

SEMSETER -VI
MAJOR FOODS & NUTRITION



Saurashtra University Rajkot Third Year Bachelor of Home Science												
Major: Food and Nutrition Semester – 6												
	Course	Subject	Credit				Marks				Exam Hours	
			Theory	Practical	Total	Total Hrs	CEE	PM	SEE	TM	Theory	Practical
1	Major Core Course CC14	FN P 14 Food Science-II	3	1	4	5	25	25	50	100	2 Hrs	3 Hrs
2	Major Core Course CC15	FN P 15 Dietetics-II	3	1	4	5	25	25	50	100	2 Hrs	3 Hrs
3	Major Core Course CC16	FN P 16 Food Service	3	1	4	5	25	25	50	100	2 Hrs	3 Hrs
4	Minor Core Course MC6 Choose any one from the basket	Interior Decoration and Home Furnishing	3	1	4	5	25	25	50	100	2 Hrs	3 Hrs
		Advance Clothing Technique	3	1	4	5	25	25	50	100	2 Hrs	3 Hrs
		Organization and Management for ECCE Centre	3	1	4	5	25	25	50	100	2 Hrs	3 Hrs
		Media for Development Project	3	1	4	5	25	25	50	100	2 Hrs	3 Hrs
		Advance Physiology	3	1	4	5	25	25	50	100	2 Hrs	3 Hrs
5	Ability Enhancement AEC 5 Choose any one from the basket	Post harvest technology	2	-	2	2	25	-	25	50	1 Hr	---
		Traditions of India	2	-	2	2	25	-	25	50	1 Hr	---
		Indian Embroidery	2	-	2	2	25	-	25	50	1 Hr	---
		Personality Development	2	-	2	2	25	-	25	50	1 Hr	---
		New Dimensions of Extension	2	-	2	2	25	-	25	50	1 Hr	---
		Diagnostic Techniques	2	-	2	2	25	-	25	50	1 Hr	---
6	Internship				4	8	50	50		100		

B. Sc (HOME SCIENCE)				
YEAR	III	FOOD SCIENCE -II PAPER NO. 1 MAJOR CORE COURSE CC14	CREDIT	04 (03+01)
SEMESTER	VI		HOURS/ WK	05 (03+02)
Total Marks: 100		Internal: 30	Theory: 50	Practical: 20

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 ધરાવે 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 નાલજ સિસ્ટમ (IKS) પર આધારિત વિષય છે? ના

B. Sc (HOME SCIENCE)					
YEAR	III	FOOD SCIENCE -II PAPER NO. 1 MAJOR CORE COURSE CC14		CREDIT	04 (03+01)
SEMESTER	VI			HOURS/ WK	05 (03+02)
Total Marks: 100		Internal: 30	Theory: 50	Practical: 20	
OBJECTIVES		1. To impart knowledge pertaining to the basic properties of food. 2. To provide basic understanding of principles behind cooking foods and also with processing technology used for different foods. 3. Understand the application of scientific principles to experimental study of foods. 4. Develop food preparation 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		Carbohydrates			
		• Classes and Types			

	- Chemical reaction in food hydrolysis, Thermal degradation, Dehydration, caramalization, maillard reaction - Application in food industry and other sweetening agents
UNIT – II	Lipids
	- Physio-chemical properties of fat & application in food preparation - Shortenings- shortenings value and factors affecting it. - Fat substitutes determination of fats/oils rancidity reversion & polymerization
UNIT – III	Protein
	- Physio-chemical properties of protein - Hydration solubility viscosity gelation emulsification binding foams changes on cooking, denaturation, coagulation
UNIT – IV A	Pigments
	- Pigments endogenous to food - Structure, chemical and physical properties - Effect of processing and storage
UNIT – IV B	Flavours
	Vegetables, fruits and spices and condiments
UNIT – IV C	Enzymes
	- Nomenclature definite specificity, catalysis - Regulation enzyme modification of food by endogenous enzyme - Enzyme inhibitor in food
UNIT – V	Emerging trends in food science
	- Genetically modified foods (GMOs) - Plant-based and alternative proteins - Sustainable food production

PRACTICALS

1	Carbohydrate - Preparation of starch from potatoes - Microscopic examination of starch - Effect of adding sugar, salt and other factors in gelatinization
2	Protein To determine gluten from different flours(Wheat, Rava Maida)
3	Fat Factors affecting fat absorption and emulsion, frying.
4	Pigment Factors affecting colour, pH, time and cooking of fruits and vegetables.
5	Enzymes Browning reactions -to study different types of browning reaction in foods.

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

B. Sc (HOME SCIENCE)				
YEAR	III	DIETETICS - II PAPER NO. 2 MAJOR CORE COURSE CC15	CREDIT	04 (03+01)
SEMESTER	VI		HOURS/ WK	05 (03+02)
Total Marks: 100		Internal: 30	Theory: 50	Practical: 20

1. Course Outcomes દરકા વાંચવાના શરૂઆતના 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 વાંચવા અત્યંત આનુસાંગિક જાગવાઈ કરાયેલ છે ? ના
7. New India Literacy Programme (NILP) મુજબના વાંચવા છે? હા
8. Swayam પ્લટફોર્મ પરના MOOC વાંચવા પર આધારિત આ વાંચવા છે? ના
9. ઇન્ડિયન નાલજ સિસ્ટમ (IKS) પર આધારિત વાંચવા છે? ના

B. Sc (HOME SCIENCE)					
YEAR	III	DIETETICS - II PAPER NO. 2 MAJOR CORE COURSE CC15		CREDIT	04 (03+01)
SEMESTER	VI			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 Cardiovascular disorders			
		1. Hypertension - Types, role of diet in the management of various types of hypertension - Consequences and complications of hypertension - Lifestyles change and behavior modification in hypertension - Use of salt alternatives, their composition and contraindications 2. Atherosclerosis / Ischemic heart diseases - Types and risk factors			

	• Role of diet • Diet after bypass surgery and heart attack • Prevention : control of risk factors and lifestyle changes
UNIT – II	Etiology, diagnosis and dietary management of Renal Disorders
	• Renal functions : normal and deranged Diagnosis : names of Renal function Tests • Glomerulonephritis • Nephrotic Syndrome • Acute and Chronic renal failure • Dialysis/ Renal transplant • Renal Calculi
UNIT – III	Etiology, diagnosis and dietary management
	• Cancer, types and etiological factors • Role of diet in prevention of all types of cancers • Nutritional management of cancer patients undergoing i. Radiotherapy ii. Chemotherapy iii. Diet to be followed after treatment iv. Cachexia • Side effects of cancer therapy and suggested diet modifications
UNIT – IV	Some special conditions requiring nutritional support
	• Bone disorders • Allergy
UNIT – V	Prebiotics and Probiotics
	• Introduction • Types and their structures • Role in health and disease • Functional characteristics and applications • Legal and regulatory status
PRACTICALS	
UNIT – I	Prepare an appendix i. Inulin content of foods ii. List of resistant starch values in raw food products iii. List of resistant starch values in processed food products
UNIT – II	Planning, Preparation and calculation by use of exchange List for 1 Cardiovascular disease a. Hypertension b. Atherosclerosis c. Diet for a patient after heart attack d. Diet for a patient after bypass surgery 2 Renal disorders a. Diet for acute nephritis b. Diet for chronic renal failure c. Diet for a patient on dialysis d. Diet for renal calculi 4 Cancer : a. Oral diet for Cancer Patients b. Tube feeding for cancer patients

UNIT – III	Case study : - Select any one patient and record the diagnosis, laboratory findings and detailed dietary and clinical history - Write down the steps in counseling and formulate a new diet for the diagnosed disease - Prepare a report and do a formal presentation
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	FOOD SERVICE PAPER NO. 3 MAJOR CORE COURSE CC16	CREDIT	04 (03+01)
SEMESTER	VI		HOURS/ WK	05 (03+02)
Total Marks: 100		Internal: 30	Theory: 50	Practical: 20

10. Course Outcomes દરેક વિષયના શરૂઆતમાં દર્શાવેલ છે? હા
11. Employability/Entrepreneurship/Skill Development પર કેન્દ્રિત થયેલ છે કે નહીં? હા
12. Value added Courses Imparting Transferable and Life Skills ના ગુણો ધરાવે છે? હા
13. Major ☒ Minor ☐ Skill Enhancement Courses ☐
 Ability Enhancement Courses ☐ Value Added Courses ☐ Exit/ Vocational Courses ☐
14. Holistic Education ☐ Multidisciplinary ☐ Interdisciplinary ☐
15. દેવ્યાગ માટે વિષય અંતર્ગત આનુસંગિક જાગવાઈ કરાયેલ છે? ના
16. New India Literacy Programme (NILP) મુજબના વિષય છે? હા
17. Swayam પ્લટફોર્મ પરના MOOC વિષય પર આધારિત આ વિષય છે? ના
18. ઇન્ડિયન નાલજ સિસ્ટમ (IKS) પર આધારિત વિષય છે? ના

B. Sc (HOME SCIENCE)					
YEAR	III	FOOD SERVICE PAPER NO. 3 MAJOR CORE COURSE CC16		CREDIT	04 (03+01)
SEMESTER	V			HOURS/ WK	05 (03+02)
Total Marks: 100		Internal: 30	Theory: 25	Practical :20	
OBJECTIVES		1. To develop skills in menu planning 2. To understand the basics of table setting 3. To understand different styles of food service 4. To understand and practice serving and clearing techniques			
LEARNING OUTCOMES		Students will acquire knowledge regarding menu planning, table setting, different styles of food service and serving and clearing techniques-all will lay a foundation for making career in hotel industries.			
COURSE CONTENT: THEORY					
UNIT – I		Setting the table			
		• Basic principles involved in Indian meal service • Basic principle involved Western meal service • Placing linen, Placing decoration, Placing glassware, Placing flatware ,Placing Dinnerware, Placing accessories, Placing serving dishes of food, laying beverage service, Setting the serving table			
UNIT – II		Styles of meal service			
		Indian service- North Indian cuisines, South Indian cuisines East Indian cuisines , Northeast Indian cuisines			

	• Veg and non veg meal service • Western meal services - Mediterranean region, Northern European region, eastern European region, North American region, South American region. • Formal, informal setting , buffet • Benefits and challenges of Indian and western meal service
UNIT – III A	Etiquette at the table
	• The approach to the table, the use of napkin, the use of the tools for eating; managing glasses, goblets and cups; finger foods; miscellaneous modes and manners
UNIT – III B	Menu planning
	• Definition ,types of menu • Factors affecting menu planning
UNIT I V	Serving meals with and without waiting on the table
	• Waiting on the table- removing the main course, when the dessert is served • Serving without waiting -setting the side table, using the side table
UNIT – V	Modern trends/adaptation and holistic well being through meal service
	• Adopting traditional Indian diet to modern lifestyle • Food service according to the tridosha principles • Technology in meal service (Automated dining, online orders, cloud kitchens) • Sustainability and eco friendly meal service practices (zero waste meals, eco friendly tableware).
Practical	
1	Basic table setting
2	Setting up and serving by Indian meal service (region wise)
3	Formal and informal table setting, buffet
4	Serving and clearing practices
5	Menu planning (western meal service A-la-cart, Indian meal service table d'ho)
6	Preparing Western cuisines(Italian, American, French, Chinese)
REFERENCES	
1	Peckham GC "Foundation of Food Preparation" The Mc Millan Co. 1969.
2	Edith and Weiss H "Catering Handbook" D.R. Tarapore Wala Sons and Co. Pvt. Ltd. 1998.
3	Faye K, "Meal management" The MacMillan Company, 1962.
4	Entrepreneurship and Food Service Management – MFN 007, IGNOU
5	Andrews S "Food and Beverage Service" Tata McGraw Hill Publishing Co. Ltd., New Delhi.
6	Shethi M and Malhan S "Catering Management" Wilsby Eastern Ltd., New Delhi.

B. Sc (HOME SCIENCE)				
YEAR	I	ADVANCE PHYSIOLOGY MINOR COURSE MC 6 PAPER NO. 4	CREDIT	04(03+01)
SEMESTER	5		HOURS/ WK	05(03+02)
Total Marks: 100		Internal: 25	Theory: 50	Practical: 25

1. Outcomes દરક વિષયની શરૂઆતમા દર્શાવલ છે? હા
2. Employability/Entrepreneurship/Skill Development પર કાબર થયેલ છે ક ના? હા
3. Value added Courses Imparting Transferable and Life Skills ના ગુણ ધરાવે છે? હા
4. Ma ☐ MinorS ☒ Enhancement Courses ☐
5. Ability Enhancement Cour ☐ Value Added Courses Exit/ Vocational Co ☐ es
6. Holistic Educa ☐ Multidisciplinary I ☐ disciplinary ☐
7. દેવ્યાગ માટ વિષય અતગત આગુસાગક જોગવાઈ કરાયેલ છે ? ના
8. New India Literacy Programme (NILP) મુજબના વિષય છે? હા
9. Swayam પ્લટફોર્મ પરના MOOC વિષય પર આચારત આ વિષય છે? ના
10. ઇન્કાયનનાલજસાસ્ટમ (IKS) પર આચારત વિષય છે? ના

B. Sc (HOME SCIENCE)					
YEAR	I	ADVANCE PHYSIOLOGY MINOR COURSE MC 6 PAPER NO. 4		CREDIT	04(03+01)
SEMESTER	5			HOURS/ WK	05(03+02)
Total Marks: 100		Internal: 25	Theory: 50	Practical: 25	
OBJECTIVES		The course will enable students to 1. Advance their understanding of scope of the relevant issues and topics of human physiology. 2. Enable the students to understand the integrated function of all systems and the grounding of nutritional science in physiology. 3. Understand alterations of structure and function in various organs and systems in disease conditions.			
LEARNING OUTCOMES		1 Students will be able to do basic hematological testing 2 Students will be able to do basic urine analysis 3 Students will be aware about modern diagnostic technique			
COURSE CONTENT: THEORY					
UNIT - I		Homeostasis			
		• Concept of Homeostasis • Role of Body system in maintaining Homeostasis			
UNIT - II		Body temperature, Temperature Regulation			
		• Normal Body Temperature • Heat Production& Heat loss • Regulation of Body Temperature			
UNIT - III		Cardio- Respiratory Physiology			
		• Transport of Oxygen and Carbon Dioxide			

UNIT - IV	• Transmission of nerve impulse in nerve fibers & synapse
	Metabolism
	• Glycolysis and Kreb's Cycle • β Oxidation
UNIT - V	• Protein Synthesis and Urea Cycle
	Reproductive Physiology
	• Physiology of Pregnancy and lactation • Spermatogenesis and oogenesis • Pregnancy- development of fertilized ovum up to placental stages – Different stages of development of fetus. • Structure of breast- lactation & secretion of milk • Parturition –different stages of labour
PRACTICALS	
1	Blood indices Hb RBC WBC DC
2	Measurement of Blood pressure by using sphygmomanometer.
3	Abnormal Urine Analysis Protein, glucose, bile pigments, ketone bodies
4	Case study of Iron deficiency Anemia, investigations and diagnosis.
5	Preparation of a project on Antenatal Care for women
6	Preparation of a project on various contraceptive devices and understanding their basic mechanism of action.
REFERENCES	
1	Ganong WF (2003). <i>Review of Medical Physiology</i> , 21st ed. McGraw Hill.
2	J.E. Park and K. Park (2009). <i>Park's Textbook of Preventive and Social Medicine</i> , 20 th edition. M/s Banarsi Das Bhanot, Jabalpur.
3	Ross and Wilson(1973). <i>Foundation of Anatomy and Physiology</i> , Medical Division of Longman Group Ltd.
4	Yash Pal Bedi (1980). <i>A Handbook of Social and Preventive Medicine</i> , Atma Ram and Sons.

YEAR	III	B SC (HOME SCIENCE)		
SEMESTER	VI	POST HARVEST TECHNOLOGY ABILITY ENHANCEMENT COURSE		CREDIT 02 (02+00)
Total Marks: 50		AEC – 5 PAPER NO. 5		HOURS/ WK 02 (02+00)
		Internal: 25	Theory: 25	Practical: ---

1. Course Outcomes દરક વિષયની શરૂઆતમા દર્શાવલ છે? હા
2. Employability/Entrepreneurship/Skill Development પર કબજા થયેલ છે ક નાહ? હા
3. Value added Courses Imparting Transferable and Life Skills ના ગુણા 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 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. ઇન્ડિયનનાલજસાસ્ટ્ર (IKS) પર આચારત વિષય છે? ના

B. Sc (HOME SCIENCE)					
YEAR	III	POST HARVEST TECHNOLOGY ABILITY ENHANCEMENT COURSE AEC – 5 PAPER NO. 5		CREDIT	02 (02+00)
SEMESTER	VI			HOURS/ WK	02 (02+00)
Total Marks: 50		Internal: 25	Theory: 25	Practical: —	
OBJECTIVES		To enable students to: 1. Understanding and applying maturity indices for different crops. 2. Analyzing physiological changes during storage 3. Practicing post -harvest handling techniques to reduce losses.. 4. Learning different Packaging and storage methods.			
LEARNING OUTCOMES		1 Explain the importance and challenges of post harvest technology 2 Apply appropriate harvest, handling and storage systems. 3 Assess post-harvest losses and develop strategies to minimize them.			
COURSE CONTENT: THEORY					
UNIT - I		Introduction to post harvest technology			
		• Importance and scope • Post-harvest losses and their causes • Principal of post -Harvest management			
UNIT - II		Physiological and Biochemical changes after Harvest			
		• Ripening and senescence • Respiration and ethylene production • Factors affecting post harvest life			

UNIT - III	Harvesting and Handling of Produce and storage systems
	• Maturity indices and harvesting techniques • Handling, sorting grading and packaging • Modified atmosphere packaging
REFERENCES	
1	Chakraverty, A. Mujumdar, A.S. & Raghvan, G.S.V.(2016). Handbook of Post -harvest Technology: Cereals, fruits, Vegetables, Tea and spices.CRC Press.
2	Kader, A.A. (2002).Postharvest Te of Technology of Horticultural crops. University of California, agriculture and natural resources.
3	Thompson, J. F. (2019) Post harvest technology of Fruits and vegetables: Principals and Practices. Blackwell publishing.

YEAR	III	INTERNSHIP		CREDIT	04
SEMESTER	VI			HOURS/ WK	08
Total Marks: 100		Internal: 50	External :50		
OBJECTIVES		1.			
COURSE CONTENT					
1	The internee would work in any one setting such as a) Multispecialty hospital b) ICDS centres c) Pathological laboratory d) NRC and CMTC e) Food Industries f) Hotel or restaurant g) Food and Drug laboratories				
2	Report writing and Presentation would be done at the end of the training period.				
3	Evaluation would be carried out for the same				