

**DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY,
UTTAR PRADESH, LUCKNOW**



Syllabus

For

M.Tech. (Food Technology)

(Effective from the Session: 2016-17)

Course Structure and Evaluation Scheme for M. Tech. Food Technology Course
(Effective from Session 2016-17)

SEMESTER I

S. N.	Subject Code	Name of Subject	Periods			Credit	Evaluation Scheme					Subject Total
			L	T	P		Theory			Practical		
							CT	TA	ESE	TA	ESE	
1.	MTFT-101	Food Beverages	3	0	0	3	20	10	70	--	--	100
2.	MTFT-102	Microbiology & Chemistry of Foods	3	0	0	3	20	10	70	--	--	100
3.	MTFE-01?	Departmental Elective I	3	0	0	3	20	10	70	--	--	100
4.	MTFE-02?	Departmental Elective II	3	0	0	3	20	10	70	--	--	100
5.		Research Process & Methodology	3	0	0	3	20	10	70	--	--	100
6.	MTFL-151	Food Microbiology Lab	-	-	3	2	--	--	--	20	30	50
7.	MTFL-152	Food Chemistry Lab	-	-	2	1	--	--	--	20	30	50
		Total				18						600

SEMESTER II

S. N.	Subject Code	Name of Subject	Periods			Credit	Evaluation Scheme					Subject Total
			L	T	P		Theory			Practical		
							CT	TA	ESE	TA	ESE	
1.	MTFT-201	Preservation & Processing of Foods	3	0	0	3	20	10	70	--	--	100
2.	MTFT-202	Cereal and Snack Foods	3	0	0	3	20	10	70	--	--	100
3.	MTFE-03?	Departmental Elective III	3	0	0	3	20	10	70	--	--	100
4.	MTFE-04?	Departmental Elective IV	3	0	0	3	20	10	70	--	--	100
5.	MTFE-05?	Departmental Elective V	3	0	0	3	20	10	70	--	--	100
6.	MTFL-251	Advanced Food Processing Lab	-	-	3	2	--	--	--	20	30	50
7.	MTFL-252	Seminar I	-	-	2	1	--	--	--	50	--	50
		Total				18						600

SEMESTER III

S. N.	Subject Code	Name of Subject	Periods			Credit	Evaluation Scheme					Subject Total
			L	T	P		Theory			Practical		
							CT	TA	ESE	TA	ESE	
1.	MTFL-351	Seminar II	0	0	6	3	--	--	--	100	--	100
2.	MTFL-352	Dissertation	0	0	30	15	--	--	--	200	300	500
		Total				18						600

SEMESTER IV

S. No.	Subject Code	Name of Subject	Periods			Credit	Evaluation Scheme					Subject Total
			L	T	P		Theory			Practical		
							CT	TA	ESE	TA	ESE	
1.	MTFL-451	Dissertation (Final)	0	0	36	18	--	--	--	200	400	600
		Total				18						600

Departmental Elective I

1. MTFE-011: Chemical Engineering Principles
2. MTFE-012: Advanced Separation Processes
3. MTFE-013: Process, Modeling and Simulation

Departmental Elective II

1. MTFE-021: Biological Sciences
2. MTFE-022: Engineering Mathematics
3. MTFE-023: Therapeutic Foods

Departmental Elective III

1. MTFE-031: Fruits, Vegetables ,Plantation & Spice Products
2. MTFE-032: Food Fermentation Technology
3. MTFE-033: Technology of Meat and Meat Products

Departmental Elective IV

1. MTFE-041: Milk and Milk Products Technology
2. MTFE-042: Novel Food Packaging Technology
3. MTFE-043: Food Processing Effluent Treatment Technology

Departmental Elective V

1. MTFE-051: Technology of Fabricated and Textured Foods
2. MTFE-052: Advances in Food Processing Technology
3. MTFE-053: Food Quality Management

MTFT-101:**FOOD BEVERAGES****3:0:0**

Definition & Classification of Beverages, Potable and sparkling water, Fruit based beverages, Still and carbonated beverages, Milk based Beverages, Fermented and Alcoholic Beverages Tea, Coffee and Cocoa Beverages, Product specifications, Raw materials and ingredients, Product specifications, Equipments and plants, Manufacturing process, Quality control. Common faults and their remedies.

Text books:

1. Developments in Soft Drinks Technology-I: L.F.Green, Applied Science Publishers Ltd., London
2. Food Science: Potter & Hotchkiss, CBS Publishers & Distributors, New Delhi.
3. Fermented Beverage Production: A.G.H. Lea & Piggott, Blackie Academic & Professional, London
4. Food Product Development: Arlington

MTFT-102:**MICROBIOLOGY AND CHEMISTRY OF FOODS****3:0:0**

Fundamentals of microbiology, Microbial spoilage of Foods, Foods poisonings and its Prevention, Beneficial Microorganisms and their utilization. Microbiological standards. Biochemical changes in Plant and Animal foods and their implications. Enzymes, Enzymatic Reactions. Post Harvest and Post Mortem Changes in Foods. Role of Enzymes in of Food processing.

Major and Minor constituents of foods, Water Activity and its relation with Food Stability, Sorption Isotherms and Hysteresis. Carbohydrates-classification and Structure. Browning Reactions, Functions of Carbohydrates, Lipids-Classification and Structure, Reactions of Lipids, Rancidity and Control. Modification of Lipids, Refining of Oils. Proteins-Classification and Structure, Functional Properties of Proteins, Denaturation of proteins and its implications. Vitamins, Minerals and Pigments & their properties.

Text Books:

1. Food Microbiology : W.C.Frazier & D.C.Westhoff, Tata McGraw Hill
2. Microbiology: M.J.Pelczar, Reid & Chann, Tata Mc Graw Publications
3. General Biochemistry: J.H.Weil
4. Food Chemistry: O.R.Fennema
5. Food Facts & Principles: Shakuntala Manay

MTFE-101:**CHEMICAL ENGINEERING PRINCIPLES****3:0:0**

Introduction of unit operations and unit processes, material and energy balance in various unit operations such as Mixing, Vaporization and Condensation, Distillation, Crystallization etc., Material Balance in processes involving chemical reaction, Thermo Chemistry. Fluid flow operations, Pumping, Metering of fluids, Filtration, Screening and size reduction. Heat and Mass transfer Operations, Heat transfer by conduction, convection and radiation, Heat exchange equipments, Fundamentals of diffusion, absorption, distillation, extraction and their equipment. Thermodynamics and Kinetics of reactions, First and second law of thermodynamics, types of reactions such as first order and second order, types of reactors such as batch, plug-flow and CSTR.

Text Books:

1. Basic Principles and Calculations in Chemical Engineering, 6th ed.: Himmelblau, Prentice Hall
2. Elementary Principles of Chemical Processes, 3rd edition: Felder, R.M. & Rousseau, R.W. John Wiley Publications (1999).
3. Chemical Process principles” Vol. 1: Hougan D. A., Watson K.M. and Ragatz R. A. Asia Publishing House (1962)

MTFE-012: ADVANCED SEPARATION PROCESSES 3:0:0

Uses and characteristics of separation processes, Equilibrium and rate governed multistage processes. Separation Factor. Cascades-Need and Types of Cascade arrangements, Ideal Cascade, total interstage flows, Squared off cascades, Separative duty and potential, Energy requirement for separation processes. Membrane Characterization, Membrane Processes and their utility, Flow patterns through membranes, Membrane Arrangements, , Gas permeation through polymeric membrane, Liquid membrane separation processes. Reverse Osmosis, Dialysis, Ultra filtration, Electro dialysis, Pervaporation, Concentration polarization. Gel Polarization. Chromatographic separation, Various types of Chromatography processes, Molecular sieve separation processes. Classification and application of Molecular Sieves.

Text Books:

1. Separation Processes, 2nd edition: C.J.King, Tata Mc Graw Hill, NY
2. Unit Operations in Chemical Engineering: McCabe Smith, TMH.

MTFE-013: PROCESS MODELLING AND SIMULATION 3:0:0

Introduction to system analysis: System and subsystem, Properties of system-structure, Degree of freedom, Analysis of degrees of freedom, Information flow. Principles of mathematical modeling, Classification of Models, Advantages & Limitations, Application of Process Models, Concept of Unit computation, Block diagrams, single flow graphs, partition, testing convergence block and control block concept. Encoding the information flow, Boolean matrix, formulation of Boolean matrix from related graph, process matrices, Identification of recycle sets through process matrices, system sensitivity and determinacy. Principles of model building, Basic system models based on material and energy balance, simple examples of process models-CSTR, Plug flow reactors, Distillation columns, absorption column, Heat exchanger.

Text Books:

1. Process Modeling, Simulation and Control for Chemical Engineering: Luyben WL, Wiley ,NY
2. Process Modelling: M.M.Denn, Wiley Publications, New York.

MTFE-021: BIOLOGICAL SCIENCES 3:0:0

Characteristics of living systems, Structure and function of carbohydrate, protein, lipid, nucleic acid, Role of Biomolecules in Foods, Cell organelles. Transport across biological membranes, Bioenergetics, Anabolic and Catabolic Processes of Carbohydrates, Proteins and Fats. Classification, Morphology and physiology of microorganisms, Growth and nutrition, Enumeration and culture techniques. Pure Cultures, Isolation of microbial strains and their applications in Food Industry. Strain Improvement. Microbial control, Introduction to Immune response, Innate and adoptive Immunity, Vaccines- History and applications.

Text Books:

1. Microbiology: M.J.Pelczar, Reid & Chann, Tata Mc Graw Publications
2. Principles of Biochemistry : A.L.Lehninger, C.B.S Publications and distributors.
3. Biochemistry : Lubert Stryen
4. General Microbiology: Roger Y.Stanier, P.R.Painter, John L. Ingraham, McMillian Press.

MTFE-022: ENGINEERING MATHEMATICS 3:0:0

Matrices, Types of Matrices, Matrix algebra, Inverse of Matrices by elementary operations, Vector algebra with applications. Numerical solution of algebraic and transcendental equations, Newton-Raphson Method, Regula Falsi Method, Bisection. Interpolation- Newton forward, Newton Backward and Lagrange's Method. Numerical differentiation, Numerical integration, Trapezoidal Rule, Simpsons One-third Rule and Three by Eight rule. Curve-fitting- Linear and Non Linear Curves, Correlation and Regression analysis Statistical quality control and Charts.

Text Books:

1. Mathematical Statistics: J.N. Kapur, S. Chand & Company Ltd., 2000
2. Higher Engineering Mathematics: B.S. Grewal, Khanna Publishers, 2005.
3. Advance Engineering Mathematics: R.K. Jain & S.R.K. Iyenger, Narosa Publication House.

MTFE-023: THERAPEUTIC FOODS 3:0:0

Nutrition and therapeutic foods. RDA / RDI. Utilization of nutrients in Human body. Balanced Diets, Therapeutic diets, Infant and baby foods, Adolescent / Teen-age foods, Geriatric foods, Functional foods and Probiotics. Calorie, and Sodium modified/ restricted foods/ diets. Amino acids and purine restricted foods/ diets. Foods / Diets in metabolic disorders and disturbances. Foods for allergic and ulcerous conditions. Foods for pregnant ladies and nursing mothers. Foods in Gastrointestinal disorders; Fever and Infection; Liver, gallbladder and pancreatic disturbances. Foods and Diets in blood, circulatory and Cardiac diseases; Urinary and Musculoskeletal diseases.

Text Books:

1. Human Nutrition : Benzamin T. Burton
2. Dietetics : B. Srilakshmi
3. Nutrition and Dietetics: Shubhangini A. Joshi
4. Nutritive value of Indian Foods : C. Gopalan :

MTFL- 151: FOOD MICROBIOLOGY LAB 0:0:3

1. Familiarization with common techniques for handling pure culture serial dilution, Inoculation, slide preparation incubation, counting etc.
2. Micrometry and determination of size of different microbes.
3. Simple and differential staining of microorganisms and their examination.
4. Preparation and sterilization of media and glass ware for microbial counts.
5. Determination of Standard Plate Count (SPC) in natural and/or processed foods.
6. Microbiological examination of some selected natural and processed foods.
7. Microbiological examination of potable water: Total and coliform count.
8. Direct total, viable, and non-viable count of microorganisms in some selected processed foods.

Text Books:

Microbes in action : H. W. Selley Jr. and Paul J. Van.
Microbiology: M.J.Pelczar, Reid & Chann, Tata Mc Graw Publications

MTFL- 152:

FOOD CHEMISTRY LAB

0:0:2

1. Determination of moisture content of foods by oven drying.
2. Determination of Total and Acid insoluble ash content in foods.
3. Determination of Crude fat content by solvent extraction methods in foods.
4. Determination of crude Protein by Kjeldhal method.
5. Determination of reducing and total sugar content in foods.
6. Analysis of water for potable and food purposes
7. Determination of free fatty acid content in fats and oils.
8. Study of some functional properties of proteins.

Text Books:

1. BIS and AOAC Methods of Food analysis.
2. "Hand Book of analysis and quality control for fruit and Vegetable Products". IInd edition. Tata McGraw-Hill Publishing Company Ltd. New Delhi.

MTFT-201:

PRESERVATION & PROCESSING OF FOODS

3:0:0

Basics of effective utilization of Food supply, Food Wastage, Causes of Quality deteriorations and quantitative losses of foods and their prevention by physical, chemical and biological means, Infestation control. Preservation by Lowering of Water Activity, Concentration: Evaporators and Freeze Concentration. Membrane Separation Processes. Dehydration of foods, Types of Driers and principles involved. Freeze Drying. Preservation of foods using High Temperatures, D, Z and F values, TDT Curves, Adequacy of thermal processing of foods. Preservation of foods using Low Temperatures, Chilling, Freezing, Immersion Freezing, IQF Foods, Freezer Burn and Chilling Injury, Thawing of foods. Preservation of foods by Radiations, Spices, Osmoanabiosis and Additives: Principles & Methods. Optimal Processing of Foods. Protective Packaging of foods.

Text Books:

1. Principles of Food Preservation Part-II: O.R.Fenema
2. Food Science: Potter & Hotchkiss, CBS Publishers & Distributors, New Delhi.
3. Thermobacteriology in Food Processing: C.R.Stumbo, Academic Press, London.

MTFT-202:

CEREALS & SNACK FOODS

3:0:0

Processing characteristics & Technologies of Cereals as Paddy, Wheat, Equipments used. Parboiling of Paddy. Turbogrounding, Milling of Durum Wheat, Rice and Wheat Products. Legumes & Oilseeds. Pretreatments, Processing characteristics, Equipment and Machinery involved, Quality Grading, Refining of oils and utilization of byproducts. Processing characteristics of Corn and its milling, Wet milling and Dry milling of Corn. Processed Cereal Foods, Breakfast Cereals: Processing Technologies involved. Bakery products from Cereals, Bread, Biscuits, Cookies and Cakes. Industrial production and Quality parameters.

Text Books:

1. C.F.T.R.I. Mysore Manuals on Rice and its Processing
2. Bakery Technology and Engineering: Samuel A.Matz, CBS Publishers & Distributors, Delhi
3. The Science of Cookie & Cracker Production: Hamed Faridi, CBS Publishers & Distributors, Delhi

MTFE-031: FRUITS, VEGETABLES , PLANTATION & SPICE PRODUCTS 3 :0 :0

General Composition and Characteristics of fruits and Vegetables, Harvesting and Storage of Fruits and Vegetables, Climacteric and Senescence, Preservation & Processing of Fruits & Vegetables by low temperatures & high temperatures. Preservation by Dehydration. Extraction of Fruit Juices, Principle and Machinery Involved. Preservation of Fruit Juices. Fruit Juice Concentrates, Squashes, Cordials, Nectars and Syrups. Fruit Pulps, Purees & Paste. Technical aspects of production and quality of Fruit products as Jam, Jelly, Marmalades, Pickles, Candied and Crystallized Fruits, Chutneys, Preserves. Processing of Spices, Cryogenic grinding, Spice oils, extracts & Oleoresins. Processing of plantation products as Tea, Coffee, Cocoa, Cashew-nut etc.

Text Books:

1. Preservation of Fruits & Vegetables: G. Lal, G.S. Siddappa and G.L. Tandan
2. An introduction to the Post-harvest physiology & handling of fruits and vegetables: R.H.H. Wills
3. Hand Book of analysis and quality control for fruit and Vegetable Products. IInd edition. Tata McGraw-Hill Publishing Company Ltd. New Delhi.

MTFE-032: FOOD FERMENTATION TECHNOLOGY 3:0:0

Pure culture techniques and Preparation and Maintenance of Bacterial, Yeast and Mold cultures for food fermentations. Lactic acid bacteria and its health benefits. Mushrooms cultivation, processing & preservation. Technology of fermented Dairy Products like Cheese, Curd and Yoghurt, Butter milk and fermented milks. Technology of fermented meat and fish products. Fermentative Production of Beer, Wines, Cider and Vinegar. Fermented Vegetables (Pickles). Production of Baker's Yeast, Microbial Proteins and Fats, Food enzymes. Oriental fermented foods.

Text Books :

1. K.H. Steinkrus Handbook of Indigenous Fermented Foods
2. Prescott & Dunn Industrial Microbiology
4. L.E. Casida Industrial Microbiology

MTFE-033: TECHNOLOGY OF MEAT AND MEAT PRODUCTS 3:0:0

Composition and nutritional value of meat, Meat microbiology and safety. Scientific slaughtering; Post mortem changes in meat; Conversion of muscle to meat; Meat plant hygiene – GMP and HACCP. By-products from meat industries and their utilization. Meat processing- curing and smoking; Fermented meat products (sausages and sauces); Frozen meat & meat storage. Beef Mutton, Pork Sausages and other meat products. Poultry processing, Canning of poultry products. Structure, composition, Nutritional and Functional characteristics of Egg. Manufacturing of egg white, Egg yolk and Whole Egg solids/powder. Classification of fresh water fish and marine fish; Commercial handling, storage and transport of raw fish. Methods of processing and preservation of fish- Canning, Freezing, Drying, Smoking and Curing. Fish products – fish meal, fish protein concentrate etc.

Text Books :

1. G.J.Mountney Poultry Products Technology
2. Developments in Meat Science – I & II, Lawrie R; Applied Science Pub. Ltd.
3. Fish & Fisheries of India; Jhingram VG; 1983, Hindustan Pub Corp

MTFE-041: MILK AND MILK PRODUCTS TECHNOLOGY 3:0:0

Structure and status of Indian Dairy Industry, Composition and Quality of Fresh Milk, Milk reception and handling, Methods of examination and Quality evaluation, Adulteration and its detection, Processing and distribution of fluid milks. Concentrated, Condensed, Dried & Instantized milk, Desiccated Milk Products, Heat / Acid Coagulated Products. Technical aspects of production and Quality of Butter and Ghee, Ice-cream, Cheese, Cultures and Fermented Milk Products, Malted Milk foods. Packaging Materials and Techniques, Packaging Machines, Plant Layout, Quality Assurance & CIP in dairy industry, By-Products utilization and Waste Treatment.

Text Books:

1. Technology of Indian Milk Products: R.P.Aneja, Mathur & Bannerji, Dairy India Publication
2. Chemistry and Testing of Dairy Products: H.V.Athortone
2. Principles of Dairy Processing: N.Warner
3. Outlines of Dairy Technology: Sukumar De

MTFE-042: NOVEL FOOD PACKAGING TECHNOLOGY 3:0:0

Introduction to principles of Food Packaging, Functions of packaging, Types of Package. Packaging materials, Desirable properties of Packaging Materials, Selection of packaging material for different foods. Methods of packaging and packaging equipments. Different forms of packaging such as Rigid, Semi rigid, Flexible forms. Properties of packaging materials their methods of testing and evaluation; Barrier properties of packaging materials: Permeability, Gas transmission rate (GTR), Water vapour transmission rate (WVTR) and their measurement. Glass: composition, properties, types of closures, methods of bottle making; Metals: Tinplate containers, tinning process, components of tinplate, tin free steel (TFS), types of cans, Aluminum containers, lacquers. Plastics: types of plastic films, laminated plastic materials, co-extrusion, edible films, biodegradable plastics. Active and Intelligent packaging techniques: Concept, techniques and uses in Food Industry, Current use of novel packaging techniques, Consumers and novel packaging. Oxygen, ethylene Carbon dioxide and other scavengers: Scavenging technology, and its applications. Different packaging system for different foods, Prediction of Shelf Life of foods.

Text Books:

1. Kadoya T. (Ed). 1990. Food Packaging. Academic Press.
2. Mahadeviah M & Gowramma RV. 1996. Food Packaging Materials. Tata McGraw Hill.
3. Palling SJ. (Ed). 1980. Developments in Food Packaging. App. Sci. Publications
4. Painsy FA. 1992. A Handbook of Food Packaging. Blackie Academic.
5. Sacharow S & Griffin RC. 1980. Principles of Food Packaging. AVI Publications

MTFE-043: FOOD PROCESSING EFFLUENT TREATMENT TECHNOLOGY 3:0:0

Environment (Protection) Act, 1986. Standards for emission or discharge of environmental pollutants from food processing Industries as per the updated provision of Environment (Protection) Act, 1986. Characterization and utilization of by-products from various Food Processing Industries. Waste water characterization. Importance of various parameters. Unit concept of treatment of food industry effluent, Pre and Primary treatments. Secondary waste water treatments. Biological oxidations: Requirements and types. Advanced wastewater treatment systems. Physico-chemical separations, Membrane Processes Chemical oxidations and treatment Coagulation and flocculation. Handling & disposal of sludge.

Text Books :

1. J.H. Green Food Processing Waste Management ; Environment (Protection) Act 1986
2. AFST(I) & CFTRI Proceedings of the Symposium on By-products From food Industries: Utilization and Disposal

MTFE-051: TECHNOLOGY OF FABRICATED AND TEXTURED FOODS 3:0:0

Extrusion technology for production and processing of Foods. Types of Extruders, Single Screw and Multiple screw Extruders, Extrusion cooking. Physical & Chemical Changes during Extrusion Process. Fiber-spinning Technology, Machinery and Process involved, Spun-fiber textured foods, Fabricated food Products. Macaroni Products, Vermicelli, Pasta and Noodles. Textured Vegetable Meat, Meat analogs, Expanded and Textured Protein Products, Puffing Gun, Puffed Products, Chemically and structurally modified Food Proteins, Food Emulsions. Non-dairy whipped toppings, Imitation Milk, Coffee whitener, Dairy analogs, Vegetable Butter (Oleo margarine), Peanut Butter, Citrus like drinks,

Text Books:

1. Handbook of Indigenous Fermented Foods: K.H. Steinkrus
2. AFST(I) & CFTRI Proceedings of IFCON .
3. Periodicals by AFST(I), CFTRI Indian Food Industry

MTFE-052: ADVANCES IN FOOD PROCESSING TECHNOLOGY 3:0:0

Membrane technology: Introduction to pressure activated membrane processes, Types of membrane and configuration, Membrane Processes: Micro- filtration, UF, NF, RO and Electro-dialysis and their industrial applications in Food Industry. Supercritical fluid extraction. Dielectric and Ohmic heating of Foods, ISM frequencies, Microwave and Radio Frequency Processing: Definition, Advantages, Mechanism of Heat Generation, Applications in Food Processing, Limitations. Solar Energy and its use in Food Processing Operations. High Pressure processing: Concept, equipments for HPP treatment, mechanism of microbial inactivation and its application in food processing. Ultrasonic processing: Properties of Ultrasonics, Application of Ultrasonics as Processing Techniques. Newer Image Processing Techniques and their applications in Food Processing, Use of Computers and Robotics in Food Processing Industry. Electronic Sorting, Grading and Packaging devices. Rheological, Structural and Textural properties of Foods and their measurement. Correlation between Textural food Attributes. Texture Profile analysis of foods. Hurdle technology: Concept of hurdle technology, Types of Hurdles and their applications.

Text Books:

1. Barbosa-Canovas 2002. Novel Food Processing Technologies. CRC.
2. Dutta AK & Anantheswaran RC.1999. Hand Book of Microwave Technology for Food Applications.
3. Cheryan M. 1998. Ultra-filtration and Micro-filtration Handbook. Technomic Publ.
4. Glasbey CA. 2004. Image Analysis for Biological Sciences.
5. Moskowitz 1999. Food Texture. AVI Publ.

MTFE-053: FOOD QUALITY MANAGEMENT 3:0:0

Definition of Quality, Quality control and Quality Assurance, Total Quality Control (TQC) and TQM.. Sensory Attributes, Sensory evaluation in Quality Management of foods. Analysis and Interpretation of sensory scores. Instrumental measurements of sensory attribute of foods: Rheological and textural characteristics . Texture profile analysis. Types of Instruments used. Food standards and Specifications: Previous Food laws: PFA, FPO, SWMA, MPO, AgMark, and BIS Standards. FSSAI: Definitions, Provisions, Scope and standards.

Text Books :

1. J.M.DeMan Rheology and Texture in Food Quality
2. Y.Pomeranz Food Analysis : Theory and practice IS: 6273 (Part-1& Part-2)
3. M.A. Amerine Principles of Sensory Analysis of Food; FSSAI Act.

MTFL: 251

ADVANCED FOOD PROCESSING LAB

0:0:3

1. Detection / Estimation of some additives in foods
2. Detection/Estimation of adulterants in some foods
3. Extension of shelf life/ preservation of foods by use of low temperature.
4. Processing and preservation of foods by use of high temperature.
5. Preservation and processing of certain vegetables by drying and dehydration
6. Preservation of foods by Sugar/ chemical preservatives.
7. Sensitivity tests (Threshold/Dilution) to measure individual ability for sensory analysis. Difference tests to evaluate qualitative and quantitative differences and/or preference between test products.
8. Assessment of quality of wheat flour (Water Absorption Power, Gluten Content, and Sedimentation Value etc.).

MTFL: 252

SEMINAR-I

0:0:2

The student(s) will be required to prepare and deliver a Seminar, on the assigned topic with the help of Power Point Presentation as well as submit a type written report.

MTFL: 351

SEMINAR-II

0:0:6

The student(s) will be required to prepare and deliver a detailed Seminar, on the assigned Topic (s) with the help of Power Point Presentation as well as submit a type written report. The seminar shall also include a detailed question answer session.

MTFL -352:

DISSERTATION

0:0:30

The student(s) will be required to search literature pertaining to the Project/Dissertation undertaken related to design of an equipment/ processing of a food commodity / optimization of a process/ new product development etc, comprehend it and prepare a report for assessment and viva-voce.

MTFL-451:

DISSERTATION (FINAL)

0:0:36

The student(s) will be required to perform the experimental work in the lab pertaining to the Project/ Dissertation undertaken as in MTFL-352, under the guidance of the Supervisor. The candidate is required to present his/her work from time to time before the departmental Post Graduate Committee for internal assessment. After completion of work the students are required to comprehend it and prepare a detailed Project report for external assessment. The candidate will also be required to prepare and deliver a detailed presentation pertaining to the work done during the project/ dissertatio.