

Semester V

FOOD & NUTRITION

Saurashtra University Rajkot
Third -Year Bachelor of Home Science
Major: Food and Nutrition Semester - 5

Pap er No.	Course	Subject	Credit				Marks				Exam Hours	
			Theo ry	Practi cal	Tot al	Tota l Hou rs	CC E	P M	SE E	T M	Theo ry	Practi cal
1	Major Core Course CC11	FN P 11 Food science-I	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
2	Major Core Course CC12	FN P 12 Dietetics-I	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
3	Major Core Course CC13	FN P 13 Advance Food Preservation & Processing	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
4	Minor Course MC4 Choose any one from the basket	Family Housing and Vastu Shashtra	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
		Aparel Technology	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
		Principles of childhood Care and Education	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
		NGO Managemen t	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
		Biochemistr y	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
5	Minor Course MC5 Choose any one from the basket	Nutrition and Health Education	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
		Gardening	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
		Laundry Science	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
		Marriage and Family Relationshi p	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
		Communica tion and Media	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
		Microbiolog y	3	1	4	5	25	25	50	10 0	2 Hrs	3 Hrs
6	Skill	Food	1	1	2	3	25	-	25	50	1 Hr	-



Enhancement SEC 5 Choose any one from the basket Choose any one from the basket	adulteration											
	Culinary art	1	1	2	3	25	-	25	50	1 Hr	-	
	Textile Design	1	1	2	3	25	-	25	50	1 Hr	-	
	Methods and Materials for Working with Young Children	1	1	2	3	25	-	25	50	1 Hr	-	
	Training for Development	1	1	2	3	25	-	25	50	1 Hr	-	
		16	6	22	28	150	125	275	550			



		14	4	22	30	175	150	225	550		
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B. Sc (HOME SCIENCE)			
YEAR	III	FOOD SCIENCE – I PAPER NO. 1 MAJOR CORE COURSE CC11	CREDIT 04 (03+01)
SEMESTER	V		HOURS/ WK 05 (03+02)
Total Marks: 100		Internal: 25	Theory: 50 Practical: 25

1. Course Outcomes દરેક વિષયના શરૂઆતમા દર્શાવેલ છે? હા
2. Employability/Entrepreneurship/Skill Development પર કેન્દ્રિત થયેલ છે કે નહીં? હા
3. Value added Courses Imparting Transferable and Life Skills ના ગુણો ધરાવે છે? હા
4. Major ☒ Minor ☐ Skill Enhancement Courses ☐
Ability Enhancement Courses ☐ Value Added Courses ☐ Exit/ Vocational Courses ☐
5. Holistic Education ☐ Multidisciplinary ☐ Interdisciplinary ☐
6. દેવ્યાગ માટે વિષય અંતર્ગત આનુસાંગિક જાગવાઈ કરાયેલ છે ? ના
7. New India Literacy Programme (NILP) મુજબના વિષય છે? હા
8. Swayam પ્લટફોર્મ પરના MOOC વિષય પર આધારિત આ વિષય છે? ના
9. ઇન્ડિયન નાલજ સિસ્ટમ (IKS) પર આધારિત વિષય છે? ના

B. Sc (HOME SCIENCE)				
YEAR	III	FOOD SCIENCE – I PAPER NO. 1 MAJOR CORE COURSE CC11	CREDIT	04 (03+01)
SEMESTER	V		HOURS/ WK	05 (03+02)
Total Marks: 100		Internal: 25	Theory: 50	Practical: 25
OBJECTIVES		1. To impart knowledge pertaining to the basic properties of food. 2. To provide basic understanding of principles behind food and also with processing technology used for different foods. 3. Understand the application of science principles to experimental study of foods. 4. Develop food preparations and evaluate by sensory methods. 5. Select food to meet your requirements both in terms of food quality as well as cost. 6. Identify the different types of energy giving, body building and regulatory foods available in market.		
LEARNING OUTCOMES		Students will gain knowledge on different types of energy giving, body building and regulatory foods available in market. students will gain knowledge on different sensory methods of food – all these lay a foundation for a career in food industries.		
COURSE CONTENT: THEORY				
UNIT – I		Introduction to Food Science		



	• Definition and scope of Food Sciences • Importance of food science in daily life • Careers in Food Science
UNIT – II	Food acceptability
	• Appearance factor • Kinaesthetic factor • Flavour factor judged by sensory organ. .
UNIT – III A	Sensory evaluation of foods
	• Definition • Practical requirement for conducting sensory test • Classification of sensory methods - difference tests rating tests.
UNIT – III B	Objective evaluation of food.
	• Advantages and disadvantages of objective evaluation • Classification, objective methods of assessing food qualities such as chemical method, physico chemical method, microscopical examination, microbiological examination.
UNIT – IV	Colloidal system in foods
	• Definition • Difference between solution colloid and suspension • Types of colloidal dispersion • Properties of colloidal dispersion • Dispersion of substance in food preparation.
UNIT – V	Unconventional foods
	• Soyabean, ragi, unconventional leaves, mashrooms, spirulina, oats, barley
PRACTICALS	
1	Sensory Evaluation by Difference Tests – • Paired Comparison Test • Triangle Test • Duo-Trio Test
2	Sensory Evaluation by Rating Tests • Two sample difference test • Multiple sample difference test • Hedonic test • Numerical scoring test • Composite scoring test • Ranking test
3	Preparation of Unconventional food (one preparation each) • Soybean product • Unconventional leaves • Ragi & Oats products • Roots & Tuber products
REFERENCES	
1	N Shukuntala Manay, M. Sadaksharaswamy, "Foods –Facts and Principles.
2	M Swaminathan "Food Science and Experimental Food."



3	Peckham G C. "Foundation of Food Preparation" The Mcmillan Co. 1962
4	Norman P N "Food Science" The A V I Publishing Co. 1982
5	Charley H "Food Science" John Wiley and Sons 1982
6	Griswold RM "The Experimental Study of Foods" Houghtan Migglin Co. 1962
7	Lowe B "Experimental Cookery" John Wiley and Sons.1965
8	ANC-1 Nutrition for the Community- Practical manual Part-1 IGNOU.
9	ANC-04 IGNOU.
10	CCCD-02 IGNOU.
11	Srilaxmi- Food Science.

YEAR	III	B. Sc (HOME SCIENCE)		
SEMESTER	V	DIETETICS - I PAPER NO. 2 MAJOR CORE COURSE CC12		CREDIT 04 (03+01)
Total Marks: 100		Internal: 25	Theory: 50	HOURS/ WK 05 (03+02)
				Practical: 25

1. Course Outcomes દરક લવધયના શરૂઆતમા દશાવલ છ? હા
2. Employability/Entrepreneurship/Skill Development પર કેન્દ્રિત થયલ છ ક નાહ? હા
3. Value added Courses Imparting Transferable and Life Skills ના ગુણો ધરાવે છે? હા
4. Major ☒ Minor ☐ Skill Enhancement Courses ☐
Ability Enhancement Courses ☐ Value Added Courses ☐ Exit/ Vocational Courses ☐
5. Holistic Education ☐ Multidisciplinary ☐ Interdisciplinary ☐
6. દેવ્યાગ માટે લવધય અતગત આનુસાગિક જાગવાઇ કરાયલ છ ? ના
7. New India Literacy Programme (NILP) મુજબના લવધય છ? હા
8. Swayam પ્લટફોર્મ પરના MOOC લવધય પર આધારત આ લવધય છ? ના
9. ઇન્ડિયન નાલજ સસ્ટમ (IKS) પર આધારત લવધય છ? ના

B. Sc (HOME SCIENCE)					
YEAR	III	DIETETICS - I PAPER NO. 2 MAJOR CORE COURSE CC12		CREDIT	04 (03+01)
SEMESTER	V			HOURS/ WK	05
Total Marks: 100		Internal: 25	Theory: 50	Practical: 25	
OBJECTIVES		1. To understand the applications of principles of diet therapy 2. Plan and prepare diets for different diseases 3. Learn the assessment of patients' need, counseling, education of the patient and follow-up			
LEARNING OUTCOMES		The students will gain knowledge, skills and understanding of the subject which will help them to enter professions of teaching, research, dietetics, counselling etc. after higher studies in related fields.			
COURSE CONTENT: THEORY					
UNIT – I		Etiology, diagnosis and dietary management of Diabetes Mellitus			
		• Type / Classification, symptoms and diagnosis • Role of diet in the management of various types of diabetes mellitus and preparation of diet plans (clinical V/s chemical control) • Secondary complications of Diabetes mellitus and its control • Tests used for diagnosing and monitoring diabetes mellitus including glucose monitoring at home. • Names of tests used for diagnosing and monitoring diabetes mellitus • Insulin therapy, oral hypoglycemic control			



	• Role of diet • Diabetes in pregnancy, surgery, illness diabetic coma, insulin reaction • Use of sweet alternatives, their composition and contra indications. • Patient Education and counseling
UNIT – II	Etiology, diagnosis and dietary management of Liver Disorders
	• Liver Function normal and Deranged • Role of diet in liver health • Liver function test and nutritional care in liver diseases • Viral hepatitis • Cirrhosis • Alcoholic liver diseases • Cholecystitis, Cholelithiasis, Pancreatitis
UNIT – III	Some special conditions requiring nutritional support
	• Burns : Nutritional management • Metabolic disorder : Diseases of the adrenal cortex, thyroid and parathyroid glands, gout, spontaneous hypoglycemia, phenylketonuria
UNIT – IV A	Therapeutics food products
	a. Antihyperglycemic agents b. Functional foods • Wheat grass • Spirulina • Mashroom • Flaxseeds (Alsi) • Niger seeds • Drumstick Leaves (Saragvo) • Barley (Jav) • Purslane (Moti Loni) • Soya • Amylase Rich Food
UNIT – IV B	Interactions between drugs, nutrients and nutritional status
	• Drugs used for infection, inflammations and fevers • Drugs used for Diabetes Mellitus-oral hypoglycemic and insulin • Drugs used for Hypertension/Renal control – Diuretics, K Sparing, Ca channel blockers, ACE inhibitors etc. • Drugs used for reducing cholesterol in blood
UNIT – V	Dietetic Techniques and Patient Counseling
	• Dieticians as part of the medical term and outreach services • Medical history assessment-techniques of obtaining relevant information for patient profiles • Dietary diagnosis and tests for nutritional status-Correlating clinical and dietary information • Patient education and counseling-assessment of patient needs, establishing rapports, counseling relationship, resources and aids to counseling. • Aesthetic attributes of diets. • Follow up visits and patients' education.
PRACTICALS	
UNIT – I	I. Prepare of List of foods rich in protein, fats, fiber sodium, calcium



	phosphorus, oxalic acid in each food exchange. II. List of foods rich in cholesterol(SFA), PUFA AND MUFA III. Glycemic Index of food
UNIT – II	Planning, Preparation and calculation by use of exchange List for I. Diabetes Mellitus a. Normal Weight b. Pregnancy II. Liver Disorder a. Hepatitis b. Cirrhosis of Liver with ascites III. Diet in metabolic disorders a. Gout b. Hypothyroidism c. Hypoglycemia d. Phenylketonuria
UNIT – III	Plan and prepare recipes from Therapeutic food products
REFERENCES	
1	Anderson, Dibble, Tukki, Mitchell, Rynbergen – NUTRITION IN HEALTH AND DISEASE, 17 TH Edi, J.B. Lippincott Co. USA.
2	B. Snlakshmi – DIETETICS, 3 rd Edi, New Age International (P) Ltd. Publisher, New Delhi
3	Carol West Suitor, Merriyl Forbes, Crowley – Nutrition – Principles and application in Health Promotion, 2 nd Edi J.E Lippincott Co. Philadelphia
4	Clifford R Anderson – MODERN WAYS TO HEALTH, Southern Publishing Association, Nashville Tennessee.
5	Corinee H Robinson, Marilyn R Lawler – Normal and Therapeutic Nutrition, 17 th Edi Oxford and IBH Publishing Co., New Delhi
6	Dr. R. Kumar, Dr. Meenal Kumar – Guide To Healthy Living, Deep and Deep Publications Pvt. Ltd., New Delhi.
7	FOODS THAT HARM FOODS THAT HEAL Reader's Digest Association Ltd., 2001
8	F.P. Antia and Philip Abraham – Clinical Dietetics and Nutrition, 4 th Edi, Oxford Universtiy Press, New Delhi
9	S.R. Williams – ESSENTIALS OF NUTRITION AND DIET THERAPY, 5 TH Edi, Times Mirror / Mosby College Publishing, Boston.
10	Kathleen Mahan, Sylvia Stamp – Food, Nutrition and Diet Therapy – 11 th Edi, W.B. Saunders Co., Philadelphia
11	Krause M.V. and Hinster M.- Food, Nutrition and Diet Therapy, W.B. Saunders
12	SOME THERAPETUTIC DIETS, NIN, Hyderabad
13	Vaid B. M. - Diet Therapy, Saurashtra University
14	Vaid B. M. - Therapeutic Nutrition, Saurashtra University

B. Sc (HOME SCIENCE)				
YEAR	III	ADVANCE FOOD PRESERVATION & PROCESSING PAPER NO.3 MAJOR CORE COURSE CC13	CREDIT	05 (03+01)
SEMESTER	V		HOURS/ WK	05 (03+02)
Total Marks: 100		Internal: 25	Theory: 50	Practical: 25

1. Course Outcomes દરેક વિષયના શરૂઆતમાં દર્શાવેલ છે? હા
2. Employability/Entrepreneurship/Skill Development પર કેન્દ્રિત થયેલ છે કે નહીં? હા
3. Value added Courses Imparting Transferable and Life Skills ના ગુણો પરાવ છે? હા
4. Major ☒ Minor ☐ Skill Enhancement Courses ☐
Ability Enhancement Courses ☐ Value Added Courses ☐ Exit/ Vocational Courses ☐
5. Holistic Education ☐ Multidisciplinary ☐ Interdisciplinary ☐
6. દેવ્યાંગ માટે વિષય અત્યંત આનુસાંગિક જાગવાઈ કરાયેલ છે? ના
7. New India Literacy Programme (NILP) મુજબના વિષય છે? હા
8. Swayam પ્લટફોર્મ પરના MOOC વિષય પર આધારિત આ વિષય છે? ના
9. ઇન્ડિયન નેશનલ સિસ્ટમ (IKS) પર આધારિત વિષય છે? ના

B. Sc (HOME SCIENCE)					
YEAR	III	ADVANCE FOOD PRESERVATION& PROCESSING PAPER NO.3 MAJOR CORE COURSE CC13		CREDIT	05 (03+01)
SEMESTER	V			HOURS/ WK	05 (03+02)
Total Marks: 100		Internal: 25	Theory: 50	Practical: 25	
OBJECTIVES		1. To make the students understand the importance of food additives and fortification. 2. To gain knowledge of food packaging and convenience food 3. To orient students to food safety laws and standards			
LEARNING OUTCOMES		Students will gain knowledge on different types of foods available in market and different packaging materials of foods –all these lay a foundation for a career in food industries and knowledge for starting new food industries.			
COURSE CONTENT: THEORY					
UNIT – I		Canning and bottling			
		• Principles • Steps in canning • Containers are used for canning • Spoilage in canned foods			
UNIT – II		Freezing and refrigeration			



	• Principle of freezing and refrigeration • The main difference between refrigeration and freezing • Types of storage at low temperature • Types of Freezing - (Air freezing, Indirect contact freezing, Immersion freezing) • Selection criteria for freezing material
UNIT – III	Drying and dehydration
	• Principles • sun drying • Types of driers- -Home made dryer, -Commercial dryer-(Kiln Drier, Stack type Drier, Tunnel Drier, spray dryer, Drum Drier, vacuum dryer, Freeze drying) • Packaging and storage of dehydrated food
UNIT – IV	Food Irradiation
	• Ionizing radiation and its sources • Effects of radiation on nutritive value of food • Use of radiation for different food groups
UNIT – VA	Vinegar preparation
	• Types of vinegar • Yeast used for vinegar preparation • Method of preparation • Post production process of vinegar • Use of vinegar
UNIT – VB	Convenience Foods
	• Types of convenience foods • Advantages and Disadvantages of convenience foods • Extruded Foods
PRACTICALS	
1	Market Survey of different Canned, Dried and Frozen foods (each 5 foods)
2	Preparing in laboratory • Home based canning • Dehydration of any one food • freezing of any one food
3	Developed any Convenience food in laboratory
4	Visit of a food processing industry
REFERENCES	
1	G. Subbulakshmi – Shobha A. Udipi, “Food Processing and Preservation”, New Age International Publisher.
2	Girdharilal, G.S. Siddappa – G.L. Tandon, Preservation of Fruits and Vegetables.
3	M. Swaminathan, “Food Science, Chemistry and Experimental Foods”.
4	B. Lakhtariya – “Food Safety and standard act 2006 with food safety and standard rules, 2011”. The new Gujarat Law house Ahmedabad.



studies, Deep & Deep Publication Pvt. Ltd.				
B. Sc (HOME SCIENCE)				
YEAR	III	BIOCHEMISTRY	CREDIT	04
SEMESTER	V		HOURS/ WK	05
Total Marks: 100			Internal: 25	Theory: 50

1. Outcomes દરક વિષયની શરૂઆતમાં દર્શાવેલ છે? હા
2. Employability/Entrepreneurship/Skill Development પર કાબૂ થયેલ છે કે નહીં? હા
3. Value added Courses Imparting Transferable and Life Skills ના ગુણો ધરાવે છે? હા
4. Minor Enhancement Courses ☐
5. Ability Enhancement Course ☐ Value Added Courses Exit/ Vocational Courses ☐
6. Holistic Education Multidisciplinary ☐ Interdisciplinary ☐
7. દેવ્યાગ માટે વિષય અત્યંત આનુસારિક જોગવાઈ કરાયેલ છે? ના
8. New India Literacy Programme (NILP) મુજબના વિષય છે? હા
9. Swayam પ્લટફોર્મ પરના MOOC વિષય પર આધારિત આ વિષય છે? ના
10. ઇન્ડિયન નાલજ સસ્ટમ (IKS) પર આધારિત વિષય છે? ના

B. Sc (HOME SCIENCE)					
YEAR	III	BIOCHEMISTRY		CREDIT	04(03+01)
SEMESTER	V	PAPER NO. 4 MINOR CORE COURSE MC4		HOURS/ WK	05 (03+02)
Total Marks: 100		Internal: 25	Theory: 50	Practical: 25	
OBJECTIVES		This course will enable students to - 1. Develop an understanding of the principles of biochemistry (as applicable to human nutrition) 2. Obtain an insight into the chemistry of major nutrients and Physiologically important compounds. 3. Understand the biological processes and systems as applicable to Human nutrition. 4. Apply the knowledge acquired to human nutrition and dietetics.			
LEARNING OUTCOMES		1 Students will be able to do basic biochemical practical 2 Students will be aware about biochemical processes of human body			
COURSE CONTENT: THEORY					
UNIT - I		Carbohydrates			
		• Classification, Monosaccharides – Fischer’s structure of aldoses and ketoses, ring structure of sugars, anomers and epimers • Oxidation of sugars, reduction of sugars, reducing properties of sugars, formation of disaccharides, reducing and non-reducing disaccharides • Polysaccharides – homo and heteropolysaccharides.			



UNIT - II	Fat /Lipids
	• Building blocks of lipids – fatty acids, glycerol; Storage lipids – triacyl glycerol, glycerophospholipids • Classification of fatty acids • Fat • Biological Importance of Lipids • Physical and chemical properties of fats • Hydrolysis • Saponification • Rancidity • Acid number • Iodine number
UNIT - III	Proteins
	• Structure and classification, peptide linkage, zwitter ion, Ninhydrin test, Sangers test ; • Protein • structure – Levels of organization – primary, secondary, tertiary and quaternary structure;
UNIT - IV	Vitamins
	• Biochemical role of fat soluble vitamins-A and D • Biochemical role of water soluble vitamins- Thiamine, Riboflavin, Niacin, Pyridoxine and Ascorbic acid
UNIT - V	Enzymes
	• Importance and specificity. • Chemical nature • Classification and nomenclature • Enzyme kinetics (factors affecting enzyme action) • Coenzymes and isoenzymes. • Inhibitors • Clinical importance of enzymes
PRACTICALS	
1	Preparation of standard solution.
2	Carbohydrates Qualitative tests for mono, di and polysaccharides and their identification in unknown mixtures Quantitative estimation of glucose, sucrose and lactose by titrimetric method
3	Qualitative tests for Protein and amino acids
4	Acid value
5	Cole's method – Glucose, Lactose
6	Effect of pH on amylase activity Effect of Temperature on amylase activity
7	Preparation of casein from milk
8	Estimation of calcium using EDTA by titration
9	Estimation of chloride
REFERENCES	
1	Lehninger A.L, Nelson D.L and Cox M.M (2009). Principles of Biochemistry, 6 th Edition, CBS Publisher and Distributors.



2	Harper's Illustrated Biochemistry, 28th Edition, McGrawHill
3	Biochemistry by West and Todd
4	Biochemistry by Conn and Stumph
5	5 Biochemistry by Stryer
6	Voet, D and Voet, J, Principles of Biochemistry, 4th edition (2011) by John Wiley and sons.
7	Nelson, D.L. and Cox, M.M., Lehninger's principles of Biochemistry, 6 th edition, (2012) W.H. Freeman.
8	P.C. Jain, Monika Jain, Engineering Chemistry, Dhanpat Rai Publications (1979)
9	Berg, J. M., Tymoczko, J.L. and Stryer, L. (2012). Biochemistry 7th Ed., W. H. Freeman
10	Enzyme and Concept of Lock & Key and Induced Fit Theory.
11	Pushpa Sundararaj and Anupa Siddhu. Qualitative tests and Quantitative Procedures in Biochemistry, A H Wheeler and Co Ltd. 2002 Second Edition, Wheeler, New Delhi.



B. Sc (HOME SCIENCE)				
YEAR	III	MICROBIOLOGY MINOR COURSE MC5 PAPER NO. 5	CREDIT	04 (03+01)
SEMESTER	V		HOURS/ WK	05 (03+02)
Total Marks: 100		Internal: 25	Theory: 50	Practical: 25

1. Course Outcomes દરક વિષયની શરૂઆતમા દર્શાવેલ છે? હા
2. Employability/Entrepreneurship/Skill Development પર કબજા થયેલ છે કે નાહ? હા
3. Value added Courses Imparting Transferable and Life Skills ના ગુણા ધરાવે છે? હા

1. Major ☐ Minor ☒ Skill Enhancement Courses ☐
Ability Enhancement Courses ☐ Value Added Co ☐s Exit/ Vocational ☐
Courses

2. Holistic Education ☐ Multidisciplinary ☐ Interdisciplinary ☐

3. દેવ્યાગ માટ વિષય અતગત આનુસાગક જોગવાઈ કરાયેલ છે? ના

4. New India Literacy Programme (NILP) મુજબના વિષય છે? હા

5. Swayam પ્લટફોર્મ પરના MOOC વિષય પર આધારત આ વિષય છે? ના

6. ઇન્ડિયનનાલજસાસ્ટ્રમ (IKS) પર આધારત વિષય છે? ના

B. Sc (HOME SCIENCE)					
YEAR	III	MICROBIOLOGY MINOR COURSE MC5 PAPER NO. 5		CREDIT	04 (03+01)
SEMESTER	05			HOURS/ WK	05 (03+02)
Total Marks: 100		Internal: 25	Theory: 50	Practical: 25	
OBJECTIVES		1.Gain knowledge of role of micro-organisms in various spheres of life 2.Understand role of micro-organisms in food spoilage and immunology			
LEARNING OUTCOMES		1. To gain fundamental understanding of Microbial World. 2. To understand beneficial as well as harmful human-microbial interactions in food and diseases.			
COURSE CONTENT: THEORY					
UNIT – I		Microbiology – Basic Concepts And Application			
		• Virus, Bacteria, Fungi, Algae and Protozoa: Morphology, habitat and their importance. • Milestone Discoveries in Microbiology: Invention of microscope, germ theory of Disease, Germ theory of fermentation • Importance of Microbiology- Economic, Industrial and Medical			
UNIT – II		Fundamentals of Microbiology			



	• Physical and Chemical methods of sterilisation • Staining techniques: Simple, special and differential staining techniques • Types of microscopy: Light, Dark and Electron Microscopes. • Different types of Culture media used for cultivation and isolation of micro-organisms.
UNIT-III	Food Spoilage And Food Infections
	• Extrinsic and Intrinsic factors affecting growth of micro-organisms in food • Microbial Spoilage of Milk and milk products, Cereal products, Vegetables, fruits and canned foods. • Food borne infections: Typhoid, Cholera, Dysentery • Food Poisoning: Bacterial and Fungal
UNIT – IV	Fermented Foods
	• Traditional fermented Milk, Soya and Cereal and vegetables based products • Probiotics and Nutraceuticals • Single cell proteins: Bacteria, Fungi and Algae
UNIT – V	Immunity
	• Definition of Antigen and Antibody • Classification of Immunity • Vaccines: Types, Recombinant vaccines and applications.
PRACTICALS	
1	• Wet mounting and identification of common fungi like Aspergillus, Mucor, Rhizopus and Yeast from spoiled food samples.
2	• Study of Microbiology laboratory instruments: Autoclave, Hot Air Oven, Incubator and Centrifuge
3	• Methylene Blue Reduction Test for Microbial analysis of Milk
4	• Negative Staining of Yeast cells
5	• Gram Staining of bacteria
6	• Visit to Food Processing Unit
REFERENCES	
1	Microbiology by Pelczar and Reid – McGraw-Hill Book Company New York
2	Modern Food Microbiology – Jay James M. Van Nostrand Reinhold Company Inc.
3	Food Microbiology – Frazier W.C. and Westhoff D.C. McGraw-Hill Company, New York



B. Sc (HOME SCIENCE)				
YEAR	III	FOOD ADULTRATION SKILL ENHANCEMENT COURSE SEC 5 PAPER NO. 6	CREDIT	02 (01+01)
SEMESTER	V		HOURS/ WK	03 (01+02)
Total Marks: 50			Internal: 25	Theory: 25

1. Course Outcomes દરક વિષયની શરૂઆતમા દર્શાવલ છે? હા
2. Employability/Entrepreneurship/Skill Development પર કબ્જા થયેલ છે ક નાહ? હા
3. Value added Courses Imparting Transferable and Life Skillsના ગુણ ધરાવે છે? હા
4. Major ☐ Minor ☐ Skill Enhancement Courses ☒
Ability Enhancement Courses ☐ Value Added Course ☐ Exit/ Vocational Cours ☐
5. Holistic Education ☐ Multidisciplinary ☐ Interdisciplin ☐
6. દેવ્યાગ માટ વિષય અતગત આનુસાગક જોગવાઈ કરાયેલ છે ? ના
7. New India Literacy Programme (NILP) મુજબના વિષય છે? હા
8. Swayam પ્લટફોર્મ પરના MOOC વિષય પર આચારત આ વિષય છે? ના
9. ઇન્ડિયનનાલજસાઈટ (IKS) પર આચારત વિષય છે? ના

B. Sc (HOME SCIENCE)					
YEAR	III	FOOD ADULTERATION SKILL ENHANCEMENT COURSE SEC 5 PAPER NO. 6		CREDIT	02 (01+01)
SEMESTER	V			HOURS/ WK	03 (01+02)
Total Marks: 50		Internal: 25	Theory: 25	Practical: —	
OBJECTIVES		1.Be aware of adulteration of selected food products through various testing procedures. 2. Understand the effect of adulterants in food. 3. Create awareness of food adulteration to consumers.			
LEARNING OUTCOMES		1. The students will be aware of adulterants side effect 2. They will be able to which type of adulteration 3. They will be able to detection of adulterants in food			
COURSE CONTENT: THEORY					
UNIT – I		Food adulteration			
		• Introduction: food and food product definition • Effect of adulterants on Community Health			
UNIT – II		Types and side effect of adulterants in foods			
		• Spices • Milk and Milk Products • Flour • Salt, sugar and tea • Fruit and vegetables(side effect of pesticides, Methods used for			



	removal of adulterants)
UNIT – III	Detection of adulterants in foods
	• Spices • Milk and Milk Products • Flour • Salt, sugar and tea • Fruit and vegetables
REFERENCES	
Wiley, Harvey Washington Foods and their adulteration Rarebooksclub.com	
Schlink, Frederick John Eat, Drink and Be wary: The problems of diet and food adulteration Literary Licensing, LLC	
Bruce, E.M. (1997) detection of the common food adulterants D. Van Nostrand company.	
Hassall, A. h. (1876). Food its Adulteration and the method for their Detection. Longmans Green	