SAVITRIBAI PHULE PUNE UNIVERSITY PUNE

REVISED SYLLABUS SINCE, JUNE 2019-20

BACHELOR OF VOCATION (B. VOC)

S.Y.B.VOC

COURSE-FOOD PROCESSING (DAIRY MILK)

SCHEME FOR PROVIDING SKILL BASED EDUCATION UNDER NATIONAL SKILL QUALIFICATION FRAMEWORK (NSQF)

SPONCERED BY UGC, NEW DELHI

Collaboration with

Mula Education Society's
ARTS, COMMERCE AND SCIENCE COLLEGE, SONAI
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Dept. of B.Voc Food processing
Arts, commerce and science college Sonai

4 Ms. Phakatkar S.S
Dept. of B.Voc Food processing
Arts, commerce and science college Sonai

5.Dr.R.R Dandwate
A.RC ,Co-cordinator
Arts, commerce and science college
At- Sonai, Tal- Newasa,
Dist- Ahmednagar-

6.Dr.S.P Khedkar
IQAC ,Co-cordinator
Arts, commerce and science college,
At- Sonai, Tal- Newasa
Dist- Ahmednagar-

7.Mr.Sopan A.Najan

Arts, commerce and science college Sonai

8. Mr. Admane S.P

Arts, commerce and science college Sonai

9.Mr. Sayyad L.R

Arts, Commerce and Science college Sonai

Dist- Ahmednagar-414105,M.S India

10.Dr. Shard Gadkh

Precedent of Mauli Agro. product

Bramhni Dis. A.nagar

B.VOC. SYLLABUS

OBJECTIVES

- **Objectives of Dairy Milk Processing:**

1. Increase production of milk to ensure the availability of recommended minimum dietary requirement.
2. Increase rural development opportunities through entrepreneurship.
3. Enable the sector to comply with Food Safety and Standard Act 2006.
4. Strengthening of organized Dairy Farm Sectors.
5. Value addition and improved marketing to provide better price to the farmers.
6. Innovation, research and development for the cost effective production.
7. Provide better service at farmer's door step.

- **Objectives of Food Processing Technology:**

1. To boost the shelf life of food articles.
2. To prevent contamination of food.
3. For transport and food storage.
4. To turn food products into the ones that appeal to customers.
5. To make availability of food even at distant or remote places.
6. To retain the nutritive value of food.
7. To ensures the availability of food throughout the year

S.Y.B.Voc Year 2019-20

SYALLABUS INDEX

SR. NO.	Class	Semester	Paper code	Course code	Subjects	Credits
15	S.Y.B.Voc	III	XV	FPT 15	BUSINESS ADMINISTRATION	03
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17		III	XVII	FPT 17	POST HARVEST TECHNOLOGY (THEORY)	03
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19		III	XIX	FPT 19	FOOD CHEMISTRY (THEORY)	03
20		III	XX	FPT 20	FOOD BIO- CHEMISTRY (THEORY)	03
21		III	XXI	FPP 21	FOOD BIO CHEMISTRY (PRACTICAL)	06
22		IV	XXII	FPT 22	FOOD ENGINEERING (THEORY)	03
23		IV	XXIII	FPP 23	FOOD ENGINEERING (PRACTICAL)	06
24		IV	XXIV	FPT 24	FOOD AND INDUSTRIAL LAWS (THEORY)	03
25		IV	XXV	FPT 25	DAIRY TECHNOLOGY MANAGEMENT (THEORY)	03
26		IV	XXVI	FPP 26	DAIRY TECHNOLOGY MANAGEMENT (PRACTICAL)	06
27		IV	XXVII	FPT 27	FOOD PACKAGING (THEORY)	03
28		IV	XXVIII	FPP -28	FOOD PACKAGING (PRACTICAL)	06

COURSE:- FOOD PROCESSING (DAIRY MILK)

SEMESTER –III PAPER – XV FPT 15

BUSINESS ADMINISTRATION

Marks 50 Credits 03

Sr No	Topic	Lectures	Credits
1	**INTRODUCTION AND FUNCTIONS OF MARKETING** 1.1 Marketing – Definitions, Concept, importance and functions of marketing, 1.2 Service Marketing: 7P's of services marketing, 1.3 E-Marketing 1.4 Digital marketing: meaning, importance of digital marketing **MARKETING MIX** 2.1 Product mix and Price mix Product mix: concept of a product, PLC, Product simplification, product diversification, new product development 2.2 Price mix : meaning, importance of price mix , factors influencing pricing , pricing methods and recent trends 2.3 : Place mix and Promotion mix c. Place mix: meaning and concepts of channel of distribution, types of channel of distribution or intermediaries, Factors influencing selection of channels, d. Promotion mix: meaning, elements of promotion mix, types of media: outdoor, indoor, print, press,	**10**	**03**
2	**INTRODUCTION OF FINANCE** – Definition - Nature and scope of finance function **Sources of Finance** 2.1 External: - Shares, Debentures, Public Deposits, Borrowing from banks: - meaning, types, advantages and limitations of these sources. 2.2 Internal: - Reserves and surplus, Bonus shares, Retained earnings, 5 Dividend policy; Meaning, advantages and limitations of these sources Capital Structure Meaning - criteria for determining capital structure.	**10**	
3	**INTRODUCTION TO COMMUNICATION** Meaning, Definition, objective, Process, importance. Principles of good Communication, **Types of communication** Written Communication, Verbal & Non-verbal Communication Techniques of Effective Speech, The Art of Listening, Principles of Good Listening, Phone Etiquette, Grapevine **Business Correspondence** Component and layout of Business letter, Drafting of letters: Enquiry letter, Placing order, Complaints and follow up letters, Sales letter, Application for employment and Resume, Notices, , Email etiquette **Media of Communication**	**10**	

	Introduction, Advantages and Disadvantages of Media of Communication		
4	**INSTITUTIONAL SUPPORT TO NEW VENTURE** **(Students are expected to study the assistance scheme of following institutions)** 4.1 District Industries Center(DIC) 4.2 Maharashtra Industrial Development Corporation(MIDC) 4.3 Small Industries Service Sector(SISI) 4.4 Micro, Small & Medium Enterprise(MSME) Financial Assistance for Small Enterprise: Institutional: a)Bank Loan b) Angel Funding c) Venture Funding d) Self Employment Schemes of Government of Maharashtra e) Government Financial Institutions: Khadi and Village Industries Board(KVIB),Rajiv Gandhi Udyami Mitra Yojana (RUGMY) f) Prime Minister Employment Generation Programme (PMEGP)	**5**	
5	**INTRODUCTION TO HUMAN RESOURCE MANAGEMENT:** 5.1 5.1.1 Definition and concept of human resource, 5.1.2 Importance of human resource management, 5.1.3 Functions of human resource management, **5.2 Human Resources Planning:** 5.2.1Definition and objectives of Human Resource planning. 5.2.2 Sources of Recruitment- Methods of Recruitment, **5.3 Training and Development:** 5.3.1 Meaning and Definition, Needs, Importance of 5.3.2 Training- 5.3.3 Training Methods **5.4 Performance Appraisal & Wage and Salary Administration:** **5.4.1 Part A : Performance Appraisal** Concept and objectives of performance Appraisal. Performance Appraisal Methods. **5.4.2 Part B : Wage and Salary Administration** Methods of Wage Payments. Determining the level of remuneration. Profit sharing, Fringe Benefits	**10**	
	Total	**45**	**03**

Reference

1. P. C. Pardeshi - Human Resource Management.
2. C. B. Mamoria - Personnel Management
3. K. Ashwathappa - OrganisationalBehaviour
4. V.S. P. Rao- Human Resource Management. Texts and cases
5. Business Communication (Principles, Methods and Techniques) - Nirmal Singh- Deep &Deep Publications Pvt. Ltd, New Delhi.
6. Essentials of Business Communication – Rajendra Pal & J. S. Korlhalli- Sultan Chand &Sons, New Delhi.
7. Media and Communication Management – C.S.Raydu - Himalaya Publishing House,Mumbai.
8. Professional Communication- Aruna Koneru- Tata McGraw-Hill Publishing Co. Ltd, New Delhi.
9. Creating a Successful CV - Siman Howard - Dorling Kindersley.
10. Business Communication skills – Dr.G.M.Dumbre, Dr.Anjali Kalkar, Dr.P.N.Shende,Dr.S.D.Takalkar- success Publication, Pune
11. Business Communication – Concepts, Cases and Applications – P.D. Chaturvedi,Mukesh Chaturvedi, 2nd Edition (2013)
12. Marketing Management By Philip Kotler
13. . Marketing Management Cravens By Hills – Woodruff
14. . Marketing – A Managerial Introduction By Gandhi
15. P.V. Kulkarni - Financial Management - Himalaya Publishing House,Mumbai.
16. I.M. Pandey - Financial Management - Vikas Publishing House

COURSE:- FOOD PROCESSING (DAIRY MILK)

SEMESTER -III PAPER –XVI FPP 16

BUSINESS ADMINISTRATION

(PRACTICAL)

Marks 150 Credits 06

Sr No	Name of Practical	Credits
1	Study of Advertisement of Particulars product and present	**04**
2	Study of packaging strategies of products	
3	Observation of Customers and salesman and role play	
4	Study of recruitment and selection process followed by company	
5	Mock interview	
6	Study of business correspondence with other agencies	
7	Study the various techniques of communication and presentation	
8	Study the financial resources available in the market	
9	Study the Government Scheme available for business	
10	Project work.	
11	Industrial Visit / Market Survey	**02**
12	Presentation on results of market survey	
	Total	**06**

References

1.Industrial Law - P.L. Malik

2. Business and Commercial Laws-Sen and Mitra.

3. An Introduction to Mercantile Laws-N. D. Kapoor

COURSE:- FOOD PROCESSING (DAIRY MILK)
SEMESTER -III PAPER – XVII FPT 17

POST HARVEST TECHNOLOGY (THEORY)

Marks 50 Credits 03

Sr. No.	Topics	Lectures	Credit
1.	Introduction of post harvest technology 1.1 Cereals; 1.2 Pulses ; 1.3 Oil seeds,; 1.4 Spices; 1.5 Tea, coffee and cocoa; 1.6 Production of spices in India	6	**03**
2.	Importance of post harvest technology 2.1 Management of plantation crops 2.2 Adulteration study.	6	
3.	Post harvest technology of major and minor spices : 3.1Black pepper, oleoresin and volatile. Cardamom, ginger, chilies, turmeric powder, and Ajwan, coriander, cumin, cinnamon, fenugreek, garlic, mustard, mace and nutmeg, 3.2 Onion, saffron, tamarind, cloves, mint, vanilla, asafetida 3.3 Preservation and storage study	05	
4.	Post harvest technology of fruits 4.1 Vegetables 4.2 Oil seed processing.	10	
5.	Post harvest technology of tea 5.1 Post harvest technology of coffee 5.2 Cocoa processing technology.	8	
6.	Rice and wheat milling introduction 6.1 Composition nutritional value 6.2 Milling process and cleaning	5	
7.	E- learning, seminar ,workshop, group discussion	5	
8.	Total	45	**03**

References:

1. Haard, N.F. and Salunkhe, D.K. 1975.
2. Postharvest Biology and Handling of Fruits and Vegetables. AVI, Westport. Kader, A. A. 1992.
3. Postharvest Technology of Horticultural Crops, 2nd Ed. University of California, Division of Agriculture and National Resources, California. Salunkhe, D.K. and Kadam, S.S. Ed. 1998.

COURSE:- FOOD PROCESSING (DAIRY MILK)

SEMESTER –III PAPER – XVIII FPP 18
POST HARVEST TECHNOLOGY (PRACTICAL)
Marks 100 Credits 06

Sr.No	Name of Practical	Credits
1	Preservation of fruits and vegetables by different method	
2	Preservation of fruits and vegetables by traditional methods	
3	Preservation of fruits and vegetables by dehydration method	
4	Preservation of fruits and vegetables by freezing	
5	Preservation of fruits and vegetables by pickling	
6	Chemical analysis of tea	
7	Chemical analysis of coffee	**04**
8	To study adulteration test of turmeric	
9	To study adulteration test of red chilies	
10	Adulteration test of black pepper	
11	To study adulteration test of tea and coffee	
12	Estimation of protein from fruits	
13	To study Glycamic index of fruits	
14	Study of Storage and packaging of spices and vegetables	
15	Visit to spice industry or fruit and vegetables processing plant	
16	Minor project Adulteration study of khoa and ghee	**02**
17	Total	**06**

References :

1. Tea, Coffee, and Cocoa: A Practical Treatise on the Analysis of Tea, Coffee, Cocoa, Chocolate, Mate (Paraguay Tea), Etc - Primary Source Edition Paperback – Import, 19 Feb 2014
2. Altekruse,S. F., Street,D. A., Fein,S. B., Levy,A. S.(1996). Consumer knowledge of foodborne microbial hazardsand food-handling practices. J Food Protect.;59:287-294.Altekruse, S. F., Street, D. A., Fein, S. B., Levy, A. S. (1996).
3. Consumer knowledge of food-borne microbial hazards and food handling practices. Journal of Food Protections.59, 287–294
4. Cereal Processing Technology: G. Owens.
5. Fruits And Vegetable Processing: M.E.Dauthy.
6. Packaging Technology:G. A. Giles.

COURSE:- FOOD PROCESSING (DAIRY MILK)

SEMESTER –III PAPER – XIX FPT 19

FOOD CHEMISTRY (THEORY)

Marks 50 Credits 03

Sr. No.	Topics	Lectures	Credit
1.	Water: 1.1 Water binding and chemical reactions mediated by water.	03	
2.	Food Proteins: 2.1 Classification, 2.2 physico-chemical properties, 2.3 Reaction involved in processing, Reactions with alkali,	07	**03**
3.	Enzyme 3.1catelysed reactions involving hydrolysis and proteolysis, 3.2 Theories of formation of texturised proteins.	07	
4.	Lipid : 4.1 Reactions involved during deep frying of food viz., 4.2 autoxidation of saturated acyl lipids and polymerization.	10	
5.	Lipoprotein and membrane; 5.1 definition, 5.2 classification and involvement in the formation of biological membranes.	13	
6.	Unsaponifiable matter contents in various fats and oils. 6.1 Edible fats and oils, 6.2 classification and 6.3 chemical composition.	03	
7.	Seminars, Workshop, Group discussion	02	
8.	Total	45	**03**

References

1. Food Bio- Chemistry And Processing: B. J. Simpson.
2. Biology and Handling of Fruits and Vegetables. AVI, Westport. Kader, A. A. 1992.
3. Postharvest Technology of Horticultural Crops, 2nd Ed. University of California, Division of Agriculture and National Resources, California. Salunkhe, D.K. and Kadam, S.S. Ed. 1998.
4. Food Bio- Chemistry And Processing: B. J. Simpson.
5. Food Processing: Principle And Applications: J.S. Smith, H. Y. Hui.
6. Agricultural And Food Marketing Management: I. M. Crowford.

COURSE:- FOOD PROCESSING (DAIRY MILK)

SEMESTER –III PAPER – XX FPT 20

FOOD BIO CHEMISTRY (THEORY)

Marks 50 Credits 03

Sr.No	Topics	Periods	Credits
1	CARBOHYDRATES: 1.1 Legumes, jellies polysaccharide viz. linear, branched and modified. 1.2 Properties and utilization of common polysaccharides, viz. cellulose, glycogen, hemicellulose and pectin.	**6**	
2	ENZYMATIC DEGRADATION OF POLYSACCHARIDES, VIZ. 2.1 Agar, alginate. 2.2 Carrangeenan, gums and starch. 2.3 Production of dextrans and malto dextran.	**6**	**03**
3	FOOD ENZYMES: 3.1 Hydrolases and lipases, utilization in food industry, effect of inihibitors, 3.2 pH and temperature. Minerals in foods: Main Elements, trace elements in eggs, cereal and cereal products, vegetables and fruits.	**6**	
4	PROTEINS, 4.1vitamins and 4.2 minerals	**6**	
5	FOOD ADDITIVES: 5.1 amino acids, minerals. 5.2 Aroma substance flavour enhancers-monosodium glutamate, nucleotides. 1Sugar substitutes, 5.3 sorbitol. Sweeteners-saccharin 5.4 cyclamate, Food colors.	**12**	
6	ANTI-NUTRITIONAL FACTORS 7.1Food contaminant, 7.2Toxic-trace elements, radio nuclides.	**6**	
7	7.1 Seminars,7.2 Group discussion. 7.3Workshop	**03**	
8	**Total**	**45**	**03**

References

1. Food Bio- Chemistry And Processing: B. J. Simpson

COURSE:- FOOD PROCESSING (DAIRY MILK)

SEMESTER –III PAPER – XXI FPP 21

FOOD BIO CHEMISTRY (PRACTICAL)

Marks100 Credits 06

Sr.no	Name of Practical	Credits
1	To study different methods of Biochemical Analysis	04
2	Analysis of Moisture content from given food sample.	
3	Analysis of Protein from given food sample.	
4	Analysis of Fat from given food sample.	
5	Analysis of Ash from given food sample.	
6	Analysis of Crude fiber from given food sample.	
7	Analysis of Carbohydrate from given food sample.	
8	Analysis of Energy Value from given food sample.	
9	Analysis of Sugar from given food sample.	
10	Analysis of Pectin from given food sample.	
11	Analysis of pH from given food sample.	
12	Analysis of Acidity of Extracted fat from given food sample.	
13	Analysis of Glycogen from given food sample.	
14	Analysis of Acid soluble compound from given food sample.	
15	Analysis of Acid insoluble compound from given food sample.	
16	Industrial visit	02
17	Total	06

References

1. Industrial Microbiology: M, J. Waites, N. L. Morgan, J. S. Rockey, G Higton.

2. Food Bio- Chemistry And Processing: B. J. Simpson.

COURSE:- FOOD PROCESSING (DAIRY MILK)

SEMESTER –IV PAPER – XXII FPT 22

FOOD ENGINEERING (THEORY)

Marks 50 Credits 03

Sr. No.	Topics	Lectures	Credit
1.	RHEOLOGY OF PROCESSED FOOD, 1.1 properties of fluid foods, 1.1.1Rheological method, 1.2 Measurement of rhelogical parameters, 1.2.1 properties of granular food and powders, 1.3 Properties of solids foods, 1.3.1 Visco-clastic models. 1.3.2 Measurement of food texture.	7	**03**
2.	FOOD FREEZING: 2.1 Thermal properties of frozen foods. 2.2 Predication of freezing rates. Plank's equation, 2.3 Neumanna problem and Tao solution. 2.4 Design of food freezing equipment, 2.5 Air blast freezers, 2.6 Plate freezers and immersion freezers, storage of frozen foods.	7	
3.	FOOD DEHYDRATION: 3.1 Estimation of drying time for food products, constant rate period and falling rate period dehydration. 3.2 Diffusion controlled falling rate period. 3.3 Use of heat and mass balanced in analysis of continuous dryers,	7	
4.	FIXED TRAY DEHYDRATION, 4.1 cabinet drying, 4.2 tunnel drying. 4.3 Freeze Dehydration: Heat and mass transfer, Calculation of drying times, Industrial freeze drying.	3	
5.	STUDY OF FOOD EQUIPMENT 5.1 pulping, Fruit juice extraction, 5.2 Blanching, Dehulling, 5.3 Size reduction and distillation. 5.4 Equipment used for food processing such as mixing, evaporator, heat exchanger, centrifugation and pumping.	14	
6.	Process time calculation using D, Z and F value.	7	
7.	Total	45	**03**

COURSE:- FOOD PROCESSING (DAIRY MILK)

SEMESTER –IV PAPER – XXIII FPP 23

FOOD ENGINEERING (PRACTICAL)

Marks 100 Credits 06

Sr. No	Name of Practical	Credits
1	Study of mechanism of different parts of freezers	
2	Study of freezers and freeze dryers	
3	Design problems on batch freezers	
4	Design problems for continuous freezers	
5	Design problems on dryer	
6	Study of importance of freezer and dryer	
7	Study of rheological properties of foods.	
8	Sieving and size reduction Operation	
9	Study of mechanism of milk tester	
10	Study of Principle and mechanism of centrifuge machine	
11	Centrifugation of different food product	04
12	Study centrifugation of Milk.	
13	Study of Food plant design	
14	Study of Food plant Layout.	
15	Engineering drawing.	
16	Visit to dairy industry.	02
17	Total	06

References

1. Agricultural And Food Marketing Management: I. M. Crowford.

2. Cereal Processing Technology: G. Owens.

3. Fruits And Vegetable Processing: M.E.Dauthy.

4. Packaging Technology:G. A. Giles.

COURSE:- FOOD PROCESSING (DAIRY MILK)

SEMESTER – IV PAPER – XXIV FPT 24

FOOD AND INDUSTRIAL LAWS (THEORY)

Marks 50 Credits 03

Sr. No.	Topics	Lectures	Credit
1.	INTRODUCTION 1.1 To subject, Need of enforcing the laws and various types of laws.	04	
2.	MANDATORY FOOD LAWS; 2.1The food safety and standards bill 2005, 2.2Establishment of the authority, composition of authoring functions of chief executive officer, scientific part,	10	
3.	GENERAL PRINCIPLES 3.1to be followed in administration of act, 3.2 General provisions as to articles of food, special responsibility as to safety of food, analysis of food offences of penalties.	4	**03**
4.	MANDATORY ACTS OF FOOD PROCESSING 4.1Standard weight of measure act, essential commodity act, consumer protection act, 4.2Environmental protection act insecticide act. 4.3Export (quality control & inspection) act.	5	
5.	THE COMPANIES ACT, 1956 5.1Company-Definition, Meaning, Features and Types of Companies, 5.2Incorporation of a Company-Mode of forming ,Documents to be filed with registrar, Certificate of Incorporation, Effects of Registration, Memorandum of Association-Its contents and alteration, Doctrine of Ultra Vires 5.3Article Of Association- Its contents and alteration- Comparison between Articles and Memorandum, Prospectus- Registration and contents Statement in lieu of Prospectus	8	
6.	THE INDUSTRIAL DISPUTES ACT,1946 & THE FACTORIES ACT 1948: 6.1 The Industrial Disputes Act,1946 - 6.2 Definitions, Authorities under the Act, 6.3 Power & Duties of Authorities, Strike & lockout, 6.4 Lay-off ,retrenchment, closure and dismissal, 6.5 Grievance Redressal Machinery, Penalties 6.6 The Factories Act, 1948 - Definitions, Authorities, Provisions regarding Safety, Provisions regarding Health, Provisions regarding Welfare, Provisions regarding Leave with Wages, 6.7 Provisions regarding Working hours of adults, Penalties.	10	
7.	OPTIONAL FOOD STANDARDS; 7.1Scope, Need and Procedure to obtain- HACCP, ISO, 7.2Agmark	3	
8.	SEMINARS, WORKSHOP, GROUP DISCUSSION	1	
9.	Total	45	**03**

References

1. Food Processing: Principle And Applications: J.S. Smith, H. Y. Hui.
2. Agricultural And Food Marketing Management: I. M. Crowford.

COURSE:- FOOD PROCESSING (DAIRY MILK)
SEMESTER – IV PAPER – XXV FPT 25

DAIRY TECHNOLOGY MANAGEMENT (THEORY)

Marks 50 Credits 03

Sr. No.	Topics	Lectures	Credit
1.	Introduction of Dairy Technology 1.1 Milk composition 1.2 Nutritional importance of milk 1.3Reception of milk and platform tests	6	**03**
2.	Introduction of Standardization 2.1 Define Standardization 2.3 sterilization of milk	6	
3.	Introduction of Pasteurization 3.1 Pasteurization of milk 3.2 Pasteurization methods	5	
4.	Introduction Homogenization of milk 4.1 Define Homogenization of milk	5	
5.	Post mulching techniques 5.1 Chilling 5.2 storage 5.3 marketing of milk	5	
6.	Indigenous milk products 6.1 Classification Indigenous milk products 6.2 Composition Indigenous milk products	5	
7.	Quality management standard and system 7.1 BIS/ISI standards 7.2 PFA rules,	5	
8.	Quality management standard and system, 8.1 AGMARK, 8.2 HACCP, 8.3 FSSAI .	8	
9.	Total	45	**03**

References

1.Milk and milk products------ Eckles, Comb and Mary

2.Milk and milk products ---- Harbonsing and Moore

3.Modern Dairy Products----- by Lampert

4.Dairy India Year Book – 2007 by - P.R. Gupta1. Microbiology: M.J. Pelczar.

2. Food Microbiology: M. R. Adam, M. R. Moss.

3. Industrial Microbiology: M, J. Waites, N. L. Morgan, J. S. Rockey, G Higton.

COURSE:- FOOD PROCESSING (DAIRY MILK)
SEMESTER – IV PAPER –XXVI FPP 26

DAIRY TECHNOLOGY MANAGEMENT (PRACTICAL)

Marks 100 Credits 06

Sr No	Name of practical	Credits
1	Quality Evaluation Of Milk Platform Tests	**04**
2	Preparation Of Ice-Cream	
3	Preparation Of Rosogulla	
4	Preparation Of Shreekhand	
5	Preparation Of Khoya	
6	Preparation Of Kulfi	
7	Preparation Of Curd	
8	Examination & Adulteration Test Ghee	
9	Determination Of Fat And SNF Of Milk	
10	Detection Of Adulteration In Food Products	
11	Determination Of Specific Gravity Of Milk	
12	Standardization Of Milk & Milk Products	
13	Examination Of Casein From Milk	
14	Texture Analysis Of Food	
15	Determination Of Viscosity By Viscometer	
16	Visit To Quality Control Laboratory Milk Processing Industry	**02**
17	Total	**06**

References

1.Milk products in India----- M.R. Shrinivasan & C.P.Anantkrishnan.

2.Dairy Technology and Engineering by H.G. Kessler

3.Ice-Cream---------- by W. S. Arbuckle

4.Dairy Processing by Earl.

5.Technology of Indian milk products—by R.P.Aneja, B.N.Mathur,

COURSE:- FOOD PROCESSING (DAIRY MILK)
SEMESTER – IV PAPER – XXVII FPT 27

FOOD PACKAGING (THEORY)

Marks 50 Credits 03

Sr. No.	Topics	Lectures	Credit
1.	INTRODUCTION, 1.1 Importance of Packaging, 1.2History of Package Development, 1.3 Packaging materials, a) Characteristics of basic packaging materials: Paper (paper board, corrugated paper, fibre board), Glass, Metal, Plastics, Foils and laminates, retort pouches, Package forms,	6	**03**
2.	PACKAGING TECHNIQUE OF MILK AND DAIRY PRODUCTS 2.1pasteurized milk, 2.2 UHT-sterilized milk, 2.3aseptic packaging,	6	
3.	STUDY OF FAT RICH PRODUCTS 3.1 ghee and butter, 3.2 coagulated and desiccated indigenous dairy products and their sweet mades, 3.3 concentrated and dried milks including baby foods.	6	
4.	MODERN PACKAGING TECHNIQUES; 4.1 Vacuum Packaging, 4.2 Modified atmosphere packaging (MAP), 4.3 Eco- friendly packaging, 4.4 Principles and methods of package sterilization, edible packaging.	10	
5.	CODING AND LABELLING OF FOOD PACKAGES, 5.1 Aseptic Packaging (AP), 5.2 Scope of AP and pre-requisite conditions for AP, 5.3 Description of equipments (including aseptic tank) and machines-	6	
6.	STUDY OF MICRO-PROCESSOR CONTROLLED SYSTEMS 6.1 Importance for AP, 6.2 Package conditions and quality assurance aspects of AP, 6.3Microbiological aspects of packaging materials. 6.4 Disposal of waste package materials, 6.5 Packaging Systems	8	
7.	.Seminars, Workshops, Group discussion	3	
8	Total	45	**03**

References

1. Packaging Technology:G. A. Giles
2. Food Processing: Principle And Applications: J.S. Smith, H. Y. Hui.

COURSE:- FOOD PROCESSING (DAIRY MILK)
SEMESTER – IV PAPER – XXVIII FPP -28

FOOD PACKAGING (PRACTICAL)

Marks 100 Credits 06

Sr No	Nmae of practical	**Credits**
3	Measurement of thickness of paper, paper boards.	
4	Measurement of basis weight of paper and paperboards.	
5	Measurement of grammage and water absorption of paper, paper boards.	**04**
6	Measurement of bursting strength of paper of paper boards. Measurement Tear resistance of papers.	
7	Measurement of puncture resistance of paper and paperboard.	
8	Measurement of tensile strength of paper of paper boards.	
9	Measurement of grease resistance of papers	
10	Determination of gas transmission rate of package films. Determination of WVTR and QTR of films.	
11	Determination of coating on package materials. Identification of plastic films.	
12	Finding chemical resistance of films.	
13	Re- packaging practices followed for packing fruits, vegetables.	
14	Packaging of different dairy products by using Pre pack and Vacuum packaging machines.	
15	Preparation of Packaging Album.	
16	Industrial Visits	**02**
17	Total	**06**

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