PSGR Krishnammal College for Women

College of excellence nirf 2023 – 4th rank

Autonomous and Affiliated to Bharathiar University Reaccredited with A++ grade by NAAC,

An ISO 9001: 2015 Certified Institution

Peelamedu, Coimbatore-641004

DEPARTMENT OF FOOD PROCESSING TECHNOLOGY AND MANAGEMENT

CHOICE BASED CREDIT SYSTEM (CBCS)

&

LEARNING OUTCOMES- BASED CURRICULUM FRAMEWORK (LOCF)

Semester I

BACHELOR OF FOOD PROCESSING TECHNOLOGY AND MANAGEMENT

2024 – 2027 Batch

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DEPARTMENT OF FOOD PROCESSING TECHNOLOGY AND MANAGEMENT

PROGRAMME LEARNING OUTCOMES (PLO's)
After Completion of the program, the students will

PLO1 : Acquire the knowledge about the chemical, biochemical, physical, microbiological changes that occur during processing and preservation of any food.

PLO2 : Possess the ability to identify, and solve problems related to Food manufacturing

PLO3 : Be able to differentiate between processed and safely processed food

PLO4 : Apply better/good practices and be more innovative in developing the food products as per the current requirements of the market.

PLO5 : Acquire skills to analyze different food products and interpret the results in an effective manner.

PLO6 : Be equipped to transfer this knowledge to the consumer

PROGRAMME SPECIFIC OUTCOME

PSO1 : Graduates with sufficient knowledge in the areas of food science, food chemistry, food processing and preservation of foods.

PSO2 : Development of a food technologist, food analyst, nutritionist and an administrator

PSO3 : Equip themselves to higher levels of learning and/or for the development of new products, that will accommodate to start up new venture in areas of food processing.

PSO4 : Shall keep themselves abreast with the current trends to meet the food industry challenges.

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BACHELOR OF SCIENCE IN FOOD PROCESSING TECHNOLOGY AND MANAGEMENT

CHOICE BASED CREDIT SYSTEM (CBCS) & LEARNING OUTCOME BASED CURRICULAR FRAMEWORK (LOCF)
2024 -2027 BATCH & ONWARDS

Sem	Part	Course Code	Title of the Course	Course Type	Instruction hours/week	Contact hours	Tutorial	Duration of Examination	Examination Marks			Credits
									CA	ESE	TOTAL	
I	I	TAM2301A/ HIN2301A/ FRE2301A	Tamil Paper I/ Hindi Paper I/ French Paper I	L	4	58	2	3	25	75	100	3
	II	ENG2301A	English Paper I	E	4	58	2	3	25	75	100	3
	III	BF24C01	Food Science	CC	4	58	2	3	25	75	100	3
	III	BF24C02	Principles ofManagement	CC	5	73	2	3	25	75	100	4
	III	BF24A01	Principles of Food and Nutrition	GE	5	73	2	3	20#	55#	75#	3
	III	BF24CP1	Food Science Practical	CC	3	45	-	3	15*	35*	50*	3
	III	BF24AP1	Nutritional Menu Planning Practical	GE	3	45	-	3	15*	35*	50*	2
	IV	**Non Tamil Students**										2
		NME23B1 / NME23A1	Basic Tamil I/ Advanced Tamil I	AEC	2	28	2	-	100	-	100	
		Students with Tamil as Language										
		NME23ES	Introduction to Entrepreneurship	AEC	2	30	-	-	100	-	100	
I - V	VI	COM15SER	Community Service (30 hours)	GC	-	-	-	-	-	-	-	Gr.
I-V	VI	24BONL1 24BONL2 24BONL3	Online Course 1 Online Course 2 Online Course 3	ACC	-	-	-	-	-	-	-	

L – Language **E- English**
CC – Core Courses **CA – Continuous Assessment**
GE – Generic Elective **ESE–End Semester Examination**
AEC – Ability Enhancement Course
ACC – Additional Credit Course
***CA conducted for 25 and converted into 15, ESE conducted for 75 and converted into 35**
#CA conducted for 25 and converted into 20, ESE conducted for 75 and converted into 25

Question Paper Pattern

ESE Question Paper Pattern: 5 x 15 = 75

MarksQuestion from each unit comprising of
One question with a weightage of 2 Marks : 2 x 5=10
One question with a weightage of 5 Marks (Internal Choice at the same CLO level) : 5 x 5 =25
One question with a weightage of 8 Marks (Internal Choice at the same CLO level) : 8 x 5 =40

Continuous Internal Assessment PatternTheory

CIA Test	: 5 marks (conducted for 45 marks after 50 days)
Model Exam	: 7 marks (Conducted for 75 marks after 85 days)
Seminar/Assignment/Quiz	: 5 marks
Class Participation	: 5 marks
Attendance	: 3 marks
Total	: **25 Marks**

Practical

Lab Performance	: 7 marks
Regularity	: 5 marks
Model Exam	: 10 marks
Attendance	: 3 marks
Total	**: 25 marks**

ESE Practical Pattern
The End Semester Examination will be conducted for a maximum of 75 marks respectively with a maximum 15 marks for the record and other submissions if any**.**

Introduction to Entrepreneurship

Quiz	: 50marks
Assignment	: 25marks
Project / Case study	: 25marks
Total	**: 100 Marks**

COURSE CODE	COURSE NAME	Category	L	T	P	Credit
BF24C01	Food Science	Theory	58	2	-	3

Preamble

To enable the students to

- Learn the basic concepts of food science and different methods of cooking
- Understand the classification, composition and nutritive values of various foods
- Gain knowledge on the cooking of cereals, pulses, meat, fish and poultry, types of spices and beverages

Course Learning Outcomes

On the successful completion of the course, students will be able to:

CLO Number	CLO Statement	Knowlege Level
CLO1	Gain knowledge on the basic concepts of food science	K1
CLO2	Recognize structure, nutritive value and role of various food groups and describe their nutritional contribution	K2
CLO3	Gain knowledge on various role of food groups in cookery and develop new cookery concepts	K3
CLO4	Demonstrate effect of processing and preservation on composition and quality changes in foods related to practical application	K4

Mapping with Programme Learning Outcomes

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1	S	M	M	M	S	M
CLO2	S	M	S	S	S	M
CLO3	S	M	S	S	S	M
CLO4	S	M	S	S	S	M

S- Strong; M-Medium

Food Science (BF24C01) (58Hrs)

Syllabus

Unit I Food Science (12Hrs)

Introduction to food science – definition, functions of food, Classification of foods ,food groups, food pyramid,and food in relation to health.

Cooking – objectives, preliminary preparations**,** Cooking methods – moist heat methods, dry heat methods, Combination methods – braising and microwave cooking, Recent methods-Ohmic cooking; Advantages and Disadvantages of cooking methods

Factors affecting cooking of foods, Gelatinization and factors affecting gel formation, denaturation, colloids, emulsion, foam and factors affecting foam formation and stability, fermentation, browning, rancidity.

Unit II Cereals, Pulses, Nuts and Oilseed and Spices (13Hrs)

Cereals and cereal products – structure, composition and nutritive value of wheat, rice, maize, jowar, ragi, bajra; Cereal starch –Types of starch, effect of moist heat and dry heat.

Pulses – composition and nutritive value, classification, toxic constituents, Effect of cooking and factors affecting cooking of pulses; Pulse cookery

Nuts & oil seeds – composition and nutritive value of coconut, flax seeds, almonds, groundnut, soya bean, sunflower seeds. Fats and oil- Refining of oils, Effect of heat on oil and Rancidity

Spices – general function, medicinal values , role of spices in cookery.

Unit III Vegetables and Fruits (10 Hrs)

Vegetables and Fruits – Classification, composition and nutritive value, selection,pigments, enzymes, flavor compounds:-bitter compound, Phytochemicals; ripening of fruits; Browning:- enzymatic and non-enzymatic browning, prevention of browning; Changes and effect of cooking.

Unit IV Meat, Fish and Poultry (12 Hrs)

Meat – classes of meat and related products, composition and nutritive value, post-mortem changes, ageing, tenderizing, curing, cuts,grades and meat cookery, Changes during cooking, methods of cooking

Fish- classification, composition and nutritive value, selection of fish, fish products, fish protein concentrate.

Poultry – classification, composition and nutritivevalue.

Unit V Egg, Milk and Sugar (11Hrs)

Egg- Structure, composition, nutritive value, egg quality grading, effect of heat on egg proteins, functions of egg in cookery.

Milk- Composition, nutritive value, properties, effects of heat on milk, milk cookery and products and indigenous milk products

Sugar- Properties, sugar and related products, stages of sugar cookery, factors affecting crystallization; Sugar cookery and artificial sweeteners

Text Books

S. No	Name of the Authors	Title of the Book	Publishers	Year and Edition
1.	Srilakshmi, B	Food Science	New Age International (P) Ltd.,Publishers, New Delhi.	2005
2.	Potter, N.	Food Science	CBS Publishers and Distributors, Delhi.	2005
3.	Shakunthala Manay,N and Shadaksharswamy, M	Foods Facts andPrinciples	New Age International	2 nd Edn., 2001

Reference Book

S.No	Name of the Authors	Title of the Book	Publishers	Year and Edition
1.	Vijaya Khader	Text book of Food Science and Technology	ICAR, New Delhi.	2001
2.	Srivastava, R.P. and Sanjeev Kumar	Fruit and vegetable preservation – principles and practices	International Book Distributing Co., Lucknow.	2002

3.	Swaminathan, M.	Food Science and Experimental Foods	Ganesh and Co., Madras.	1995
4.	Sukhneet Suri	Food science nutrition and safety	Pearson Education Ltd.	2016

Pedagogy

Blended learning, lecture by chalk & talk, power point presentation, e-content, group discussion, assignment, quiz , seminar.

Course Designers:

1. **Dr. N. Deepa Sathish**

COURSE NUMBER	COURSE NAME	Category	L	T	P	Credit
BF24C02	Principles of Management	Theory	73	2	-	4

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO Number	CLO Statement	Knowledge Level
CLO1	Recognize the concepts of management, functions, levels and modern management practices	K1
CLO2	Understand the application of managerial functions such as planning, organizing, staffing, controlling, coordination delegation and authority	K2
CLO3	Apply the management principles, theories, budgetary & non budgetary controls and AI in the food business management	K3
CLO4	Analyse the different management perspectives to take rational decisions and implement the best practices in Food Industry	K4

Mapping with Programme Learning Outcomes

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	S	M	S	S	S
CLO2	S	S	S	S	S
CLO3	S	S	S	S	S
CLO4	S	S	M	M	S

S-Strong; M-Medium; L-Low

PRINCIPLES OF MANAGEMENT - BF24C02 (73 Hours)

UNIT – I (14 Hours)

Management: Introduction - Meaning & Definition - ***Scope – Features - Levels of Management*-**Skills and Competencies - Management Theories: Maslow's Hierarchy of

needs, Theory X, Y. Management Thoughts: Scientific, Modern Management thoughts - *__Functions of Management*-__IKS in management.

UNIT – II (15 Hours)

Planning: Introduction -Meaning and Definition - ***Nature and Characteristics of Planning - Importance* -** Types of Plans - Planning process - Management by Objectives.

Decision Making: Introduction - Meaning and ***Features of decision making*** - Types of decision making - Decision making phases and process - AI assisted decision making in food industry. Creativity & its Stages - Application in Food business**.**

UNIT – III (15 Hours)

Organizing: Introduction - Meaning and Definition - ***Principles of Organizing*** - Formal and Informal Organization - **Importance of Organization*** - Delegation and Authority - Organizational structure in Food industry. Staffing - meaning- importance - Staffing process - Role of RPA in staffing.

UNIT – IV (14 Hours)

Controlling: Definition - ***Characteristics of control - Importance of controlling***- Control process - Effective control system - Limitations of controlling - Types of Control - Role of Controlling in Food industry.

Co-ordination: Meaning and Definition - Features, types and Benefits of co-ordination - Essentials for effective co-ordination.

UNIT – V (15 Hours)

Food Business Management - Definition, need, importance, process and sustainability of food businessin Indian Economy. Application of AI in food business management - Sectors in Food industry - Emerging trends in food industry - ***Ethics in Food Business Management***

*** Highlighted Text offered in blended mode (Links Provided)**

TEXT BOOKS:

Sl. No.	Author(s)	Title of the Book	Publisher	Year & Edition
1.	Harold Koontz and Heinz Weihrich	Essentials of Management	Tata McGraw Hill	2023 10th Edition
2.	Dr. Mishra & Gupta	Principles of Management	SBPD PublishingHouse	2021 1st Edition

REFERENCE BOOKS:

Sl. No.	Author(s)	Title of the Book	Publisher	Year & Edition
1.	Gareth R. Jones & Jennifer M George	Contemporary Management	McGraw-Hill Education	2022 12th Edition
2.	Stephen P. Robbins,Mary Coulter and Neharika Vohra	Management	Pearson Prentice Hall, New Delhi	2022 15th Edition

Pedagogy: Chalk &Talk, lecture, Seminar, PPT, Group Discussion, Activity and Case Study

Blended Learning Links:

SI.No.	Units	Topics	Blended Learning Links
1	1	Scope, Features and Levels of Management	https://www.youtube.com/watch?v=X_0LEIQbgwg
2		Functions of Management	https://www.youtube.com/watch?v=pzSRAM5Hvg4
3	2	Nature, Characteristics and Importance of Planning	https://www.youtube.com/watch?v=zuM3u0du_5g
4		Features of decision making	www.youtube.com/watch?v=KWy_m6QfFhw
5		Principles of Organizing	https://www.youtube.com/watch?v=v9YkwuPPWxQ https://www.youtube.com/watch?v=p7zjC-HPCYM

6	3	Importance of Organization	https://www.youtube.com/watch?v=UEXrsZ3vkx0
7	4	Characteristics of control – Importance of controlling	https://www.youtube.com/watch?v=__x1O5xaAsY https://www.youtube.com/watch?v=0HeAbUD4H78
8	5	Ethics in food industry	https://www.youtube.com/watch?v=5Qxd7scGnas

COURSE CODE	COURSE NAME	Category	L	T	P	Credit
BF24A01	Principles of Food and Nutrition	Theory	73	2	-	3

Preamble

To enable the students to

- Gain knowledge about nutrition and malnutrition, sources and functions of vitamins and minerals
- Determine the energy values of foods
- Learn the Know the importance of water and electrolyte balance in the body

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLO Number	CLO Statement	Knowledge Level
CLO1	Gain basic knowledge on the basic concepts of nutrition, food groups and meal planning	K1
CLO2	Understanding the sources, digestion and absorption of carbohydrates, proteins and fats	K2
CLO3	Understand the role of food and nutrients in health and disease prevention.	K3
CLO4	Able to conceptualize, implement and evaluate the functions, requirements and effects of deficiency of nutrients	K4

Mapping with Programme Learning Outcomes

CLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1	S	S	S	S	M	M
CLO2	S	S	S	M	M	M
CLO3	S	S	S	M	M	M
CLO4	S	S	S	S	M	M

S-Strong; M-Medium

Principles of Food and Nutrition (BF24A01) (73 Hrs)

Syllabus

Unit I Introduction to Nutrition and Meal planning (15 hours)

Food as source of nutrients, functions of food; Nutrition-Definition, importance and scope of nutrition, Relation of nutrition to health, Malnutrition, Nutritional Care and Nutritional Status. Recommended Dietary Allowances (RDA)-Significance and factors affecting RDA, Reference man and women. General concepts about growth and development and through different stages of life and RDA for Indians

Meal planning- Definition, Principles of meal planning, Basic five food groups, Balanced diet, Exchange lists, and factors affecting meal planning, Dietary Guidelines for different age group.

Unit II Proximate principles (15 Hrs)

Carbohydrate, Proteins and Lipids- classification, functions, digestion and absorption, sources and requirements and Dietary fibre; Protein quality of foods-Protein Efficiency Ratio (PER), Biological Value (BV) and Net Protein Utilization (NPU)

Unit III Energy, Water and Electrolytes (15 Hrs)

Energy:-Sources, physiological energy value of foods, thermogenic effect of foods; Basal Metabolic Rate(BMR)- factors affecting BMR and energy allowance for various activities

Water-Daily requirement, Regulation and distribution of body water, Fluid Exchange, Overhydration, Dehydration and water intoxication; Electrolytes- Types, composition of body fluid, fluid and electrolyte balance and electrolyte imbalance

Unit IV Vitamins (14 Hrs)

Fat soluble vitamins – vitamins A, D, E and K – functions, sources, requirements and deficiency. Water soluble vitamins (thiamine, riboflavin, niacin, pyridoxine, folic acid, cyanocobalamin, biotin, pantothenic acid and ascorbic acid) – functions, sources, requirements and deficiency

Unit V Minerals **(14 Hrs)**

Minerals – calcium, phosphorus, iron, magnesium, sodium and potassium – functions, sources, requirements and deficiency.

Trace minerals – zinc, iodine, fluorine and chlorine – functions, sources, requirements and deficiency

Text Books

S.No	Name of the Authors	Title of the Book	Publishers	Year and Edition
1.	Srilakshmi, B	Nutrition Science	New age international Pvt. Ltd. New Delhi.	6th Edn 2018
2.	Mudambi, S.R.,	Fundamentals of foods, nutrition and diet therapy	New Age International, New Delhi	2007
3.	Avanta Sharma	Principles of therapeuticnutrition and dietetics	CBS Publishersand Distributors, New Delhi	2014
4.	Dr. M. Swaminathan	Food and Nutrition	Bappco Publications	2nd Edn.,2000

Reference Books

S. No	Name of the Authors	Title of the Book	Publishers	Year and Edition
1.	Raheena Begum	A textbook of foods, Nutrition and dietetics	Sterling Publishers, New Delhi	2000
2.	Sunetra Roday	Food Science and Nutrition	Oxford University Press	2017
3.	Towsend, C.E., and Rath, R.	Nutrition and Diet Therapy	Delmar Publishers, New York.	2000
4.	Shashi Goyal	Food nutrition and Health	S.Chand and Company Pvt Ltd , New Delhi	2012

Pedagogy

Blended learning, lecture by chalk & talk, power point presentation, e-content, group discussion, assignment, quiz, seminar

Course Designers:

1. Dr. N. Deepa Sathish

2. Ms. Santhiya R

COURSE CODE	COURSE NAME	Category	L	T	P	Credit
BF24CP1	Food Science Practical	Practical	58	2	-	3

Preamble

To enable the students to

- Learn the preparation of various food products- milk, egg & beverages
- Understand the effect of dry & moist heat methods of cooking
- Gain knowledge on browning of fruits & effect of acid/alkali/heat on vegetables
- Determine melting point, smoking point and flash point of fats

Course Learning Outcomes

On successful completion of the course

CLO Number	CLO Statement	Knowledge Level
CLO1	Classify the food groups and understand its properties	K1
CLO2	Recognize the effect of processing on structural changes of different food	K2
CLO3	Gain knowledge on the factors affecting properties of food	K3
CLO4	Apply the concepts of the changes and develop products	K4

Mapping with Programme Learning Outcomes

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1	S	S	S	S	S	S
CLO2	S	S	S	S	S	S
CLO3	S	S	S	S	S	S
CLO4	S	S	S	S	S	S

S- Strong

FOOD SCIENCE PRACTICAL (BF24CP1)

Total Hours :45 **Credit:3**

Syllabus

1. Study on organoleptic evaluation of foods
2. Effect of dry heat and moist heat on starch granules
3. Determination of gluten content in wheat
4. Cooking characteristics of pulses
5. Germination characteristics of pulses
6. Cooking characteristics of vegetables - effect of acid, alkali, heat and time
7. Study of enzymatic and non-enzymatic browning in fruits
8. Cooking characteristics of milk and it products.
9. Cooking characteristics of egg
10. Study on foam formation and stability
11. Study the shortening effects of fats and oils during cooking
12. Stages of sugar crystallization
13. Effect of temperature on taste

Text Books

S.No	Name of the Authors	Title of the Book	Publishers	Year and Edition
1	Manay Shakunthala, N And Shadaksharaswamy M.	Foods facts and Principles,	New Age International (P) Ltd Publishers,	2005
2	Swaminathan, M.	Food Science and Experimental Foods	Ganesh and Co.Madras.	1995
3	Usha Chandrasekar,	Food Science in Indian Cookery	Phoenix publishers House Private Limited	2002
4	Srilakshmi B.	Food Science	New Age International (P) Ltd Publishers	2005

Reference Books

S.No	Name of the Authors	Title of the Book	Publishers	Year and Edition
1.	Paul and Paulmer	Food Theory and Application	John Wiley and sons, New York	1972
2.	Norman N. Potter and Joseph H. Hotchkiss,	Food Science	CBS Publishers anddistributers	1997
3.	Swaminathan M	Food Science, Chemistry and Experimental foods	Bappo Publishers company Ltd	1997
4.	Meyer LH,	Food Chemistry	CBS Publication	1987

Pedagogy: Demonstration and hands on practical's

Course Designers:
1. Dr.N.Deepa Sathish
2. Ms. Sujithra S

COURSE CODE	COURSE NAME	Category	L	T	P	Credit
BF24AP1	Nutritional Menu Planning Practical	Practical	-	-	45	2

Preamble

To enable the students to

- Gain knowledge on the energy value of foods and the energy requirements of individual
- Understand about the nutritional composition of food.
- Analyze the methods of assessing nutritional status of an individual

Course Outcomes

On the successful completion of the course, students will be able to

CLO Number	CLO Statement	Knowledge Level
CLO1	To calculate the energy value of foods	K1
CLO2	To learn the standardization of menu planning	K2
CLO3	To learn energy requirements of an individual	K3
CLO 4	To gain knowledge on preparing a day's diet based on the nutritional status	K4

Mapping with Programme Learning Outcomes

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1	S	S	S	S	S	S
CLO2	S	S	S	S	S	S
CLO3	S	S	S	S	S	S
CLO4	S	S	S	S	S	S

S-Strong

NUTRITIONAL MENU PLANNING PRACTICAL (BF24AP1)

Total Hours: 45 **Credits: 2**

1. Calculation of energy values in foods from food composition tables and Preparation of food exchange lists
2. Calculation of basal metabolic rate and energy requirements of an individual per day.
3. Preparation and standardization of recipes, portion control and calculation of nutritive value
    i. Controlling techniques - Weights and measures standard, household measures for raw and cooked food
    ii. Basic preparation of various foods from different food groups & their nutritive value(porridges,Salads, Beverages,Soups, desserts and puddings, custard, kheer, ice cream, poached, scrambled,fried omlette & eggnogs and meat preparations)

4. Preparation of a day's diet and calculation of Nutritive value
    a. Pregnant and Lactating Mother
    b. Infants
    c. School going children
    d. Adolescents
    e. Adults and
    f. Elderly people

5. Preparation of a day's diet and calculation of Nutritive value for various health conditions
    i. Weaning food
    ii. Iron rich food
    iii. Underweight
    iv. Obesity

6. Methods of Assessing Nutritional status of an individual- BMI, Head circumference, Upper arm, mid arm circumference, skin fold thickness

Text Books

S.No	Name of the Authors	Title of the Book	Publishers	Year and Edition
1	Dr. C. Gopalan	Nutritive Value of Indian Books	ICMR and NIN	2021
2	Dr. C. Gopalan	Dietary Guidelines for Indians	ICMR and NIN	2024
3	Pomrenz Y & Meloan CE	Food Analysis - Theory and Practice	CBS	1996
4	Food safety and standards, Ministry of health and family welfare FSSAI Authority of India	Manual of methods for analysis of foods	Government of India	2016
5	David T Plummer	An Introduction to Practical Biochemistry	Tata McGraw Hill	2007,third edn
6	A.Y.Sathe	A first course in Food Analysis	New Age International Publishers	1999
7	Dr. Geetha Swaminathan and Ms. Mary George	Laboratory Chemical Methods in Food Analysis	Margham Publishers	2002

Pedagogy

Demonstration and hands on practical's

Course Designers:

1. **Dr. N. Deepa Sathish**