting and post-harvest management of cocoa
- Awareness on global perspective of cashew, production and processing of cashew in India
- Knowing the harvest and post-harvest management of cocoa

Module – Plant layout and maintenance
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Introduction to food plant design - plant location - location factors, site selection - layout - objectives, classical and practical layout – preparation of process chart and machinery layout – product layout and process layout - repair and maintenance of equipment – preventive and breakdown maintenance – replacement of equipment.

Learning outcome:

- Knowing the factors influencing plant layout
- Knowing the work station design concepts, Storage space requirements and Learn about the plant layout procedure
- Knowing the layout problems
- Knowing the general sanitary standards

Module - Equipments and specifications of machineries in spices and plantation crop processing
Duration - Online – 3 hr, Self-learning – 4hr

Learning objective:

Different unit operations pertaining to spices and plantation crops processing. Equipment involved in unit operations of different spices and plantation crop processing. Specifications of machineries involved in spices and plantation crop processing. CIP: Cleaning & sanitization of processing equipment's: objectives, frequency, procedures, mechanical cleaning aspects, CIP system & program

Learning outcome:

- Learn the equipment used in coconut primary processing – splitting device, dryers, shell fired copra dryer, solar tunnel dryer, coconut deshelling machine. Copra moisture meter. Snow ball tender nut machine,
- Learn the dehydrated coconut product and machineries - coconut chips making machine, coconut chips dehydrator.
- Knowing the types of machineries used in coconut processing listed below
    1. Coconut milk extraction machineries
    2. Virgin coconut oil extraction machine

3. Tender coconut processing equipment

- Knowing the processing, grading and packaging machineries used in cashew nut processing
- Awareness on mechanization in spice processing

Module - Value addition of spices and plantation crops

Duration - Online – 2 hr , Self-learning – 4hr

Learning objective:

Spices: Extracts-essential oils, oleoresin, flavour and natural colour and pigments. Preparation of powders, dried spices and condiments, dehydrated products. Pepper- dehydrated green pepper, white pepper and canned pepper. Ginger-wine, ginger preserve. Turmeric – Curcumin Processing. Chillies – brined chilli, pickle and sauce preparation. Waste and by-products utilization.
Plantation crops: Coconut – processing of coconut milk, milk powder, coconut oil extraction, virgin coconut oil, activated carbon and husk. Cashew – Nut processing, cashew apple juice preparation. Cocoa – cocoa butter processing.

Learning outcome:

- Awareness on list of value added products from coconut and its specification, value added coconut milk produces, fermented coconut based product, coconut sugar based product
- Awareness on primary processing and value added products from tender coconut, quality standards of coconut sap
- Learn the coconut based value added bakery products, coconut based by-product utilization
- Learn the processing of cocoa and value addition
- Knowing the post-harvest processing of spices
- Knowing the processing of tea and coffee flow charts

Module - Packaging of spices and plantation crop Products

Duration - Online – 2 hr, Self-learning – 2 hr

Learning objective:

Advance in packaging, different packaging materials, methods and machineries involved (primary, secondary and tertiary) in packaging of spices and plantation crop and their value-added products. Selection of packaging materials and standards for spices and plantation crop products. Recent packaging techniques to extend the shelf life of the product such as oil, oleoresin, coconut milk, preserve and juices. Technologies - aseptic packaging, tetra pack, MAP, hermetic packaging, convenient intelligent and smart packaging. Advances in storage of spices and plantation crops.

Learning outcome:

- Learn the functional characteristic of packaging materials
- Awareness on the special packaging system
- Learn the packaging specification of spices: ground and whole

Trainers Guide on Minor Forest Produce Processing – Domain Skills

Module – Introduction
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Overview of PMFME scheme, guidelines, objectives, capacity building framework and its implementation. Status and scope of minor forest produce (MFP); Types of minor forest produce under different categories – medicinal, essential oils. Edible wild plants, gums, resins, natural coloring materials etc.

Learning outcome:

- Awareness on the introduction about PMFME scheme and capacity building and research
- Knowing the objective of the scheme
- Awareness on the guidelines and contact
- Knowing the importance of minor forest produce
- Knowing the estimates of selected non – timber forest produce
- Learn the types of minor forest produce

Module – Collection & trading of minor forest produce
Duration – Online – 2hr, Self-learning – 1hr

Learning objective:

Significance in tribal economy– sustainable cultivation &collection methods, mechanism of marketing of minor forest produce – minimum support price- promotion

Learning outcome:

- Learn the significance of minor forest produce in tribal economy
- Knowing the sustainable cultivation of MFPs
- Learn the cultivation and harvesting techniques of approved ODOP MFPs
- Awareness on challenges and issues during cultivation of MFPs
- Learn the collection of MFP
- Awareness on mechanism of marketing of minor forest produce
- Learn the role of various bodies in promotion of MFP or non-timber forest produces marketing.

Module - Equipments and specifications of machineries in spices and plantation crop processing
Duration - Online – 3 hr, Self-learning – 4hr

Learning objective:

Equipment involved in collection of minor forest produce. Specifications of machineries involved in processing of different minor forest produce. CIP: Cleaning & sanitization of processing equipment's: objectives, frequency, procedures, mechanical cleaning aspects, CIP system & program.

Learning outcome:

- Awareness on automated arecanut climbing and harvesting machine
- Awareness on equipment used in minor forest produce eg. honey extractor and a good bee keeper suit, bamboo shoot processing
- Lean the specifications of machineries involved in processing of different minor forest produce

- Awareness on importance of clean in place
- Awareness on factors affecting the cleaning in place process
- Learn the selection of cleaning chemicals and disinfectants
- Knowing the types of CIP system

Module - Value addition of minor forest produce
Duration - Online – 2 hr , Self-learning – 4hr

Learning objective:

Sugar conserves: Jams, jellies, toffee. Beverages: Juices, squashes, syrups, nectars, RTS. Preparation of concentrates-puree, soup, and paste. Preparation of pickles, and chutneys. Medicinal & aromatic products

Learning outcome:

- Learn the list of processed food from minor forest produces - processing of jam, processing of jelly, processing of toffee, processing of fruit beverages, preparation of pickle and chutney, different types of pickling process.

Module - Packaging of minor forest products
Duration - Online – 2 hr, Self-learning – 2 hr

Learning objective:

Different packaging materials, methods and machineries involved (primary, secondary and tertiary) in packaging of MFP & their value added products. Selection of packaging materials standards for minor forest produce. Recent packaging techniques to extend the shelf life of the product. Storage of value added products from minor forest produce.

Learning outcome:

- Learn the different levels of packaging and functions of packaging for minor forest produce
- Knowing the different types of packing material and its usage – paper, plastic, aluminum, glass. Modified atmosphere packaging, controlled atmosphere packaging, vacuum packing, aseptic packing, active packing, active packaging of fruits and vegetables.
- Awareness through different case study of minor forest produce processing sector.

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Trainers Guide on Master Trainers – Platform Skills (Food Safety Regulations)

AATMANIRBHAR BHARAT

Organized by

Indian Institute of Food Processing Technology (IIFPT)

Ministry of Food Processing Industries, Government of India

Trainers Guide on Platform Skills

Fruits and Vegetable Processing

Module - Food safety regulation and certification

Duration – Online – 6 hr, Self-learning – 2hr

Learning objective:

Need for testing of food, notified NABL labs, Referral labs and reference labs in India. GMP, GHP, GLP practices relevant to fruits and vegetable processing. HACCP implementation program. Regulations and standards for maintaining food safety and quality - FSSAI and International standards – FSSAI packaging and labelling requirements. FSSAI registration and licensing procedure.

Learning Outcome:

- Knowing the food testing requirement and list of notified reference laboratories in India
- Knowing the list of notified referral laboratories scope
- Knowing the list of state/public food laboratories in India
- Learn the Food safety practice: GMP, GHP, GLP, HACCP implementation program
- Learn the FSSAI registration and licensing procedure.

Dairy Processing

Module - Food safety regulation and certification

Duration – Online – 6 hr, Self-learning – 2hr

Learning objective:

Need for testing of food, notified NABL labs, referral labs and reference labs in India. GMP, GHP, GLP practices relevant to dairy processing. HACCP implementation program. Regulations and standards for maintaining food safety and quality - FSSAI and International standards – FSSAI packaging and labelling requirements. FSSAI registration and licensing procedure.

Learning outcome:

- Knowing the FSSAI registration and licensing procedure
- Awareness on benefits of having FSSAI license

Grain Processing

Module - Food safety regulation and certification

Duration – Online – 6 hr, Self-learning – 2hr

Learning objective:

Need for testing of food, notified NABL labs, referral labs and reference labs in India. GMP, GHP, GLP practices relevant to dairy processing. HACCP implementation program. Regulations and standards for maintaining food safety and quality - FSSAI and International standards – FSSAI packaging and labelling requirements. FSSAI registration and licensing procedure.

Learning outcome:

- Awareness on role of food testing laboratories for assuring food safety in India, Food safety global trends
- Knowing the role of food testing laboratories in food safety
- Learn the food safety standards, packaging & labeling regulation in India,
- Learn the GMP & HACCP practices in food processing
    1. Potential sources of microbial contamination

2. Microbial hazard
3. Factors affecting microbial growth
4. Preventive measure

- Learn the nutritional analysis of foods and use of instrumental techniques in food labs
  1. Proximate
  2. Mineral analysis
  3. Vitamin analysis

Fish and Marine Processing

Module - Food safety regulation and certification
Duration – Online – 6 hr, Self-learning – 2hr

Learning objective:

Need for testing of food, notified NABL labs, referral labs and reference labs in India. GMP, GHP, GLP practices relevant to dairy processing. HACCP implementation program. Regulations and standards for maintaining food safety and quality - FSSAI and International standards – FSSAI packaging and labelling requirements. FSSAI registration and licensing procedure.

Learning outcome:

- Learn the regulation of exporting marine products
- Awareness on EU legislation regarding quality and safety of fishery products
- Awareness on FDA guidelines for certain chemical contaminants in fishery products
- AwarenessFDA guidelines for certain microbiological contaminants in fishery products

Meat and Poultry Processing

Module - Food safety regulation and certification
Duration – Online – 6 hr, Self-learning – 2hr

Learning objective:

Need for testing of food, notified NABL labs, referral labs and reference labs in India. GMP, GHP, GLP practices relevant to dairy processing. HACCP implementation program. Regulations and standards for maintaining food safety and quality - FSSAI and International standards – FSSAI packaging and labelling requirements. FSSAI registration and licensing procedure.

Learning outcome:

- Awareness on important FSSAI regulations on food packaging, labeling, nutritional information.
- Learn the meat food safety regulation and certification.
- Knowing the list of notified referral laboratories, quality management system, ISO 22000in India
- Learn the HACCP principles and food safety plan for meat and poultry processing

Bakery and Confectionary Processing

Module - Food safety regulation and certification
Duration – Online – 6 hr, Self-learning – 2hr

Learning objective:

Need for testing of food, notified NABL labs, referral labs and reference labs in India. GMP, GHP, GLP practices relevant to dairy processing. HACCP implementation program. Regulations and standards for maintaining food safety and quality - FSSAI and International standards – FSSAI packaging and labelling requirements. FSSAI registration and licensing procedure.

Learning outcome:

- Awareness of food safetypest control system for bakery and confectionary
- Awareness on personal hygiene and health status of production employee's in bakery sector
- Learn the quality parameters of raw material for bakery production
- Learn the list of approved additives used in bakery production
- Learn the food labeling requirements for bakery and confectionary products

Fat and Oil Seeds Processing

Module - Food safety regulation and certification

Duration – Online – 6 hr, Self-learning – 2hr

Learning objective:

Need for testing of food, notified NABL labs, Referral labs and reference labs in India. Concept of quality assurance and quality control in relation to fat and oil industry; quality management systems - ISO 9000; TQM, HACCP, GMP, GHP, GLP relevant to fat and oilseed processing; role of international organizations- ISO, IDF, CAC, AOAC and WTO, national organizations - BIS, Agmark; significance of oil and allied products order, FSSAI and APEDA in oil industry; guidelines for setting up quality control laboratory. Legislation on fats and oils, packaging laws and testing of packaged materials.

Learning outcome:

- Learn the importance of quality and quality measure of fat and oil seed processing
- Lean the quality enforcing bodies and their standards for packaging of edible oil vanaspati and ghee.

Minor Forest Produce Processing

Module - Food safety regulation and certification

Duration – Online – 6 hr, Self-learning – 2hr

Learning objective:

Need for testing of food, notified NABL labs, referral labs and reference labs in India. GMP, GHP, GLP practices relevant to fruits and vegetable processing. HACCP implementation program. Regulations and standards for maintaining food safety and quality - FSSAI and International standards – FSSAI packaging and labelling requirements. FSSAI registration and licensing procedure.

Learning outcome:

- Knowing the good food laboratory practice and food lab and laboratory design
- Learn the basic equipment's and instruments used in laboratories
- Learn the environment conditions safety and related requirements
- Learn the certified reference material / standards and reference cultures.
- Knowing the certification of non- timber forest produce and NTFP resource and its management in India
- Awareness on the Indian initiatives for developing NTFP certification standards

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Trainers Guide on Master Trainers – Platform Skills (Soft Skill & Communication)

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Organized by

Indian Institute of Food Processing Technology (IIFPT)

Ministry of Food Processing Industries, Government of India

Guide on Platform Skills

Module - Soft skill and communication
Duration – Online – 6 hr, Self-learning – 2hr

Learning objective:
Importance of soft skills and communication -Networking skills–creative& innovative thinking – problem management – stress and emotional management – leadership and teaming up – Confidence building – entrepreneurs competencies – risk taking and goal settings - Effective communication skills.

Learning Outcome:

- Understanding of entrepreneur's approach
- Awareness on networking dynamics
- Knowing the benefits of brain storming session
- Understanding the route cause analysis of problem
- Learn the different analysis techniques of problem
- Learn to handle and manage emotions – The rational and emotional dimension.
- Learn risk management – assessment, mitigation, evaluation.
- Learn the essentials of communication – verbal non – verbal communication
- Knowing the barriers of communication, listening, goal setting
- Learn the process of incubation
- Learn the problem management and enhancement of entrepreneurial competencies