Re-Accredited 'B++' 2.86 CGPA by NAAC
VEER NARMAD SOUTH GUJARAT UNIVERSITY
University Campus, Udhna-Magdalla Road, SURAT - 395 007, Gujarat, India.
વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી
યુનિવર્સિટી કેમ્પસ, ઉધના-મગદલ્લા રોડ, સુરત - ૩૯૫ ૦૦૭, ગુજરાત, ભારત.
Tel : +91 - 261 - 2227141 to 2227146, Toll Free : 1800 2333 011, Digital Helpline No.- 0261 2388888
E-mail : info@vnsgu.ac.in, Website : www.vnsgu.ac.in

ક્રમાંક :એસ./પરિપત્ર/૧૦૨૩૫/૨૦૨૪
તા.૧૬/૦૫/૨૦૨૪

પ્રતિ,
આચાર્યશ્રી,
શેઠ પી.ટી. મહિલા કોલેજ ઓફ આર્ટસ એન્ડ હોમસાયન્સ,
વનિતા વિશ્રામ કોલેજ કેમ્પસ,
અઠવાગેટ,
સુરત.

વિષયઃ– બી.એસસી. હોમસાયન્સ સેમ.– ૧ થી ૪ નાં સુધારેલ અભ્યાસક્રમ બાબત.
સંદર્ભઃ યુનિવર્સિટી કાર્યાલયના તા.૧૩–૦૩–૨૦૨૪, ક્રમાંક : એસ./પરિપત્ર/૫૪૮૬/૨૦૨૪

સુજ્ઞશ્રી,

સવિનય વિષય અને સંદર્ભ પરત્વે જણાવવાનું કે, શૈક્ષણિક વર્ષ–૨૦૨૪–૨૫ થી અમલમાં આવનાર NEP-2020 અંતર્ગત B.Sc. Home Science Semester -1 થી 4 નો સુધારેલ અભ્યાસક્રમ હોમસાયન્સ વિષયની અભ્યાસ સમિતિના ચેરમેનશ્રીએ અભ્યાસ સમિતિવતી અને વિજ્ઞાન વિદ્યાશાખાના અધ્યક્ષશ્રીએ વિદ્યાશાખાની મંજૂરીની અપેક્ષાએ વિદ્યાશાખા વતી મંજૂર કરી એકેડેમિક કાઉન્સિલને કરેલ ભલામણને એકેડેમિક કાઉન્સિલની તા.૦૧/૦૩/૨૦૨૪ ની સભાનાં ઠરાવ ક્રમાંકઃ૧૦૪ અન્વયે માનનીય કુલપતિશ્રીને આપેલ સત્તા અંતર્ગત માનનીય ઈ.ચા.કુલપતિશ્રી ધ્વારા મંજૂર કરેલ છે. જેની આથી જાણ કરવામાં આવે છે.

કુલસચિવ

પ્રતિ,
૧) અધ્યક્ષશ્રી, વિજ્ઞાન વિદ્યાશાખા,
૨) પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.

.....જાણ સારૂ.

Attachment NO: 1

SCIENCE FACULTY

B.Sc. Home Science (Major: Food Science & Nutrition)

Proposed New Credit Frame Work as per the NEP for 4-year UG Degree with Honours and Honours with Research

Proposed New Credit Frame Work as per the NEP for 4-year UG Degree with Research Project

To be implemented from Academic year: 2024-25.

SEM	Major		Minor		Multi-disciplinary	AEC	SEC	VAC	Internship	Research Project/ On the Job Training	Total Credit
	Theory	Practical	Theory	Practical	T/T+P		T/P/ T+P				
1	3+3	1+1	2	2	(2+2)/ (1+1)+(1+1)	2	2/2/ 1+1	2		-	22
2	3+3	1+1	2	2	(2+2)/ (1+1)+(1+1)	2	2/2/ 1+1	2		-	22
3	2+2+4	2+2+0	0	0	(2+2)/ (1+1)+(1+1)	2	2/2/ 1+1	2		-	22
4	2+2+4	2+2+0	2	2	-	2	2/2/ 1+1	2		-	22
5	2+2+2	2+2+2	2+2	2+2	-	-	2/2/ 1+1	-		-	22
6	2+2+2	2+2+2	2	2	-	2	-	-	4	-	22
Total Credit	40	24	12	12	12	10	10	8	4	-	132
	64		24								
7	2+2+2	2+2+2	2	2	-	-	-	-		6	22
8	2+2+2	2+2+2	2	2	-	-	-	-		6	22
Total Credit	52	36	16	16	12	10	10	8	4	12	176
	88		32								

* For Theory; 1 credit = 1 hr. for Practical; 1 credit = 2 hr. & for Research Project/Dissertation; 1 credit = 2 hr.

Summer internship of 04 credit is required only if the student wish to exit after 1st, 2nd, or 3rd year. It is over and above in addition to the total credit

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
I	BFSNMJT01	Major Course	Fundamentals of Food Science & Nutrition	Theory	3
	BFSNMJP01		Fundamentals of Food Science & Nutrition	Practical	1
	BFSNMJT02		Applied Science I	Theory	3
	BFSNMJP02		Applied Science I	Practical	1
	BFSNMCT01	Minor Course	Foundation of Art & Design	Theory	2
	BFSNMCP01		Foundation of Art & Design	Practical	2
	BFSNMDCT01	Multi-disciplinary Course	Logical & Mathematical Reasoning	Theory	2
	BFSNMDCP01		Logical & Mathematical Reasoning	Practical	2
	BFSNAECT01	Ability Enhancement Course	English Proficiency and Life Skills (English)	Theory	2
	BFSNSECT01	Skill Enhancement	Nutrition & Fitness	Theory	1
	BFSNSECP01		Nutrition & Fitness	Practical	1
	BFSNVACT01	Value Added Course	Bharatiya Knowledge System	Theory	2
			NCC/NSS/Physical Training/Saptadhara		
	TOTAL CREDIT				**22**

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
II	BFSNMJT03	Major Course	Nutrition During Lifespan	Theory	3
	BFSNMJP03		Nutrition During Lifespan	Practical	1
	BFSNMJT04		Applied Science II	Theory	3
	BFSNMJP04		Applied Science II	Practical	1
	BFSNMCT02	Minor Course	Introduction to Clothing & Textiles	Theory	2
	BFSNMCP02		Introduction to Clothing & Textiles	Practical	2
	BFSNMDCT02	Multi Disciplinary Course	Vedic Nutrition	Theory	2
	BFSNMDCP02		Vedic Nutrition	Practical	2
	BFSNAECT02	Ability Enhancement Course	English Proficiency and Life Skills (English)	Theory	2
	BFSNSECP02	Skill Enhancement	Computer Application in Nutrition	Practical	2
	BFSNVACT02	Value Added Course	Bharatiya Knowledge System	Theory	2
			NCC/NSS/Physical Training/Saptadhara		
	TOTAL CREDIT				**22**
Exit option with Certificate in Food Science & Nutrition (44 Credits)					
Exit option with Certificate in Food Science & Nutrition With Internship- 4 Credits (48 Credits)					

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
III	BFSNMJT05	Major Course	Food Science I	Theory	2
	BFSNMJP05		Food Science I	Practical	2
	BFSNMJT06		Human Physiology	Theory	2
	BFSNMJP06		Human Physiology	Practical	2
	BFSNMJT07		Community Nutrition	Theory	4
	BFSNMDCT03	Multi-Disciplinary Course	Food Microbiology	Theory	2
	BFSNMDCP03		Food Microbiology	Practical	2
	BFSNAECT03	Ability Enhancement Course	English Proficiency and Life Skills (English)	Theory	2
	BFSNSECP03	Skill enhancement Course	Sensory evaluation	Practical	2
	BFSNVACT03	Value Added Course	Basics of Statistics / Bharatiya Knowledge system.	Theory	2
			NCC/NSS/Physical Training/Saptadhara		
		TOTAL CREDITS			**22**
Sem	**Course code**	**Course Category**	**Paper Title**	**Theory/ Practical**	**Credit**
IV	BFSNMJT08	Major Course	Food Science II	Theory	2
	BFSNMJP08		Food Science II	Practical	2
	BFSNMJT09		Food Preservation	Theory	2
	BFSNMJP09		Food Preservation	Practical	2
	BFSNMJT10		Food Safety & Quality Control	Theory	4
	BFSNMCT03	Minor Course	Maternal, Child Nutrition & Health	Theory	2
	BFSNMCP03		Maternal, Child Nutrition & Health	Practical	2
	BFSNAECT04	Ability Enhancement Course	English Proficiency and Life Skills (English)	Theory	2
	BFSNSECP04	Skill Enhancement Course	Bakery Science	Practical	2
	BFSNVACP01	Value Added Course	Research Methodology	Practical	2
			NCC/NSS/Physical Training/Saptadhara		
		TOTAL CREDITS			**22**
Exit option with Diploma in Food Science & Nutrition (88 Credits)					
Exit option with Diploma in Food Science & Nutrition With Internship- 4 Credits (96 Credits)					

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
V	BFSNMJT11	Major Course	Diet Therapy I	Theory	2
	BFSNMJP11		Diet Therapy I	Practical	2
	BFSNMJT12		Advance Chemistry	Theory	2
	BFSNMJP12		Advance Chemistry	Practical	2
	BFSNMJT13		Human Nutrition I	Theory	2
	BFSNMJP13		Human Nutrition I	Practical	2
	BFSNMCT04	Minor Course	Dietetic Techniques & Patient Counseling	Theory	2
	BFSNMCP04		Dietetic Techniques & Patient Counseling	Practical	2
	BFSNMCT05		Food Processing	Theory	2
	BFSNMCP05		Food Processing	Practical	2
	BFSNAECP05	Skill Enhancement Course	Food Product Development	Practical	2
			NCC/NSS/Physical Training/Saptadhara		
		TOTAL CREDITS			**22**

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
VI	BFSNMJT14	Major Course	Diet Therapy II	Theory	2
	BFSNMJP14		Diet Therapy II	Practical	2
	BFSNMJT15		Nutritional Biochemistry	Theory	2
	BFSNMJP15		Nutritional Biochemistry	Practical	2
	BFSNMJT16		Human Nutrition II	Theory	2
	BFSNMJP16		Human Nutrition II	Practical	2
	BFSNMCT06	Minor Course	Food Analysis	Theory	2
	BFSNMCP06		Food Analysis	Practical	2
	BFSNSECP05	Ability Enhancement Course	Nutritional Assessment &Surveillance	Practical	2
	BFSNPINT01	Internship	Internship	Practical	4
			NCC/NSS/Physical Training/Saptadhara		
		TOTAL CREDITS			**22**

Exit option with Bachelors of Science in Food Science & Nutrition (132 Credits)

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
VII	BFSNMJT17	Major Course	Medical Nutrition Therapy I	Theory	2
	BFSNMJP17		Medical Nutrition Therapy I	Practical	2
	BFSNMJT18		Physiology & Clinical Biochemistry	Theory	2
	BFSNMJP18		Physiology & Clinical Biochemistry	Practical	2
	BFSNMJT19		Principles & Applications of Instruments & Techniques	Theory	2
	BFSNMJP19		Principles & Applications of Instruments & Techniques	Practical	2
	BFSNMCT07	Minor Course	Recent Advances in Food Science & Nutrition – I (Seminar)	Theory	2
	BFSNMCP07		Recent Advances in Food Science & Nutrition – I (Seminar)	Practical	2
	BFSNDISP01	Dissertation	Research project/ Dissertation	Practical	6
			NCC/NSS/Physical Training/Saptadhara		
		TOTAL CREDITS			**22**

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
VIII	BFSNMJT20	Major Course	Medical Nutrition Therapy- II	Theory	2
	BFSNMJP20		Medical Nutrition Therapy- II	Practical	2
	BFSNMJT21		Innovative Food Formulations & Evaluation	Theory	2
	BFSNMJP21		Innovative Food Formulations & Evaluation	Practical	2
	BFSNMJT22		Advance Statistics in Research Methodology	Theory	2
	BFSNMJP22		Advance Statistics in Research Methodology	Practical	2
	BFSNMCT08	Minor Course	Recent Advances in Food Science & Nutrition – II (Seminar)	Theory	2
	BFSNMCP08		Recent Advances in Food Science & Nutrition – II (Seminar)	Practical	2
	BFSNDISP02	Dissertation	Research project/ Dissertation	Practical	6
		TOTAL CREDITS			**22**
Exit option with Bachelors of Science in Food Science & Nutrition Honors with Research Project (176 Credits)					

BFSNMJT- BACHELORS IN FOOD SCIENCE & NUTRITION MAJOR THEORY

BFSNMJP- BACHELORS IN FOOD SCIENCE & NUTRITION MAJOR PRACTICAL

BFSNMCT- BACHELORS IN FOOD SCIENCE & NUTRITION MINOR COURSE THEORY

BFSNMCP- BACHELORS IN FOOD SCIENCE & NUTRITION MINOR COURSE PRACTICAL

BFSNAECT- BACHELORS IN FOOD SCIENCE & NUTRITION ABILITY ENHANCEMENT COURSE THEORY

BFSNSECP- BACHELORS IN FOOD SCIENCE & NUTRITION SKILL ENHANCEMENT COURSE PRACTICAL

BFSNVACT- - BACHELORS IN FOOD SCIENCE & NUTRITION VALUE ADDED COURSE THEORY

BFSNVACP- - BACHELORS IN FOOD SCIENCE & NUTRITION VALUE ADDED COURSE PRACTICAL

BFSNMDCT- BACHELORS IN FOOD SCIENCE & NUTRITION MULTI- DISCIPLINARY COURSE THEORY

BFSNMDCP- BACHELORS IN FOOD SCIENCE & NUTRITION MULTI- DISCIPLINARY COURSE PRACTICAL

BFSNDISP BACHELORS IN FOOD SCIENCE & NUTRITION DISSERTATION PRACTICAL

Attachment NO. 2

F.Y. B. Sc.

Food Science & Nutrition

Semester I

To be implemented from Academic year: 2024-25

F. Y. B.Sc. (Food science & Nutrition)

Semester – I

Year: 2024-25

Fundamentals of Food Science and Nutrition (Theory)

Course	Paper No.	Hours/week	Credit
Fundamentals of Food Science and Nutrition	BFSNMJT01	3	3

Objectives:

1. To provide students with the knowledge of basic terminology and several aspects of nutrition and the functions of food in healthy life sustenance
2. To ensure that students are familiar with the food classification, functions of various nutrients, their requirements, dietary sources and effect of deficiencies and excess.
3. To be familiar with different cooking methods, their advantages and disadvantages
4. To learn how to improve food's nutritional quality.

Chapter no.	Topic and Details	Number of lectures assigned
1	**Basic concepts of Foods and Nutrition:** • Terms used in Nutrition and Health: Food, Health, Nutrition, Nutrients, Balanced diet, R.D.A., etc. • Classification and Functions of Food, Food groups and Food guide pyramids • Methods of cooking, advantages and disadvantages of cooking methods and effect of cooking on nutritive value • Basic methods to improve the nutritional quality of foods: • Germination, Fermentation, Supplementation, Fortification and enrichment	6
2	**Macronutrient:** Carbohydrates: Composition and classification Monosaccharides - glucose, fructose, galactose. Disaccharides - Maltose, lactose, sucrose Polysaccharides - Dextrin, starch, glycogen Sources, daily requirements, functions. Effects of too high and too low carbohydrates on health, digestion and absorption of carbohydrate. Lipids: • Classification & Properties. Fatty acids-composition, properties • sources, daily requirements, functions, digestion & absorption lipids • Role & nutritional significances of PUFA, MUFA, SFA, • Omega-3 fatty acid. Proteins: • Composition, Classification, • Amino acids -Classification, types, functions. • Proteins - Sources, daily requirements, functions, Effect of too high - too low proteins on health. Digestion	10

3	**Micronutrients – I** Classification Fat-soluble vitamins: Vitamin A, D, E and K • sources, daily requirements, functions, digestion & absorption • Deficiencies and effect of excess amount on health Water-soluble vitamins: Vitamin – B complex and Ascorbic acid • sources, daily requirements, functions, digestion & absorption • Deficiencies and effect of excess amount on health	12
4	**Micronutrients – II** Classification Macro minerals: Calcium, Phosphorus, Magnesium, Sodium, Potassium, etc. • sources, daily requirements, functions, digestion & absorption • Deficiencies Micro minerals: Iron, Zinc, Iodine, Fluoride, etc. • sources, daily requirements, functions, digestion & absorption • Deficiencies	8
5	**Water:** Functions, daily requirements, Water balance **Dietary Fiber**: Classification, sources, composition and nutritional significance.	4

References:

1. Mahana R. ; Puri S.; Khanna S. ; Gupta S. ;Jain S.; Seth R.(2020)Textbook of Nutrition and Dietetics, Elite Punlishing House
2. Mudambi, R. S.;Rajgopal M.V.(2020) Fundamentals of Foods and Nutrition, New age International Pvt. Ltd.
3. Singh J.(2017) Handbook of Nutrition And Dietetics, Lotus press, New Delhi

F. Y. B.Sc. - Food science and Nutrition

Semester – I

Year: 2024-25

Fundamentals of Food Science and Nutrition (Practical)

Course	Paper No.	Hours/ week	Credit
Fundamentals of Food Science and Nutrition	BFSNMJP01	2	1

Objectives:

1. To learn measuring different types of foods – grains, flours, raw vegetables, fruits & liquids
2. To provide students with the knowledge of serving size, exchange sizes and cooked amount of different recipes
3. To learn the uses of food guide
4. To standardize different recipes based on portion size
5. To learn the various cooking methods and mediums of cooking.
6. To make a list of rich sources of various nutrients, plan and prepare recipes.

Chapter no.	Topic and Details	Number of lectures assigned
1	**Basics of Food Preparation :** • Food groups- Introduction to food guide, grouping of foods, discussion on nutritive value, calculation of nutrient present in different food groups. • Measuring ingredients –Introduction of common measuring tools use in the preparation of different recipes, Methods of measuring different types of foods like grains, flours, Raw fruits and vegetables, liquids, etc. • Edible portion- Determination of edible portion percentage of different foods. • Standardization of basic recipes and Portion size.	14
2	**Plan and Prepare Recipes for:** • Different cooking methods • Carbohydrate: High And Low • Energy : High And Low • Protein: High animal protein and High plant protein • Vitamin- A and carotene • B-complex vitamins • Vitamin – C • Minerals – High Calcium and High Iron	14

References:

1. Gopalan C., Sastri V. R., Balasubramanium S.C.; (2018); Nutritive value of Indian Foods; ICMR & NIN, Hyderabad
2. Longvah T., Ananthan R., Bhaskarachary K., Venkalah K.; (2017) Indian food composition tables; N I N, Hyderabad.
3. Some common Indian Recipes and their Nutritive value; N I N, Hyderabad

F.Y. B. Sc. (Food Science & Nutrition)
Semester-1 Year: 2024-25
Applied Science-I (Theory)

Course	Paper No	Hours/Week	Credit
Applied Science-I	BFSNMJT02	3	3

Objectives:

1. To know the importance and application of science in daily life
2. To develop scientific approach and analytical attitude.
3. To acquire basic knowledge of various chemical processes.
4. To understand the application of chemistry in food, textile, medicine, agriculture and other industries.

Chapter No.	Topics & Details	No. of lectures assigned
1.	**Revision of Basic Chemistry** • Important definitions e.g. Element, compound, mole, atom, mole concept, periodic table and its use, Molecular wt., Atomic wt., Crystalloids, colloids, Solution, difference between true solution and colloidal solution, normality ,molarity, methods of expressing the strength/concentration of solution. • Calculation and conversion of strength of solution. • Difference between Organic & Inorganic compounds with suitable examples. • Functional groups of organic compounds and its examples.	5
2.	**Soap and detergents** • Introduction and historical background. • Definition of Soap and Detergent. • Saponification process • Difference between Soap and Detergent • Advantages and disadvantages of soap and detergents. • Raw material for soap making and its role. • Cleansing action of soap and detergents	4
3	**Agrochemicals** **(Insecticides and Pesticides)** • Introduction and importance • Types of agrochemicals and according to PFA their max. permissible limit to use. • Pesticides in our food. • Health hazards/toxicity of Agrochemicals with suitable examples.	3

4	**Drugs and Pharmaceuticals** • Introduction to drugs and its meaning. • Uses of drugs and causes of disease. • Definition and classification based on chemical structure, name and therapeutic action. • Qualities or properties of an ideal drug/good drug. • Common therapeutic drugs-meaning with suitable examples. • Mode of action of Antibiotics (in brief). • Uses and side effects of Aspirin, antibiotics, paracetamol, sulphanilamide etc.	6
5	**Dyes** • Introduction and historical background • Definition of dyes (chromophore, auxochrome). • Classification of dyes based on chemical constitution and mode of application with suitable examples. • Uses of different dyes in food, textile, medicine, laboratory etc. • Health hazards of dyes.	5
6	**Introduction to polymers and their application** • Definition and types of polymerization-Addition polymerization and condensation polymerization • Classification of polymers with suitable examples: 1) Natural and synthetic 2) Organic and inorganic 3) Thermoplastic and Thermosetting • Some important polymers and their properties & uses polyethylene, polyester, Nylon, Teflon, polyvinyl chloride(PVC)	5

References:

- K. Venkatraman (1952): The Chemistry of Synthetic Dyes, Vol. I, Academic Press, New York.
- Kent S.A. (1974): Riegel's Handbook of Industrial Chemistry.
- Person D. (1983): The Chemical Analysis of Food, Churchill Livings Tone, Edinburgh, London, New York.
- Textbook of std.11 and 12 (Chemistry)
- Textbook of Industrial chemistry by Sharm

F.Y. B. Sc. (Food Science & Nutrition)

Semester-1 Year: 2024-25

Applied Science-I (Practical)

Course	Paper No	Hours/Week	Credit
Applied Science-I	BFSNMJP02	2	1

Objectives:

1. Know the importance and application of science in daily life
2. Develop scientific approach and analytical attitude.
3. Acquire basic knowledge of various chemical processes.
4. Understand the application of chemistry in food, textile, medicine, agriculture and other industries.

Practical No.	Topics & Details	No. of lectures assigned
1.	Introduction to laboratory apparatus	2
2	Acid – Base Titration - Strong acid – Weak base	4
3	Acid – Base Titration - Weak acid – Strong base	2
4	Acid – Base Titration - Strong acid – Strong base	2
5	Redox reaction – $KMnO_4$ vs $H_2C_2O_4$ $2H_2O$	4
6	Soap Making	2
7	pH determination using pH papers	2

References:

- K. Venkatraman (1952): The Chemistry of Synthetic Dyes, Vol. I, Academic Press, New York.
- Kent S.A. (1974): Riegel's Handbook of Industrial Chemistry.
- Person D. (1983): The Chemical Analysis of Food, Churchill Livings Tone, Edinburgh, London, New York.
- Textbook of std.11 and 12 (Chemistry Practical Book)
- Textbook of Industrial chemistry by Sharma
- Prayogik Rashayan Shashtra – B. K. Bhatt

F.Y. B. Sc. (Food Science & Nutrition)

Semester I

Year: 2024-25

Foundation of Art and Design (Theory)

Course	Paper No	Hours/Week	Credit
Foundation of Art and Design	BFSNMCT01	2	2

Objective:

1. To understand elements and principles of art and design.
2. To develop aesthetic sense and be a good art consumer.
3. To develop an understanding of the application of art principles in design composition of traditional and contemporary art, and interior design.
4. To develop skill in using colours to create different effect in space.

Chapter No.	Topics and Details	No. of lectures assigned
1	**Introduction to design** • Classification and purpose of design • Types of design • Design process	6
2	**Principles of design** • Balance • Harmony • Proportion • Rhythm • Emphasis	6
3	**Elements of Design** • Line • Shape and Form • Space • Texture • Light • Colour	6
4	**Study of colour** • Classification of colours (Primary, Secondary, Tertiary) • Dimension of colour (Hue, Value, Intensity) • Colour scheme (Monochromatic scheme, Complementary scheme, Analogous scheme, Split complementary scheme, Double split complementary, Triads)	4
5	**Introduction to Residential Space Planning and furnishing** • Factors influencing selection of house • Factors of house planning • Lighting in house • History of furniture	

References:

- Bhatt Pranav and Goenka Shanita (1990): The Foundation of Art and Design, Bombay: Lakhani book Depot.
- Birrel, Verla Leone (1967) Colour and Design: A Basic Text (Vol-I & II) Digest Submitted in requirement for the degree of education in Teacher college Columbia University.
- Botter and Lockart (1961) Design for you, New York: John Willey & Sons Inc.
- Duncan, Miller (1949), Interior Decoration, London, New York, The Publications.

F.Y. B. Sc. (Food Science & Nutrition)

Semester I

w.e.f. 2024-25

Foundation of Art and Design (Practical)

Course	Paper No	Hours/Week	Credit
Foundation of Art and Design	BFSNMCP01	4	2

Objectives:

1. To develop skill in using colour scheme to create any art.
2. To understand elements and principal of design
3. To develop an understanding of light and colour in design.
4. To Gain knowledge on different styles of motif.

Practical No.	Topics and Details	No. of lectures assigned
1	Drawing of colour wheel with primary, secondary, territory colours	2
2	Drawing of colour scheme	4
3	Value scale: Black-while, primary colour, secondary colour and Intermediate colour	2
4	Drawing of colour spectrum	2
5	Preparation of motifs • Naturalistic- Scenic, floral, birds & animal • Stylized/conventional • Geometric • Abstract	4
6	Designing motifs based on principal of design • Balance • Rhythm • Proportion • Emphasis • Harmony	6
7	Texture and collage making	2
8	Enlargement and reduction of design	4

References:

- Bhatt Pranav and Goenka Shanita (1990): The Foundation of Art and Design, Bombay: Lakhani book Depot.
- Birrel, Verla Leone (1967) Colour and Design: A Basic Text (Vol-I & II) Digest Submitted in requirement for the degree of education in Teacher college Columbia University.
- Botter and Lockart (1961) Design for you, New York: John Willey & Sons Inc.
- Duncan, Miller (1949), Interior Decoration, London, New York, The Publications.
- Kasu, A. (2012). Interior Design, VthEdition, Ashish Book Center, Chamber D. N. Road, Mumbai.
- Seetharaman, P., &Pannu P. (2010): Interior Design and Decoration, CBS Publishers

F.Y. B. Sc. (Food Science & Nutrition)

Semester I Year: 2024-25

Logical and Mathematical Reasoning (Theory)

Course	Paper No	Hours/ Week	Credit
Logical and Mathematical Reasoning	BFSNMDCT01	2	2

Objectives:

- To employ critical thinking in identifying the problem, developing analytical skills and capabilities to resolve the problems efficiently

Chapter No.	Topics & Details	No. of lectures assigned
1	Types of reasoning. Number series, Letter series, Codes and Relationships. Mathematical Aptitude (Fraction, Time & Distance, Ratio, Proportion and Percentage, Profit and Loss, Interest and Discounting, Averages etc.).	12
2	Logical Reasoning Syllabus Understanding the structure of arguments: argument forms, the structure of categorical propositions, Mood and Figure, Formal and Informal fallacies, Uses of language, Connotations and denotations of terms, Classical square of opposition. Evaluating and distinguishing deductive and inductive reasoning. Analogies. Venn diagram: Simple and multiple uses for establishing the validity of arguments. Indian Logic: Means of knowledge. Pramanas: Pratyaksha (Perception), Anumana (Inference), Upamana (Comparison), Shabda (Verbal testimony), Arthapatti (Implication) and Anupalabddhi (Non-apprehension). Structure and kinds of Anumana (inference), Vyapti (invariable relation), Hetvabhasas (fallacies of inference).	16

F.Y. B. Sc. (Food Science & Nutrition)

Semester I Year: 2024-25

Logical and Mathematical Reasoning (Practical)

Course	Paper No	Hours/ Week	Credit
Logical and Mathematical Reasoning	BFSNMDCP01	4	2

Objectives:

- To employ critical thinking in identifying the problem, developing analytical skills and capabilities to resolve the problems efficiently

Chapter No.	Topics & Details	No. of lectures assigned
1	Types of reasoning. Number series, Letter series, Codes and Relationships. Mathematical Aptitude (Fraction, Time & Distance, Ratio, Proportion and Percentage, Profit and Loss, Interest and Discounting, Averages etc.).	12
2	Logical Reasoning Syllabus Understanding the structure of arguments: argument forms, the structure of categorical propositions, Mood and Figure, Formal and Informal fallacies, Uses of language, Connotations and denotations of terms, Classical square of opposition. Evaluating and distinguishing deductive and inductive reasoning. Analogies. Venn diagram: Simple and multiple uses for establishing the validity of arguments. Indian Logic: Means of knowledge. Pramanas: Pratyaksha (Perception), Anumana (Inference), Upamana (Comparison), Shabda (Verbal testimony), Arthapatti (Implication) and Anupalabddhi (Non-apprehension). Structure and kinds of Anumana (inference), Vyapti (invariable relation), Hetvabhasas (fallacies of inference).	16

F.Y. B. Sc. (Food Science & Nutrition)

1st Semester Year: 2024-25

Nutrition and Fitness (Theory)

Course	Paper no.	Hours per week	Credit
Nutrition and Fitness	BFSNSECT01	1	1

Objectives:

1. To understand various aspects of health and fitness.
2. To adopt a holistic approach towards health management and disease prevention.
3. To develop the ability to provide guidance on healthy diet, exercise & lifestyle modifications for disease prevention and management.

Chapter No.	Topic and Details	No. of lectures assigned
1	Introduction to health and fitness 1. Elements of fitness 2. Evaluation of fitness 3. Analysis of Body composition 4. Exercise methods and prevention of exercise injuries 5. Stress management	10
2	Lifestyle Modification Introduction, prevention and control of lifestyle disorders 1. Diabetes 2. CVD, HTN 3. Metabolic syndrome 4. PCOS and Reproductive health	08
3	1. FAD diets 2. Nutritional Supplements 3. Meal Replacers 4. Appetite Suppressants	05

References:

- Elenaor N., Whitney S., Rady R. (1993): Understanding Nutrition, West Publishing Company, Minneapolis.
- Wardlaw (1993): Perspectives in Nutrition, Paul Insel Mosby.
- Robinsson and Lawler (1986): Normal and Therapeutic Nutrition, Mac Millan Pub. Co.
- McArdle, William D (2010): Exercise Physiology, Lippincott, William and Wilkins, Philadelphia.
- Sharkley, Brian J and Gaskill, Steven E. (2007): Fitness and Health, 6th Edition, Human Kinetics, USA.

F.Y. B. Sc. (Food Science & Nutrition)

1st Semester Year: 2024-25

Nutrition and Fitness (Practical)

Course	Paper no.	Hours per week	Credit
Nutrition and Fitness	BFSNSECP01	1	1

Objectives:

4. To understand various aspects of health and fitness.
5. To adopt a holistic approach towards health management and disease prevention.
6. To develop the ability to provide guidance on healthy diet, exercise & lifestyle modifications for disease prevention and management.

Chapter No.	Topic and Details	No. of lectures assigned
1	Introduction to health and fitness a) Elements of fitness b) Evaluation of fitness c) Analysis of Body composition d) Exercise methods and prevention of exercise injuries e) Stress management	08
2	Surya Namaskar Yoga & Pranayam Aerobic Exercise Meditation	10
3	FAD diets Nutritional Supplements Meal Replacers Appetite Suppressants	05

References:

- Elenaor N., Whitney S., Rady R. (1993): Understanding Nutrition, West Publishing Company, Minneapolis.
- Wardlaw (1993): Perspectives in Nutrition, Paul Insel Mosby.
- Robinsson and Lawler (1986): Normal and Therapeutic Nutrition, Mac Millan Pub. Co.
- McArdle, William D (2010): Exercise Physiology, Lippincott, William and Wilkins, Philadelphia.
- Sharkley, Brian J and Gaskill, Steven E. (2007): Fitness and Health, 6th Edition, Human Kinetics, USA.

F.Y. B. Sc.

Food Science & Nutrition

Semester II

To be implemented from Academic year : 2024-25

F.Y. B.Sc. (Food Science & Nutrition)

Semester II

Year: 2024-25

Nutrition During Lifespan (Theory)

Course	Paper no.	Hours/ week	Credit
Nutrition During Lifespan (Theory)	BFSNMJT03	3	3

Objectives:

- Study the growth and development during various stages of life span
- Understand the basics for recommending the dietary allowances
- Study nutritional needs at different stages of life span

Chapter No.	Topic and Details	No. of lectures assigned
1	**Basics of meal planning:** • Basic concept and purposes of Recommending the Dietary Allowances, Factors Affecting Recommended Dietary Allowances • Uses of ICMR- RDA in planning balance diet • Exchange system and Dietary Diversity	6
2	**Nutrition in Pregnancy and Lactation:** • Physiological Changes occurring during Pregnancy • Importance of Food and Nutritional Care and Requirement during pregnancy • General Dietary and nutritional Problems and Complications • Physiology and Hormones involved in Lactation • Food supplements and galactagogues. • Factors Affecting the Volume and Composition of Breast Milk, • Nutritional Requirements during lactation	8
3	**Nutrition in Infancy:** • Growth and Development of Infants • Composition of Human Milk and Human Milk Substitute • Bottle Feeding and related Problems • Weaning and Supplementary Feeding Foods • Feeding Problems and Complications. • Use of growth charts and standards and prevention of growth faltering	6
4	**Nutrition in childhood and adolescence:** • Growth and Development of Pre School • School Going Children and Adolescence. • Food and Nutritional Requirements • Factors to be considered while Planning Diet for Children and Adolescents • Growth Spurt during Adolescence.	6

	• Food Habits, Dietary Guidelines, Food and Nutritional Requirements • Nutritional and Behavioral Problems and Eating Disorders	
5	**Nutrition in adulthood and old age:** • Reference Man and Reference Woman, • Food and Nutritional Requirements for Adults doing Different Activities • Processes of Ageing • Food and Nutritional Requirements of Elders • Nutrition Related Problems of Old Age • Dietary Guidelines and diet Modifications	4

F.Y. B.Sc. (Food Science & Nutrition)

Semester II

Year: 2024-25

Nutrition During Lifespan (Practical)

Course	Paper no.	Hours/ week	Credit
Nutrition During Lifespan (Practical)	BFSNMJP03	2	1

Objectives:

1. Study the growth and development during various stages of life span
2. Understand the basics for recommending the dietary allowances
3. Design food plans and assess the adequacy of diets to meet the nutritional needs of humans at various stages of life cycle.
4. Gain experience in planning adequate diets for different age groups and for different income groups.

Practical No.	Topics and Details	No. of lectures assigned
1	Planning, Preparing and Evaluating Menu for Infants (Supplementary Foods)	4
2	Planning, Preparing and Evaluating Menu for Pre-schoolers	2
3	Planning, Preparing and Evaluating Menu for School Going Children	2
4	Planning, Preparing and Evaluating Menu for Adolescents	4
5	Planning, Preparing and Evaluating Menu for Adults	4
6	Planning, Preparing and Evaluating Menu for Elderly	4

References:

- Mahtab, S, Bamji, Kamala Krishnasamy, Brahmam, G.N.V. (2012)Text Book of Human Nutrition, Third Edition, Oxford and IBH Publishing Co. P. Ltd., New Delhi.
- Srilakshmi, B. (2013), Dietetics, New Age International (P) Ltd., New Delhi.
- SunetraRoday (2017). Food Science and Nutrition, Oxford University Press, New Delhi.
- Longvah, T, Ananthan, R, Bhaskarachary, K, Venkaiah, K. (2017). Indian Food Composition Tables (IFCT), Indian Council of Medical Research, National Institute of Nutrition, Hyderabad.
- Shakuntala Manay, Shadaksharaswamy. M (2013) Foods, Facts and Principles, New Age International Pvt Ltd Publishers, 2nd Edition) Ltd., New Delhi.
- Swaminathan, M. (2012), Advanced Textbook on Food and Nutrition, Vol. 1, Second Edition, Bangalore Printing and Publishing Co. Ltd., Bangalore.

F.Y. B.Sc. (Food Science & Nutrition)

Semester II

Year: 2024-25

Applied Science- II (Theory)

Course	Paper no.	Hours/ week	Credit
Applied Science- II	BFSNMJT04	3	3

Objectives:

1. To apply the basic knowledge of biology in daily life.
2. To develop an understanding about how cells work.
3. To create an understanding about various diseases and general health care.

Chapter No.	Topic and Details	No. of lectures assigned
1	**Cell** • Introduction to cell • Types of cells and their characteristics (prokaryotes vs eukaryotes) • Structures and functions of important organelles of typical animal cell • Cell division- Mitosis and Meiosis (brief introduction)	6
2	**Introduction to Microorganisms** • Bacteria ➢ Structure and Morphology ➢ Classification based on response to O2, temperature and nutritional requirements ➢ Economic importance • Fungi ➢ Morphology, general classification and Physiological characteristics of moulds and yeasts ➢ Industrial importance of fungi and yeast • Viruses ➢ Morphology and classification ➢ Importance	6
3	**Chemical basis of heredity** • Sex determination • Autosomal, recessive and sex-linked inheritance • Mutation- types, abnormalities in chromosomes number	6

4	**General Health care and common diseases in human beings** • Introduction to health and diseases • Types of diseases (infectious and non-infectious-in brief) • Common diseases in human beings (in brief) ➢ Typhoid ➢ Pneumonia ➢ Common cold ➢ Malaria ➢ Ascariasis ➢ Amoebiasis	6
5	**Genetic Engineering and Biotechnology** • Definition of terms • Gene cloning • Applications of genetic engineering • Insects and virus resistant plants • Plants with improved characteristics • Production of growth hormone, Insulin	4

References:

- Dutta A.C.,(1980) ' A class book of Botany' John Brown, oxford university press. Faraday House, Calcutta- 13.
- Apsangikar D.K. and Rane K.T.(1975): 'Introduction to Botany': Popular Publication Surat.
- Sharma V.K. (1990) 'Biology class XI'Publishers 23,Daryaganj New Delhi-110002.
- Sankaram M.S.(1990) 'Biology for Class XII'Tata McGraw-Hill Publishing Company Limited 4/12 Asaf Ali Road New Delhi.
- Gujarat State Board of school Text books (1994) 'Biology Standard 12': old assembly Building Sector 17,Gandhinagar.
- Gujarat State Board of school Text books (1996) 'Biology Standard 12': old assembly Building Sector 17,Gandhinagar.
- Maheshwari P.Manoharlal (1996) 'Biology Part 1-7' NCERT New Delhi

F.Y. B.Sc. (Food Science & Nutrition)
Semester II
Year: 2024-25

Applied Science- II (Practical)

Course	Paper no.	Hours/ week	Credit
Applied Science- II	BFSNMJP04	2	1

Objectives:

1. To enable students to develop the skill and ability to work systematically in biology laboratory.
2. Acquire knowledge of various microorganisms and required skills to study them.
3. Apply the knowledge in everyday life.

Practical No.	Topic and Details	No. of lectures assigned
1	Study and care of simple microscope & compound microscope	4
2	Monochrome staining (Curd bacteria)	4
3	Monochrome staining (Pure culture of bacteria)	2
4	Identification of tissues	2
5	Study of common fungi and other pathogens	4
6	Study of medicinally important plants (project)	2

References:

- Dutta A.C.,(1980) ' A class book of Botany' John Brown, oxford university press. Faraday House, Calcutta- 13.
- Apsangikar D.K. and Rane K.T.(1975): 'Introduction to Botany': Popular Publication Surat.
- Sharma V.K. (1990) 'Biology class XI'Publishers 23,Daryaganj New Delhi-110002.
- Sankaram M.S.(1990) 'Biology for Class XII'Tata McGraw-Hill Publishing Company Limited 4/12 Asaf Ali Road New Delhi.
- Gujarat State Board of school Text books (1994) 'Biology Standard 12': old assembly Building Sector 17,Gandhinagar.
- Gujarat State Board of school Text books (1996) 'Biology Standard 12': old assembly Building Sector 17,Gandhinagar.
- Maheshwari P.Manoharlal (1996) 'Biology Part 1-7' NCERT New Delhi

F.Y. B. Sc. (Food Science & Nutrition)
Semester II Year: 2024-25
Introduction to Clothing and Textiles (Theory)

Course	Paper No	Hours/ Week	Credit
Introduction to Clothing and Textiles	BFSNMCT02	2	2

Objectives:

1. To obtain a broad understanding of textiles and clothing
2. To develop understanding of technical terms involved in textiles.
3. To understand different types of yarns, weaves and finishes.
4. To create awareness and arouse interest in selecting clothes to suit one's personality

Chapter No.	Topics and Details	No. of lectures assigned
1	**Introduction to textiles** • Classification of textile fibers (Natural, Man made) • Properties of fiber • Types of weaves (Basic weave- Plain weave, Rib weave, Basket weave, Twill weave, Satin weave. Compound weave- Dobby weave, jacquard weave, Extra yarn weave, pique, Double cloth)	8
2	**Introduction to Yarn** • Types of yarn (staple yarns, filament yarn) • Factors affecting yarn (Yarn twist, Direction of twist, Yarn count) • Yarn classification (On the basis of number of parts or structure, On the basis of fibre length)	5
3	**Introduction to clothing** • Theories of clothing (Modesty theory, Immodesty theory, Protection theory, Adornment theory) • Functions of clothing • Factors influencing clothing preference (Physiological, psychological, environmental)	7
4	**Types of figures** (Hourglass, Top Hourglass, Bottom hour glass, Spoon, Triangle, Inverted Triangle, Rectangle) **Care labels and symbol**	4

References:

- Bhatia R. and Arora C., Introduction to Clothing and Textiles, The Maharaja Sayajirao University of Baroda, Vadodara 1999.
- Booth, J.E. (1996). Principles of Textile Testing. New Delhi: CBS Publishers & Distributors Pvt. Ltd.
- Corbman, P.B. (1983). Textiles: Fibre to Fabric. McGraw-Hill Publishers.
- Collier, B.J., & Epps, H.H. (1998). Textile testing and analysis. Prentice Hall Publishers.
- Dantyagi, S. (1996). Fundamentals of Textiles and their Care. India: Orient Black swan Private Limited.
- Madhulika, P. (2013). Weaving. New Delhi: Random Publishing.

F.Y. B. Sc. (General Home Science)

Semester II

Year: 2024-25

Introduction to Clothing and Textiles (Practical)

Course	Paper No	Hours/ Week	Credit
Introduction to Clothing and Textiles	BFSNMCP02	4	2

Objectives:

1. To develop skill in operating sewing machine
2. To gain an understanding about different construction techniques and its use.
3. To develop skill in hand sewing

Practical No.	Topics and Details	No. of lectures assigned
1	Introduction to type of sewing machines, its part.	2
2	Body measurement	2
3	Identification and importance of fabric grain line	2
4	**Hand sewing technique-** Hand basting, Hemming, Back stitch	6
5	**Basic seam-** Plain seam, French seam, top stitched, flat and fell seam	6
6	**Gathers and pleats**	4

References:

- Anna Jacob Thomas, The art of sewing, UBS publishers' distributers, 1995
- Readers digest, Complete guide to sewing, Trusted media brands, USA

F.Y. B. Sc. (Food Science & Nutrition)

Semester II

Year: 2024-25

Vedic Nutrition (Theory)

Course	Paper No.	Hours/ week	Credit
Vedic Nutrition	BFSNMDCT02	2	2

Objectives:

- To introduce the basic principles of nutrition in Ayurveda
- To link the Ayurvedic nutrition with modern dietary practices for health
- To analyse basic tenets of traditional diets and healthy recipes
- To understand the contemporary food habits in everyday life

Chapter No.	Topic and Details	No. of lectures assigned
1	UNIT -I Introduction to Ayurvedic Nutrition • Ayurveda and Indian food cultures • Nutrition and lifestyle transition over the years • Regional Food Traditions of India	08
2	UNIT -II Basic principles of Food and Nutrition and Ayurveda • Understanding rich sources of nutrients • Concept of Doshas & assessment • Ayurvedic Principles of food habits and factors determining quality of food (Ahara vidhi visheshaayatana) • FSSAI regulations on Ayurvedic Aahar	15
3	UNIT- III Ayurvedic Diets • Principles of Diet: Aharavidhi vidhan, Sattvic, Rajasi, Tamasic foods • Incompatible food (Viruddha Ahara), Pathya; Apathya; Viprita Ahaar • Lifestyle Management with Dincharya and Ritucharya • Application of Ayurvedic diets to stress linked food behaviour	15

F.Y. B. Sc. (Food Science & Nutrition)
Semester II
Year: 2024-25

Vedic Nutrition (Practical)

Course	Paper No.	Hours/ week	Credit
Vedic Nutrition	BFSNMDCP02	4	2

Objectives:

- To introduce the basic principles of nutrition in Ayurveda
- To link the Ayurvedic nutrition with modern dietary practices for health
- To analyse basic tenets of traditional diets and healthy recipes
- To understand the contemporary food habits in everyday life

Chapter No.	Topic and Details	No. of lectures assigned
1	Visit your local market and classify the available food items according to Sattvic, Rajasi, Tamasic foods	5
2	Conduct a survey of 10-15 households in your locality: 1) to study food behaviour and analyse them in light of Ayurvedic dietary principles of Sattvic, Rajasi, Tamasic 2) to study the food consumption patterns and intake of incompatible food: Viruddha Ahara, Pathya; Apathya; Viprita Ahaar 3) to know about their adopted lifestyle Dincharya and Ritucharya	8
3	Visit available e-resources of University of Delhi, Ministry of Ayush with regard to Ayurveda and Nutrition.	4
4	Preparation of a meal according to the Indian Regional Ayurvedic Foods	4
5	Preparation of seasonal meals according to the nature of food.	4

F.Y. B. Sc. (Food Science & Nutrition)
Semester II
Year: 2024-25
Computer Application in Nutrition (Practical)

Course	Paper No.	Hours/ week	Credit
Computer Application in Nutrition	BFSNSECP02	4	2

Objectives:

These applications allow the management of relevant information, facilitating and speeding up the diet treatment, and are designed for a general population with potential nutritional problems.

Chapter No.	Topic and Details	No. of lectures assigned
1	Use of word processing software for creating reports and presentation.	5
2	Use of Google Docs, Sheets, Slides and Forms	8
3	Use of internet data base and software tools for literature review and bibliography	6
4	Statistical analysis using MS-Excel and other statistical software for – 1. Applications in food quality data analysis 2. Applications in nutritional epidemiology and clinical study data analysis 3. Representation	8

S.Y. B.Sc. (NCF - NEP)
(Food Science & Nutrition)

SEMESTER – III

To be implemented from the Academic year : 2024-25

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – III
Year: 2024-25
Subject Title: Food Science-I (Theory)

Subject Name	Subject Code	Hours/week	Credit
Food Science – I (Theory)	BFSNMJT05	02	02

Objectives: This course will enable the students:
1. To understand the nature and composition of food.
2. To learn methods and principles involved in food preparations.
3. To understand the changes occurring in foods during cooking/preparation.

Chapter No.	Name of Topic and Detailed Content	Number of Lectures assigned
1.	**Introduction to food science, aims and objectives of studying food science** • Physical and chemical properties of foods and its application (in brief).	04
2.	**Plant Origin Foods** **Cereals:** • Composition and structure of cereal grains. • Gluten formation and factors affecting it. • Starch, its property and effect of dry and moist heat on starch i.e. gelatinization. • Parboiling of rice and rice products in brief. **Pulses and legumes:** • Composition and processing in brief i.e. milling/decortication, soaking, germination, fermentation and parching/puffing. • Toxic factors, their ill effects and its elimination **Fruits and Vegetables:** • Composition, classification and selection of fruits and veg. • Pectic substances of fruits and veg. • Ripening of fruits and changes during ripening. • Enzymatic browning reactions and its prevention.	12

	• Vegetable color pigments/plant pigments and effect of heat, acid and alkalis on it (in brief)	
3	**Fats and Oils:** • Brief introduction and sources and types of fats/oils • Functions of fats/oils in cookery • Fat absorption and factors affecting it • Spoilage of fats/oils and its prevention. • Hydrogenation of fats/oils	08

REFERENCES:

1. Srilakshmi, B: (2010) Food Science, 5th Edition, New Age International Pvt Ltd Publishers
2. Shadaksharaswamy, M, Manay, S, (2010): Food facts and Principles, 3rd Edition, New Age International Publishers
3. Bennion, M. Scheule, B.: (2009): Introductory Foods,13th Edition, Prentice Hall Publications
4. Manay, S. (2009) Foods Facts ,New Age International Pvt Ltd Publishers
5. Subbulakshmi, G, Udipi, S. A (2006): Food processing and Preservation, New Age International Pvt Ltd Publishers
6. Potter, N. N., Hotchkiss J. H: (1999), Food Science , 5th Edition, Springer Publications
7. Freeland-Graves, J., Peckham, G. C, (1995): Foundations of Food Preparation (6th Edition), Prentice Hall Publishers
8. Food science- Experiments and Applications : Mohini Sethi and Eram S. R

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – III
Year : 2024-25
Subject Title: Food Science-I (Practical)

Subject Name	Subject Code	Hours/week	Credit
Food Science – I (Practical)	BFSNMJP05	04	02

Objectives:
1. To understand the nature and composition of food
2. To observe the principles of Food Science.
3. to observe and understand the changes occurring in foods during cooking/ preparation/ processing.

Practical No.	Topic and Details	Number of lectures assigned
1	Introduction to Food science practical • Measuring techniques, devices, weights and measurements.	3
2	Different experiments with cereals • Extraction of Gluten and Gluten based food products.	3
3	Different experiments with starch • Gelatinization properties of different starch	3
4	Fruits and vegetables • Enzymatic browning in fruits and vegetables its prevention.	3

5	Different experiments with fats and oils • To study the physical properties of fats and oils and factors affecting fat absorption.	3

REFERENCES:

1. Srilakshmi, B: (2010) Food Science, 5th Edition, New Age International Pvt Ltd Publishers
2. Shadaksharaswamy, M, Manay, S, (2010): Food facts and Principles, 3rd Edition, New Age International Publishers
3. Bennion, M. Scheule, B.: (2009): Introductory Foods,13th Edition, Prentice Hall Publications
4. Manay, S. (2009) Foods Facts ,New Age International Pvt Ltd Publishers
5. Subbulakshmi, G, Udipi, S. A (2006): Food processing and Preservation, New Age International Pvt Ltd Publishers
6. Potter, N. N., Hotchkiss J. H: (1999), Food Science , 5th Edition, Springer Publications
7. Freeland-Graves, J., Peckham, G. C, (1995): Foundations of Food Preparation (6th Edition), Prentice Hall Publishers
8. Food science- Experiments and Applications : Mohini Sethi and Eram S. Rao

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – III
Year: 2024-25
Subject Title: Human Physiology (Theory)

Subject Name	Subject Code	Hours/week	Credit
Human Physiology (Theory)	BFSNMJT06	02	02

Objectives: The course enables students to:
1. Get familiar with the human body.
2. Make healthful choices and to take appropriate action when signs of illness arise.

Chapter No.	Topic and Details	No. of lectures assigned
1	**Introduction:** • General terms- anatomy, physiology, symmetrical arrangement, anatomical position. **Body systems** **Blood and Lymphatic System:** • Physical characteristics of blood • Blood groups, their importance, Rh-incompatibility • Function of RBC and WBC **Cardiovascular System:** • Structure of heart and pathway of blood circulation • Cardiac cycle, ECG • Information about hypertension **Respiratory System:** • Respiratory organs- nose, sinuses, larynx, trachea, bronchi, lungs- brief structure and functions • Common diseases- Tuberculosis, Asthma, Bronchitis, Pneumonia **Gastro intestinal System:** • Oral cavity, tonsils, pharynx, oesophagus, stomach, small and large intestine- brief structure and functions • Liver, gall bladder, pancreas- structure and functions • Common disorders- vomiting, diarrhoea, constipation, hyperacidity, diabetes mellitus	12
2	**Excretory System:** • Functions of organs of urinary system (in brief) **Nervous System:** • Functions of different parts of brain, spinal cord and reflex action (in brief)	12

	Endocrine System: • Functions of endocrine glands (in brief) **Reproductive System:** • Functions of male and female reproductive system (in brief)	

REFERENCES:

- Gujarat State Board of school Text books (1994) 'Biology Standard 12': old assembly Building Sector 17, Gandhinagar.
- Gujarat State Board of school Text books (1996) 'Biology Standard 12': old assembly Building Sector 17, Gandhinagar.
- Maheshwari P.Manoharlal (1996) 'Biology Part 1-7' NCERT New Delhi

S.Y. B.Sc. (NCF - NEP)
(Food Science & Nutrition)
Semester – III
Year: 2024-25
Human Physiology (Practical)

Subject Name	Subject Code	Hours/week	Credit
Human Physiology (Practical)	BFSNMJP06	4	2

Objectives:

1. To develop skills to perform simple clinical tests.
1. To introduce the students to various instruments like stethoscope, sphygmomanometer, etc.

Practical No.	Topic and Details	No. of practical assigned
1	• Measurement of primary health parameters (Anthropometric measurements, Body temperature, Pulse rate, Blood pressure)	3
2	• Determination of blood groups	3
3	• Estimation of haemoglobin	2
4	• Determination of Bleeding time and clotting time	2
5	• Test for normal and abnormal urine components like sugar, albumin and acetone and discussion on diseases in which they are found.	2
6	• Determination of ESR	2

REFERENCES:

1. Textbook of Medical Technology, By Praful Godkar.
2. Human Physiology, By CC Chatterjee

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – III
Year 2024-25
Community Nutrition (Theory)

Subject Name	Subject Code	Hours/week	Credit
Community Nutrition (Theory)	BFSNMJT07	04	04

Objectives:

1. Students will be able to interpret and apply nutrition concepts to evaluate and improve the nutritional health of the community.
2. It inculcates leadership qualities in conducting various extension and community outreach programs.
3. Familiarize students with the methods of nutritional assessment.
4. Make the students conversant with various aspects of nutrition education and promotion.

Chapter No.	Topic and Details	Number of lectures assigned
1	**i) Introduction to Community Nutrition** • Definition, concept, component and characteristics of a community nutrition • Nutrition Education- Aims, Nature and Importance to the Community, Training Workers in Nutrition Education, and Extension Work- When to Teach, Whom to Teach and Who is to Teach. **ii) Nutritional problems in India and Factors contributing to it:** • Major nutritional deficiencies - Aetiology, Prevalence, Symptoms and Preventive measures. • Prevalence of Malnutrition in India: Types of malnutrition, prevalence, morbidity and mortality rate, current status of malnutrition in India, Strategies to Overcome Malnutrition in India-Need for an Integrated Approach to Solve the Problems of Malnutrition	08

2	**i) Assessment of Nutritional Status:** • Definition of nutritional status and purpose of assessment of nutritional status • Direct and Indirect Methods of Nutritional Assessment- nutritional anthropometry, Clinical examination, biochemical methods, diet survey. **ii) Current Vital statistics in India:** 2. Under 5 Mortality Rate (U5MR) , Infant Mortality Rate (**IMR**) , Neonatal Mortality Rate (**NMR**) , Crude Death Rate (**CDR**) ,Sex Ratio at Birth (SRB)	09
3	**i) Strategies to improve community Nutritional status:** □ Individual strategies to improve maternal and child nutritional status: Nutrition education - Woman to woman, Child to child □ Community strategies – contact, rural school system, exhibition, demonstration and dramatizetion , Increasing food availability by green and white revolution □ Major nutrition supplementation programs in India : Integrated Child Development Services Scheme (ICDS), Mid-day meal Programs (MDM), Special Nutrition Programs (SNP),Wheat Based Nutrition Programs (WNP), Applied Nutrition Programs (ANP), Balwadi Nutrition Programs (BNP) etc. **ii) Nutrient Deficiency Control Programs in India :** • National Prophylaxis Program for Prevention of Blindness due To Vitamin A Deficiency , National Nutritional Anemia Prophylaxis Program , National Iodine Deficiency Disorder Control Program **iii) Organizations concerned with malnutrition and nutrition education :** • National Organizations Concerned with Food and Nutrition- ICMR, ICARM, CHEB, CSWB , SSWB etc. • International Organizations Concerned with Food and Nutrition- FAO, WHO, UNICEF, CARE, AFPRO, CWS and World Bank.	12

REFERENCES:

1. Helsing and King. Breast feeding in practice – A manual for health workers, Delhi Oxford University, Press
2. Nutrient requirements & Recommended Dietary Allowances for Indians Indian Council of Medical Research, NIN Hyderabad.
3. Sachdeva, H.P. Nutrition in children. Department of Pediatrics, Maulana Azad Medical College, New Delhi.

4. Ghos S. 1976. The feeding and care of infants and young children. UNICEF.
5. Pipes, P.L. And Trahms, C.M. (1993). Nutrition in infancy and childhood. 5th edition Mosby year Book Inc.
6. Park & Park : Textbook of preventive and Social Medicine, Banarsidas, Bhanot Publication 1995. Vir S. (2011). Public Health Nutrition in Developing Countries published by
7. Woodhead Publishing India. ISBN-13: 9780857090041, ISBN-10: 0857090046

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – III
Year: 2024-25
Subject Title: Food Microbiology (Theory)

Subject Name	Subject Code	Hours/week	Credit
Food Microbiology (Theory)	BFSNMDCT03	02	02

Objectives: This course will enable the students to:

1. To understand the nature and the role of microorganisms in food
2. To have a knowledge of the basic principles of food sanitation and safety
3. To acquire a perspective of the importance of microorganisms n environmental microbiology.

Chapter No.	Topic and Details	Number of Lectures assigned
1.	**General characteristics of** 1. Molds 2. Yeasts 3. Bacteria **Micro Organisms And Food** **Beneficial effects of micro organisms.** (A) Examples of micro-organisms responsible for commercial production of acid, vitamins, amino acid etc. (B) Microbial fermentation and Role of micro organisms in Food fermentations -Beer & Wine -Bread -Indian pickles -Fermented dairy products Curd, yoghurt & cheese -Vinegar	12
2	**Contamination and spoilage of** -Cereal and cereal products -Vegetable and vegetable products -Meat and Eggs -Milk -Canned Foods **Food infections and intoxications**	12

REFERENCES:

1. Frazier ,W.C,&Westhoff,D.1988 Food Microbiology . Tata MeGraw-Hill
2. Guthrie ,R.K.[ed].1972.Food sanitation Inc.EaglewoodC1ifTN.J
3. Jay,1978.Modern food microbiology.VanNostrand Rcinhold Company ,New York
4. Marriot .N.G.[,1995]Principles of Food Sanitation 4" edition Edward Amold
5. Pelczar ,M.L.,and R.D Reid -1972 Microbiology. McGraw&Hill ,New York
6. Reid,G. [ed]1982 Prescott and Dunn S industrial microbiology AVI Publishing Co.lne Westport, Conn

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – III
Year: 2024-25
Subject Title: Food Microbiology (Practical)

Subject Name	Subject Code	Hours/week	Credit
Food Microbiology (Practical)	BFSNMDCP03	04	02

Objectives: This course will enable the students to:

4. To understand the principle, working and use of various equipments
5. To have a knowledge of the underlying underlying principles in in practical food microbiology
6. To develop awareness about the different techniques in isolation and primary identification

Practical No.	Name of Practical	Number of Lectures assigned
1.	Study of laboratory equipments principle, working and use of -Microscope, Autoclave, Incubator, Refrigerator, colony counter.	08
2.	Staining techniques -Acid fast staining -Negative staining -Capsule staining	06
3.	Preparation of culture media composition and uses.	02
4.	Bacteriological Analysis of Water Bacteriological analysis of Milk	08

REFERENCES:

1. Frazier ,W.C,&Westhoff,D.1988 Food Microbiology . Tata MeGraw-Hill
2. Guthrie ,R.K.[ed].1972.Food sanitation Inc.EaglewoodC1ifTN.J
3. Jay,1978.Modern food microbiology.VanNostrand Rcinhold Company ,New York
4. Marriot .N.G.[,1995]Principles of Food Sanitation 4" edition Edward Amold
5. Pelczar ,M.L.,and R.D Reid -1972 Microbiology. McGraw&Hill ,New York
6. Reid,G. [ed]1982 Prescott and Dunn S industrial microbiology AVI Publishing Co.lne Westport, Conn

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – III

Year: 2024-25

Sensory Evaluation (Practical)

Subject Name	Subject Code	Hours/week	Credit
Sensory Evaluation (Practical)	BFSNSECP03	4	2

Objectives:

1. Understand the physiological changes, in food on processing.
2. Preparing trained sensory evaluators.
3. Developing awareness in students about role and importance of sensory evaluators.
4. To enable students to understand different aspects of sensory science
5. Evaluation and their applications in food industries and research &development.

Practical No.	Topic and Details	Number of lectures assigned
1	**The Multinational Food Business - Strategic, Organizational and Management Issues for Product Development** 1. Planning stages 2. Prerequisites of a successful product development 3. The concept of added value	2
2	**Quality Evaluation** 1. Standardization of food products a. At laboratory level b. Scaling up c. Understand sale and profit margin 2. Shelf life studies - chemical and microbiological parameters	2
3	**Sensory characteristics of food and selection of panel** 1. Colour, Texture, Consistency, Taste and odor 2. Effect of temperature on sensory characteristics of foods 3. Panels for Sensory Evaluation a. Types of panels b. Training the panel members	2

	c. Number of panel members for different tests	
4	**Types of Sensory Evaluation Tests** **1. Discriminative / Difference Test:** a. Single sample test / Monodic test b Paired comparison test c. Simple triangle test d. Directional triangle test e. Due-Trio test f. Multiple sample test.	8
5	**1. Quality Test** a. Scoring test b. Descriptive test (i) Flavour profile method (ii)Texture profile method **2. Rating Test** a. Hedonic scale test b. Preference ranks c. Visual representation **3. Food Samples for Evaluation** a. Sample size for different evaluation tests b. Order of presentation c. Method of presentation	10

REFERENCES:

1. S Mudambi, S.R., Rajgopal, M.V.(2012), Fundamentals of Foods and Nutrition, New Age International Pvt. Ltd.
2. Food Science (2012), Maharashtra State Board of Secondary and Higher Secondary education Pune,1' Edition, Sheth Publications.
3. Roday Sunctra, (2012), Food Science and Nutrition, 2nd Edition, Oxford University Press.

S.Y. B.Sc. (NCF - NEP)
(Food Science & Nutrition)

SEMESTER – IV

To be implemented from the Academic year : 2024-25

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – IV
Year: 2024-25
Subject Title: Food Science-II (Theory)

Subject Name	Subject Code	Hours/week	Credit
Food Science-II (Theory)	BFSNMJT08	02	02

Objectives: This course will enable the students:
1. To understand the nature and composition of food.
2. To learn methods and principles involved in food preparations.
3. To understand the changes occurring in foods during cooking/preparation.

Chapter No	Name of Topic and Detailed Content	Number of Lectures assigned
1.	**Milk and milk products:** • Source, Composition and nutritive value of milk • Physical properties of milk • Effect of heat, acid and enzymes on milk • Types of milk in brief	06
2.	**Meat, fish and poultry:** **Meat:** • Composition, post-mortem changes in meat • Ageing and curing of meat, methods of tenderisation of meat • Changes during cooking of meat **Fish:** • Classification of fish, composition, selection of fish, spoilage of fish • Fish Protein Concentrate (FPC) **Poultry:** • Composition and nutritive value in brief • Egg as a principal poultry product • composition and structure of egg • methods to judge egg quality • Changes during storage of egg • hard-boiled egg (FeS formation) • Role of egg in cookery	12
	Water: • Water content in foods and forms of water present in food.	06

3.	• Types of water and its effect on cooking. • Role of water in food preparation/processing **Sugar and its related products:** • Properties in brief, related products like honey, jaggery, and caramel sugar. • Crystallization of sugar and factors affecting it, examples of crystalline candies and non-crystalline candies.	

REFERENCES:

1. Srilakshmi, B: (2010) Food Science, 5th Edition, New Age International Pvt Ltd Publishers
2. Shadaksharaswamy, M, Manay, S, (2010): Food facts and Principles, 3rd Edition, New Age International Publishers
3. Bennion, M. Scheule, B.: (2009): Introductory Foods,13th Edition, Prentice Hall Publications
4. Manay, S. (2009) Foods Facts ,New Age International Pvt Ltd Publishers
5. Subbulakshmi, G, Udipi, S. A (2006): Food processing and Preservation, New Age International Pvt Ltd Publishers
6. Potter, N. N., Hotchkiss J. H: (1999), Food Science , 5th Edition, Springer Publications
7. Freeland-Graves, J., Peckham, G. C, (1995): Foundations of Food Preparation (6th Edition), Prentice Hall Publishers
8. Food science- Experiments and Applications : Mohini Sethi and Eram S. Rao

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – IV

Year: 2024-25

Food Science- II (Practical)

Subject Name	Subject Code	Hours/week	Credit
Food Science- II (Practical)	BFSNMJP08	4	2

Objectives:

1. To understand the nature and composition of food
2. To observe the principles of Food Science.
3. to observe and understand the changes occurring in foods during cooking/ preparation/ processing.

Practical No.	Topic and Details	Number of lectures assigned
1	Different experiments with sugar • Effect of heat on sugar • by products of caramelization	6
2	Different experiments with milk • Effect of heat on milk • Effect of heat and acid on properties of milk	6
3	Different experiments with egg • Effect of heat on egg and FeS formation. • To study the role of egg in cookery	4

REFERENCES:

2. Srilakshmi, B: (2010) Food Science, 5th Edition, New Age International Pvt Ltd Publishers
3. Shadaksharaswamy, M, Manay, S, (2010): Food facts and Principles, 3rd Edition, New Age International Publishers
4. Bennion, M. Scheule, B.: (2009): Introductory Foods,13th Edition, Prentice Hall Publications
5. Manay, S. (2009) Foods Facts ,New Age International Pvt Ltd Publishers
6. Subbulakshmi, G, Udipi, S. A (2006): Food processing and Preservation, New Age International Pvt Ltd Publishers

7. Potter, N. N., Hotchkiss J. H: (1999), Food Science , 5th Edition, Springer Publications
8. Freeland-Graves, J., Peckham, G. C, (1995): Foundations of Food Preparation (6th Edition), Prentice Hall Publishers
9. Food science- Experiments and Applications : Mohini Sethi and Eram S. Rao

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – IV
Year: 2024-25
Food Preservation (Theory)

Subject Name	Subject Code	Hours/week	Credit
Food Preservation (Theory)	BFSNMJT09	04	02

Objectives: The course enables students to:

1. Understand the basic principles of food preservation.
2. Learn the various preservation techniques and their applications.

Chapter No.	Topic and Details	No. of lectures assigned
1	**Introduction to food preservation, its importance and basic principles of food preservation** • Meaning, definition and objectives • Importance, traditional methods of food preservation (in brief) • Classification of food according to its shelf life or on the basis of ease of spoilage with suitable examples. • Basic principles involved in various methods of food preservation.	10
2	**Methods of Food Preservation** • Asepsis and removal of microorganisms • Preservation of food by use of chemical preservatives- classification according to PFA- difference between chemical preservatives and food additives- properties of an ideal preservative- use of various chemical and natural preservatives. • Preservation of food by use of Low temperature- terminology related to low temperature e.g. freezing, chilling, cold storage, frozen storage etc.- Selection and preparation of food for freezing e.g. blanching- Slow freezing and quick freezing-Changes during freezing- meaning of Thawing, dehydro-freezing and pre-cooked frozen foods. • Preservation of food by use of high temperature- factors affecting heat resistance-TDT (Thermal Death Time) - heat penetration and factors affecting it- Pasteurization and sterilization (only definition). • Preservation of food by Canning-meaning and canning process for various fruits and vegetables with flow chart- terminology related to canning process: Lye peeling,	14

	scalding, syruping, brining, Aseptic canning and dehydro-canning. • Preservation of food by Drying/ Dehydration- meaning and difference between drying and dehydration- Treatments of food before drying- various types of driers (in brief) and about Tunnel drying and Spray drying in detail- treatments of food after drying- IMF (Intermediate Moisture Foods). • Preservation of food by irradiation- mode of action of radiation i.e. principle- Advantages and disadvantages of irradiation.	

Basic Text & Reference Books:

- Frazier W. & Westhoff. D. (1988): Food Microbiology, Tata McGraw- Hill Publisher
- Subbulakshmi G. and Udipi S.A. (2001): Food Processing and Preservation, New Longree K and Armbruster Johnwiley and Sons, Quantity food sanitation 4th edition
- Desorosier N.W., (1963), The Technology of Food Preservation. The AVT Publishing Company.
- Banwart G.J., (1989), Basic Food Microbiology, Chapman & Hall Publication, New York.
- Girdharilal, Siddappa. G.S. and Tandon. G. L., Preservation of Fruits and Vegetable published, ICAR, New Delhi
- Dr Swaminathan. M., Food Science Chemistry and experimental Foods Published by the Bangalore Printing and Publishing co. Ltd.

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – IV
Year : 2024-25
Food Preservation (Practical)

Subject Name	Subject code	Hours per week	Credit
Food Preservation (Practical)	BFSNMJP09	4	2

Objectives: The course enables students

1. To understand the basic principles underlying food preservation as an income generating activity.
2. To develop the ability in students to prepare and preserve foods by laboratory and household methods of food preservation.

Practical No.	Topic and Details	No. of practical assigned
1	**Introduction to Food Preservation Practical** • Aseptic handling in the laboratory. • Principles and methods of food preservation in brief. • Causes of spoilage of food and favourable conditions for its causes.	4
2	**Sugar Preserves** • Preparation of Jam • Preparation of Murabbas	4
3	**Ketchup** • Preparation of Tomato ketchup	4
4	**Masalas and Chutney** • Plain Masala • Sambar Masala • Pav bhaji Masala • Pani puri Masala • Milk masala • Dal- coconut chutney • Coconut garlic chutney	2
5	**Preparation of Pickles** • Short and long shelf-life pickles • Sweet pickles	4

S.Y. B.Sc. (NCF - NEP)
(Food Science & Nutrition)
Semester – IV
Year: 2024-25
Subject Title: Food Safety and Quality Control (Theory)

Subject Name	Subject Code	Hours/week	Credit
Food Safety and Quality Control (Theory)	BFSNMJT10	04	04

Objectives: This course will enable the students to:

iii) Understand basic concept of food safety
iv) Understand the importance of food hazards of physical, chemical and microbial origin
v) Understand importance of sanitation and hygiene
vi) Understand the relevance of risk assessment and management in the context of food safety.

Chapter No.	Topic and Details	Number of Lectures assigned
1.	**Basic concept of food microbiology & food safety** -History, Occurrence and growth of micro organism in food -Role of micro organs in fermented products -Food safety and importance of safe foods -Factors affecting food safety Food hazards -Physical, Chemical, Biological -Recent concerns of food safety Prions, GM foods, Dioxin-contaminated foods	8
2.	**Food safety in food service establishment** -Food Safety measures and sanitation in food service establishment and for street foods. -Personal hygiene in food service establishment **Risk analysis, assessment and management** -Food safety assurance - HACCP, definition, important terms. -Principles., guidelines and application and benefits of HACCP	10
3.	**Food regulation: Standards and quality control** -Food standards and regulations in India -PFA, FPO, BIS, Agmark	6

	-Regulation related to GM foods	

REFERENCES

iii) Sathe A. Y. (1999) A First Course in Food Analysis. 1# Edition, New Age International (P) Ltd., New Delhi.

iv) Jacobs M. B. (1999) Chemical Analysis of Food and Food Products. 3" Edition,CBS Publishers & Distributors, New Delhi.

v) Food Science-Sri Lakshmi

vi) Frazier ,W.C,&Westhoff,D.1988 Food Microbiology . Tata MeGraw-Hill

vii)Guthrie ,R.K.[ed].1972.Food sanitation Inc.EaglewoodC1ifTN.J

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – IV
Year: 2024-25
Maternal Child Nutrition & Health (Theory)

Subject Name	Subject Code	Hours/week	Credit
Maternal Child Nutrition & Health (Theory)	BFSNMCT03	2	2

Objectives: The course will enable the students to:

1. To understand normal pattern of growth & nutritional requirements of children.
2. To understand the factors affecting growth & development
3. Be familiar with growth and developmental changes from conception till adolescence.
4. Be familiar with physiological changes in pregnancy and lactation.

Chapter no.	Topic and details	No. of Lectures Assigned
1	**Conception & pregnancy: Ovulation, fertilization and implantation:** **i) Ovulation:** 1) Definition and process of ovulation 2) Hormones involved in ovulation (e.g., lh, fsh, estrogen, progesterone) **ii) Fertilization:** • Definition and stages of fertilization • Sperm structure and function • Egg (ovum) structure and characteristics **iii) Implantation:** • Definition and significance of implantation • Process of blastocyst implantation into the uterine lining • Signs and symptoms of pregnancy **Prenatal care:** i) **Prenatal growth and development :** • Definition and characteristics of growth and development • Factors affecting prenatal growth & development • Stages of prenatal development ii) **Physiological changes and development during pregnancy** : • Changes in various maternal systems: blood volume, renal, gi, cv, weight, nutritional status etc. • Importance of placenta, umbilical cord & amniotic fluid • Common problems and complications during pregnancy	12

	• Nutritional care during pregnancy	
2	**Post-natal care :** i) **Birth process:** • Stages of labor and birth, types of delivery, complications during delivery • Care of new born baby and mother ii) **Breast feeding and its importance** • Anatomy and physiology of breast feeding • Factors affecting lactation • Breast feeding practices: importance of exclusive breast feeding and methods of breast feeding • Composition and types of human milk and Advantages of breast feeding • Hazards of artificial feeding, contraindications of breast feeding. **iii) Supplementary feeding – food square** • Promotion of sound eating habits in children • Factors affecting food intake and food habit • Common problems of eating in childhood and ways to overcome them. **iv) Nutritional care during lactating period** • Factors improving lactation performance.	8
3	**Human Immunity and immunization :** **i) Immunity** • Definitions – immunity, antigen, antibody • Types of immunity • Factors affecting immunity **ii) Childhood diseases and prevention:** • Common illness and its prevention • Infectious diseases and its prevention **iii) Immunization and vaccination:** • Definition, Importance and difference between Immunization and vaccination • Immunization chart	8

REFERENCES:

1. International Food Policy Research Institute (1997). Care and Nutrition: Conceptsand Measurement. International Food Policy Research Institute Washington DC.,USA

2. International Child Health: A Digest of Current Information

3. Barker, D.J.P. (1998). Mothers, Babies and Health in Later Life. Edinburgh, Churchill Livingstone

4. Ward, R.H.T; Smith, S.K.; Donnai, D. (eds) (1994) Early Fetal Growth and Development. London, RCOG Press

5. Sachdev, H.P.S. and Choudhary, P. (1995). Nutrition in Children-Developing Country Concerns. Cambridge Press, New Delhi

6. King, F.S. (1992). Helping Mothers to Breastfeed. Association for Consumers Action on Safety and Health, Mumbai

7. Wallace, H.M. and Giri, K. (1990) Health Care of Women and Children in Developing Countries. Third Party Publishing Co, Oakland.

8. Tanner, J.M. (1988) Foetus into Man: Physical Growth from Conception to Maturity. Wheaton and Co Ltd. Great Britain

9. Luke, B. Johnson, T.R.B.; Petrie, R.H. (1993). Clinical Maternal-Fetal Nutrition. Little Brown and Co, Boston

10. Ghai O.P. understanding and managing acute diarrhea in infants and young children. AIMS, New Delhi.

11. Ghos S. 1976. The feeding and care of infants and young children. UNICEF.

12. WHO (1999) Nutrition for Health and Development: Progress and Prospects on the Eve of the 21st century. WHO/NHD/99.9. Geneva

13. Haggerty, PA; Rustein SO (1999) Breastfeeding and Complementary Infant Feeding and the Postpartum Effects of Breastfeeding. Demographic and Health Surveys Comparative Studies Calverton, MA., Macro International.

14. Koletzo, B.; Hernell, O.; Michaelson, K. (2000) Short and Long Term Effects of Breastfeeding on Infant Health. Plenum Press, New York

15. Huffman, S.L.; Baker, J.; Schumann, J.; Zehner, E.R. (1998) The Case for Promoting Multiple Vitamin/Mineral Supplements for Women of Reproductive Age in Developing Countries. LINKAGES Project. Washington DE. AED.

16. UNICEF (1997). The Care Initiative: Assessment, Analysis and Action to improve care for Nutrition. New York, UNICEF

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – IV
Year: 2024-25
Maternal Child Nutrition & Health (Practical)

Subject Name	Subject Code	Hours/week	Credit
Maternal Child Nutrition & Health (Practical)	BFSNMCP03	4	2

Objectives: The course will enable the students to:

1. To know the maternal nutritional and other health problems of community.
2. To understand why breast-feeding practices are important in various communities.
3. To learn and prepare homemade ARF, supplementary food, galactagogues rich food for infant children and mother with special needs & techniques to deal with it.

Chapter no.	Topic and details	Number of lectures assigned
1	**i) Antenatal care:** Survey, interview and report writing for maternal nutrition issues Plan a framework to overcome maternal health problems **ii) Breast feeding practices:** Survey, interview and report writing to aware community to improve breast feeding practices iii) Survey and identification of at-risk pregnant women in the community	10
2	i) Preparation of home-made substitutes and ARF ii) Preparing nutritional recipes for infants and young children iii) Preparing nutritional recipe for pregnant and lactating woman (Galactagogues rich) iv) Preparation of immunization schedule – community facility, interview	12

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – IV

Year: 2024-25

Subject Title: Bakery Science (Practical)

Subject Name	Subject Code	Hours/week	Credit
Bakery Science (Practical)	BFSNSECP04	04	02

Objectives: The course will enable the students to:

1. Familiarizing the students with different equipment used in bakery
2. Aware the students with different categories of bakery products and their possible uses.
3. Students will understand about functions of various ingredients used in bakery products
4. Providing knowledge about the development of various bakery products

Practical No.	Topic & Details	Number of Lectures assigned
1.	Ingredients and it's role in baking: Types of flour, sugar, nuts and dry fruits, shortenings, leavening etc.	4
2.	Mixing methods: Basic steps involved in mixing ingredients, kneading, stirring, whipping, creaming etc.	4
3.	Simple yeast fermented products: Bread Sticks, bread rolls, hand and soft rolls, sour dough etc.	4
4.	Simple tea cakes: Sponge cake, Mawa Cake, Brownie, Pound Cake	4
5.	Simple cookies and biscuits	4
6.	Laminated yeast breads & Pastries: Danish pastry, croissants, Puff Pastry, Choux Pastry, Eclairs, Jam Tart/ Custard Tart	4

REFERENCES:

1. Junit, N. A., Nik Omar, N. N. A., Zakaria, M., & Mohamed, N. N. (2003). Suria Bakery & Confectionary.
2. Ashokkumar Y. (2019). Textbook of bakery and confectionary (Second Edition)
3. Hartel, R. W., Joachim, H., & Hofberger, R. (2018). Confectionery science and technology (Vol. 536). Berlin/Heidelberg, Germany: Springer.
4. Khetarpaul, N. (2005). Bakery science and cereal technology. Daya Books

S.Y. B.Sc. (NCF - NEP)
(Food Science &
Nutrition) Semester – IV

Year: 2024-25

Research Methodology (Practical)

Subject Name	Subject Code	Hours/week	Credit
Research Methodology (Practical)	BFSNVACP01	4	2

Objectives:

1. To understand the scientific approaches to research
2. To understand the significance of research methods in food and nutrition
3. To identify the sources of variability and uncertainty in research.
4. To appreciate the importance of scientific writing and develop competence in writing skills.
5. To develop basic understanding about computer software's used
6. To develop data management skills.

Practical No.	Topic and Details	Number of lectures assigned
1	A) Basic concepts of research: Introduction, Meaning, Objectives, Characteristics, Requirements for a Scientific Research, Types of Researches: Exploratory and Descriptive B) Research Problem: Introduction, Selecting the Problem, Defining the Problem, Sources of Problem, Criteria for Selection of the Problem.	4
2	Research design and Hypothesis Formulation: (a) Meaning of Research Design, Types of Research Designs (exploratory, descriptive, diagnostic, experimental) (b) Hypothesis, Sources of Hypothesis, Forms of Hypothesis Sampling methods and techniques: Meaning and Definition of Population and Sampling, Techniques of Sampling (probability and non-probability)	8
3.	Data collection and Measurement: (a) Types of data: Secondary and Primary (b) Methods of Primary data collection: Observation, Personal Interview, Questionnaire, Schedule, Case Study, Social Survey, Field study, Field experiment, Scaling measurement: types of measurement scales	8

4.	Organization and presentation of data 1. Data reduction strategies 2. Coding and tabulation 3. Grouping of data: Frequency distribution 4. Graphic representation: Graphs, diagrams and charts	6

References:

- Research Methodology- Methods and techniques by CR Kothari & Gaurav Garg
- Sarangi, P.(2010). Taxman's Research Methodology. New Delhi: Taxman Publications (P) Ltd.
- Oliver, P. (2008). Writing your Thesis. Delhi: Sage Publication.
- Hart, C. (2005). Doing your Master's Dissertation. New Delhi: Vistaar Publications.
- Chawla. D and Sondhi. N. (2011), Research Methodology Concepts and Cases. Noida: Vikas Publishing House
- William, N. Your Research Project. New Delhi: Vistaar Publications.

Attachment No: 3

SCIENCE FACULTY Year: 2023-24

B.Sc. Home Science (Major: Food Science & Nutrition)

Proposed New Credit Frame Work as per the NEP for 4-year UG Degree with Honours and Honours with Research

Proposed New Credit Frame Work as per the NEP for 4-year UG Degree with Research Project

SEM	Major		Minor		Multi-disciplinary	AEC	SEC	VAC	Internship	Research Project/ On the Job Training	Total Credit
	Theory	Practical	Theory	Practical	T/T+P		T/P/ T+P				
1	3+3	1+1	2	2	(2+2)/ (1+1)+(1+1)	2	2/2/ 1+1	2		-	22
2	3+3	1+1	2	2	(2+2)/ (1+1)+(1+1)	2	2/2/ 1+1	2		-	22
3	2+2+2	2+2+2	0	0	(2+2)/ (1+1)+(1+1)	2	2/2/ 1+1	2		-	22
4	2+2+2	2+2+2	2	2	-	2	2/2/ 1+1	2		-	22
5	2+2+2	2+2+2	2+2	2+2	-	-	2/2/ 1+1	-		-	22
6	2+2+2	2+2+2	2	2	-	2	-	-	4	-	22
Total Credit	32	32	12	12	12	10	10	8	4	-	132
	64		24								
7	2+2+2	2+2+2	2	2	-	-	-	-		6	22
8	2+2+2	2+2+2	2	2	-	-	-	-		6	22
Total Credit	44	44	16	16	12	10	10	8	4	12	176
	88		32								

* For Theory; 1 credit = 1 hr. for Practical; 1 credit = 2 hr. & for Research Project/Dissertation; 1 credit = 2 hr.

Summer internship of 04 credit is required only if the student wish to exit after 1st, 2nd, or 3rd year. It is over and above in addition to the total credit

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
I	BFSNTCC01	Major Course	Fundamentals of Food Science & Nutrition	Theory	3
	BFSNPCC01		Fundamentals of Food Science & Nutrition	Practical	1
	BFSNTCC02		Applied Science I	Theory	3
	BFSNPCC02		Applied Science I	Practical	1
	BFSNTMC01	Minor Course	Foundation of Art & Design	Theory	2
	BFSNPMC01		Foundation of Art & Design	Practical	2
	BFSNMDCT01	Multi-disciplinary Course	Logical & Mathematical Reasoning	Theory	2
	BFSNMDCP01		Logical & Mathematical Reasoning	Practical	2
	BFSNAECT01	Ability Enhancement Course	English Proficiency and Life Skills (English)	Theory	2
	BFSNSECT01	Skill Enhancement	Nutrition & Fitness	Theory	1
	BFSNSECP01		Nutrition & Fitness	Practical	1
	BFSNVACT01	Value Added Course	Bharatiya Knowledge System	Theory	2
			NCC/NSS/Physical Training/Saptadhara		
	TOTAL CREDIT				**22**

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
II	BFSNTCC03	Major Course	Nutrition During Lifespan	Theory	3
	BFSNPCC03		Nutrition During Lifespan	Practical	1
	BFSNTCC04		Applied Science II	Theory	3
	BFSNPCC04		Applied Science II	Practical	1
	BFSNTMC02	Minor Course	Introduction to Clothing & Textiles	Theory	2
	BFSNPMC02		Introduction to Clothing & Textiles	Practical	2
	BFSNMDCT02	Multi Disciplinary Course	Vedic Nutrition	Theory	2
	BFSNMDCP02		Vedic Nutrition	Practical	2
	BFSNAECT02	Ability Enhancement Course	English Proficiency and Life Skills (English)	Theory	2
	BFSNSECP02	Skill Enhancement	Computer Application in Nutrition	Practical	2
	BFSNVACT02	Value Added Course	Environmental Studies	Theory	2
			NCC/NSS/Physical Training/Saptadhara		
	TOTAL CREDIT				**22**
→ Exit option with Certificate in Food Science & Nutrition (44 Credits)					
Exit option with Certificate in Food Science & Nutrition With Internship- 4 Credits (48 Credits)					

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
III	BFSNTCC05	Major Course	Food Science I	Theory	2
	BFSNPCC05		Food Science I	Practical	2
	BFSNTCC06		Human Physiology	Theory	2
	BFSNPCC06		Human Physiology	Practical	2
	BFSNTCC07		Community Nutrition	Theory	2
	BFSNPCC07		Community Nutrition	Practical	2
	BFSNMDCT03	Multi-Disciplinary Course	Food Microbiology	Theory	2
	BFSNMDCP03		Food Microbiology	Practical	2
	BFSNAECT03	Ability Enhancement Course	Written & Spoken Communication Skills (English)	Theory	2
	BFSNSECP03	Skill enhancement Course	Sensory evaluation	Practical	2
	BFSNVACP03	Value Added Course	Basics of Statistics	Practical	2
			NCC/NSS/Physical Training/Saptadhara		
		TOTAL CREDITS			**22**
Sem	**Course code**	**Course Category**	**Paper Title**	**Theory/ Practical**	**Credit**
IV	BFSNTCC08	Major Course	Food Science II	Theory	2
	BFSNPCC08		Food Science II	Practical	2
	BFSNTCC09		Food Safety & Quality Control	Theory	2
	BFSNPCC09		Food Safety & Quality Control	Practical	2
	BFSNTCC10		Food Preservation	Theory	2
	BFSNPCC10		Food Preservation	Practical	2
	BFSNTMC07	Minor Course	Maternal, Child Nutrition & Health	Theory	2
	BFSNPMC07		Maternal, Child Nutrition & Health	Practical	2
	BFSNMDCT04	Ability Enhancement Course	Written & Spoken Communication Skills (English)	Theory	2
	BFSNSECP04	Skill Enhancement Course	Bakery Science	Practical	2
	BFSNVACP04	Value Added Course	Research Methodology	Practical	2
			NCC/NSS/Physical Training/Saptadhara		
		TOTAL CREDITS			**22**
→		**Exit option with Diploma in Food Science & Nutrition (88 Credits)**			
Exit option with Diploma in Food Science & Nutrition With Internship- 4 Credits (96 Credits)					

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
V	BFSNTCC11	Major Course	Diet Therapy I	Theory	2
	BFSNPCC11		Diet Therapy I	Practical	2
	BfSNTCC12		Advance Chemistry	Theory	2
	BFSNPCC12		Advance Chemistry	Practical	2
	BFSNTCC13		Human Nutrition I	Theory	2
	BFSNPCC13		Human Nutrition I	Practical	2
	BFSNTMC08	Minor Course	Dietetic Techniques & Patient Counseling	Theory	2
	BFSNPMC08		Dietetic Techniques & Patient Counseling	Practical	2
	BFSNTMC09		Food Processing	Theory	2
	BFSNPMC09		Food Processing	Practical	2
	BFSNAECP05	Skill Enhancement Course	Food Product Development	Practical	2
			NCC/NSS/Physical Training/Saptadhara		
		TOTAL CREDITS			**22**

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
VI	BFSNTCC12	Major Course	Diet Therapy II	Theory	2
	BFSNPCC12		Diet Therapy II	Practical	1
	BFSNTCC13		Nutritional Biochemistry II	Theory	2
	BFSNPCC13		Nutritional Biochemistry II	Practical	1
	BFSNTCC14		Human Nutrition II	Theory	2
	BFSNPCC14		Human Nutrition II	Practical	1
	BFSNTMC10	Minor Course	Food Analysis	Theory	2
	BFSNPMC10		Food Analysis	Practical	2
	BFSNSECP05	Ability Enhancement Course	Nutritional Assessment &Surveillance	Practical	2
	BFSNPINT01	Internship	Internship	Practical	4
			NCC/NSS/Physical Training/Saptadhara		
		TOTAL CREDITS			**22**

→ **Exit option with Bachelors of Science in Food Science & Nutrition (132 Credits)**

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
VII	BFSNTCC15	Major Course	Medical Nutrition Therapy I	Theory	2
	BFSNPCC15		Medical Nutrition Therapy I	Practical	2
	BFSNTCC16		Physiology & Clinical Biochemistry	Theory	2
	BFSNPCC16		Physiology & Clinical Biochemistry	Practical	2
	BFSNTCC17		Principles & Applications of Instruments & Techniques	Theory	2
	BFSNPCC17		Principles & Applications of Instruments & Techniques	Practical	2
	BFSNPMC11	Minor Course	Recent Advances in Food Science & Nutrition – I (Seminar)	Practical	2
	BFSNDCC01	Dissertation	Research project/ Dissertation	Practical	6
			NCC/NSS/Physical Training/Saptadhara		
		TOTAL CREDITS			**22**

Sem	Course code	Course Category	Paper Title	Theory/ Practical	Credit
VIII	BFSNTCC18	Major Course	Medical Nutrition Therapy- II	Theory	4
	BFSNTCC18		Innovative Food Formulations & Evaluation	Theory	4
	BFSNTCC19		Advance Statistics in Research Methodology	Theory	4
	BFSNPCC19		Advance Statistics in Research Methodology	Theory	1
	BFSNTMC11	Minor Course	Recent Advances in Food Science & Nutrition – II (Seminar)	Theory	2
	BFSNDCC02	Dissertation	Research project/ Dissertation	Practical	6
		TOTAL CREDITS			**22**

⟶ Exit option with Bachelors of Science in Food Science & Nutrition Honors with Research Project (176 Credits)

BFSNTCC- BACHELORS IN FOOD SCIENCE & NUTRITION THEORY CORE COURSE

BFSNPCC- BACHELORS IN FOOD SCIENCE & NUTRITION PRACTICAL CORE COURSE

BFSNTMC- BACHELORS IN FOOD SCIENCE & NUTRITION THEORY MINOR COURSE

BFSNPMC- BACHELORS IN FOOD SCIENCE & NUTRITION PRACTICAL MINOR COURSE

BFSNTAEC- BACHELORS IN FOOD SCIENCE & NUTRITION THEORY ABILITY ENHANCEMENT COURSE

BFSNPSEC- BACHELORS IN FOOD SCIENCE & NUTRITION PRACTICAL SKILL ENHANCEMENT COURSE

BFSNTVAC- - BACHELORS IN FOOD SCIENCE & NUTRITION THEORY VALUE ADDED COURSE

BFSNPVAC- - BACHELORS IN FOOD SCIENCE & NUTRITION PRACTICAL VALUE ADDED COURSE

BFSNTMDC- BACHELORS IN FOOD SCIENCE & NUTRITION THEORY MULTI-DISCIPLINARY COURSE

BFSNPMDC- BACHELORS IN FOOD SCIENCE & NUTRITION PRACTICAL MULTI-DISCIPLINARY COURSE

BFSNDCC- BACHELORS IN FOOD SCIENCE & NUTRITION DISSERTATION CORE COURSE