

VANITA VISHRAM WOMEN'S UNIVERSITY
SCHOOL OF SCIENCE AND TECHNOLOGY



BACHELOR OF SCIENCE (B.Sc.) HONOURS
FOOD AND NUTRITION PROGRAMME
under Learning Outcomes-based Curriculum Framework (LOCF)
for UnderGraduate (UG) Education

**Core Courses (CC), Ability Enhancement Compulsory Courses (AECC),
Generic Elective Courses (GE)**

*Course Structure is applicable to the students seeking admission in the following
programmes*

B.Sc. Food and Nutrition under LOCF
w.e.f. the Academic Year 2022-2023

Preamble – VVWU

Vanita Vishram Women's University (VVWU) is the First-ever Women's University of Gujarat approved by the Government of Gujarat under the provisions of the Gujarat Private Universities Act, 2009. It is a University committed to achieve Women's Empowerment through Quality Education, Skill Development, and by providing employment opportunities to its girl students through its model curriculum, integration of technology in pedagogy and best-in-class infrastructure. The focus is on prioritizing practical component and experiential learning supported through academia-industry linkages, functional MoUs, skill development training, internships etc. It aims at providing opportunities to the girl students for holistic development and self-reliance.

VISION

Empowerment of women through quality education and skill development, so as to make them strong pillars of stability in the society.

MISSION

To provide Education & Professional Training to all women for their all-round development, so as to enable them to become economically independent and socially empowered citizens.

2. Introduction of the Programme

It is a three-year undergraduate course offered after completion of 10+2 schooling. The course aims to provide broad and balanced knowledge in Food and Nutrition in addition to understanding of key chemical concepts, principles and theories. It will provide knowledge and skill to the students' thus enabling them to undertake further studies in Food and Nutrition, in related areas or multidisciplinary areas that can be helpful for self-employment / entrepreneurship. The course is designed to provide intellectual and laboratory skills according to the UGC module for CHOICE BASED CREDIT SYSTEM (CBCS) pertaining to B.Sc. Food and Nutrition (Honours).

3. Programme Specific Objectives (PSOs)

- To provide knowledge of Food and Nutrition with board and balanced aspects
- Development of laboratory analysis skills.
- To develop critical thinking approaches for problem solving.
- To provide skill base training to hold out in the current competitive environment.
- Multidisciplinary approach for overall development.

4. Programme Specific Outcomes (PSOs)

- Identifying Food and Nutrition related problems, analysis and application of data using appropriate methodologies.
- Finding opportunity to apply subject-related skills for acquiring jobs and self-employment.
- Understanding new frontiers of knowledge in Food and Nutrition for professional development.
- Applying subject knowledge for solving societal problems related to application of Food and Nutrition in day to day life.
- Applying subject knowledge for sustainable environment friendly green initiatives.

4. Structure of the Programme

B.Sc. FOOD AND NUTRITION HONOURS STRUCTURE AND DISTRIBUTION OF COURSES						
Semester	CC Total Credits	DSE Total Credits	GE Total Credits	SEC Total Credits	AECC Total Credits	Total Credits
1	18	-	2	-	4	24
2	18	-	2	-	4	24
3	18	2	-	4	-	24
4	18	2	-	4	-	24
5	18	6	-	-	-	24
6	12	6				24
7	6					22
8	6					22
Total						188

B.Sc. Food and Nutrition Programme

Semester	Subjects	Core Course	Credits	TOTAL
SEMESTER-1	Nutrition Science	Fundamentals of Food and Health (Th)-2 Principles of Macronutrients (Th)-2 Applied Science (Pr)- 2	6	24
	Clinical Dietetics	Basic Dietetics (Th)-2 Human Physiology -I (Th)- 2 Food Laboratory (Pr)- 2	6	
	Food Science	Food Hazards & Prevention (Th)-2 Essential of Food Science (Th)-2 Basic Food Chemistry (Pr)- 2	6	
	AECC	English Communication-I Environmental Studies-I	2 2	
	Elective	Food Safety & Hygiene	2	
SEMESTER-2	Nutrition Science	Lifecycle Nutrition (Th)-2 Principle of Micronutrients (Th)-2 Family Meal Management (Pr)- 2	6	24
	Clinical Dietetics	Nutrition in Physical Fitness (Th)-2 Human Physiology -II (Th)-2 Assessment of Nutritional Status (Pr)- 2	6	
	Food Science	Advance Food Science (Th)-2 Food Adulteration and Legislation (Th)-2 Food Preservation and Processing (Pr)- 2	6	
	AECC	English Communication-II Environmental Studies-II	2 2	
	Elective	Elective (From other Discipline)	2	
SEMESTER-3	Nutrition Science	Nutrition Policies and Programs (Th) -2 Nutrition in Special Condition (Th)-2 Food and Nutrition Security (Th)- 2	9	

		Analytical Instrumentation (Pr)- 3		
	Clinical Dietetics	Paediatric Nutrition (Th) -2 Community Nutrition (Th) - 2 Diet in Metabolic Disorders (Th)- 2 Diet for Vulnerable groups (Pr)- 3	9	24
	SEC	Basics of Computer Applications-(Th) -2 Global Cuisines- (Th) -2	4	
	Department Elective	Growth and Development (Th) -2 (Certificate Course (30 Hrs)*/ In House or Outside Training (30 Hrs)/ Student Exchange Program)	2	
SEMESTER-4	Nutrition Science	Sensory Evaluation (Th)-2 Food Entrepreneurship (Th)-2 Food Microbiology (Th)-2 Food Analysis (Pr)-3	9	24
	Clinical Dietetics	Diet in GI disorders (Th) - 2 Geriatric Nutrition (Th) - 2 Parenteral and Enteral Nutrition (Th)- 2 Nutrition in Critical Care (Pr)- 3	9	
	SEC	Food Engineering (Th) -2 Ayurveda and Nutrition (Th) - 2	4	
	Department Elective	Food Anthropology (Th) -2 Professional Applications in Food Science and Nutrition- Department Elective-2 (Certificate Course (30 Hrs)*/ In House or Outside Training (30 Hrs)/ Student Exchange Program)	2	
SEMESTER-5	Nutrition Science	Nutritional Biochemistry-I (Th) - 2 Food Packaging and Labelling (Th) - 2 Food Commodities- I (Th) - 2 Food Service Management (Th) - 2 Functional Food and Nutraceuticals (Th) - 2 Nutrition Education and Counseling (Th) - 2 Food Product Development (Pr) - 6	18	24
	Department Elective	Nutrition Updates (Th)-2 Food Technology (Th)-2 Bakery and Confectionery (Pr)-2	6	

SEMESTER-6	Nutrition Science	Nutritional Biochemistry-II (Th) - 2 Avenues in Food and Nutrition (Th)-2 Food and Mood (Th)-2 Nutrition Behaviour and Lifestyle Management (Th)-2 Internship and Report Writing (Pr)-4	12	24
	Department Elective	Nutrition Softwares and Screening tools (Th)-2 Food Fortification (Th)-2 Nutrition Transformation (Pr)-2	6	
		Project Work/ Training (90 Hrs)/ Internship (2 Weeks)	6	
SEMESTER-7	Nutrition Science	Human Health, Nutrition and Environment-Core Course-XXI (Credit-4) Ancient Nutrition- Core Course Lab-7 (Credit=2)	6	22
	Research Specific Elective	Research Methodology (Th) -2 Research Area Specific Elective-I (Credit-2)	4	
	Research Component	Dissertation (Credit-9) Seminar (Credit-1) Research Article Writing (Credit-2)**	12	
SEMESTER-8	Nutrition Science	Nutritional Epidemiology (Credit-4) Nutrition Communication- Core Course Lab-8 (Credit-2)	6	22
	Research Specific Elective	Data Analysis Course (Credit-2) Research Area Specific Elective-II (Credit-2)	4	
	Research Component	Dissertation (Credit-9) Seminar (Credit-1) Research Paper Presentation in Seminar or Conference (Credit-2)	12	
			Total	188

Note:

1. Course structures are to be passed year by year with necessary changes from the respective board of studies.
2. Students will have an exit option at the end of the Semester-6 and she will be awarded with the regular B.Sc Degree (Non-Honours).
3. Course structure of Semester-7 & 8 will require rigorous analysis before implementation in terms of academic requirements, finance and implementation challenges.
4. Subjects suggested above are examples of how subjects can be offered.
5. *Certificate Course may be in Online/Offline or in blended mode.
6. **Research Article Writing comprises articles submitted to the supervisor. Suggestive
7. Notes for the implementation of NEP 2020:
 - a. ● As per Government guidelines, yet we can implement NCC/NSS/ Saptdhara/ Physical Training as 2 Credit component in each semester and incorporate it in the Course Curriculum
 - b. ● Students with CGPA > 7.5 at the end of Semester-6 will only become eligible to go for B.Sc (Honours) Program (Research Track) in Semester-7. Rest of the students will be awarded traditional B.Sc Degree at the end of Semester-6

BACHELOR IN FOOD AND NUTRITION
SEMESTER II
CORE COURSE

FN11100 - Life Cycle Nutrition (Th)	
Course Objectives	
This course will enable students	
<ul style="list-style-type: none"> ● To study special nutritional needs, physiology and health concerns during different stages of life cycle. ● To explain, compare and contrast the nutritional requirements of humans. ● To study the relationship of nutrition to physical and psychological growth , development and aging. 	
Course Outcome:	
At the end of the course, the students will be able to understand the role of food and nutrients in health and aging processes and they will be able to prepare and deliver effective presentations of technical information to food science and nutrition professionals and to the general public.	
FN11100-THEORY COURSE CONTENTS (2 Credits)	
S.No	STRUCTURE
Unit 1	Infancy: <ul style="list-style-type: none"> ● Nutrient requirement during infancy, feeding of infants, value of breastfeeding on infants, breastfeeding versus artificial feeding, types of milk and their use in infant feeding. Nutritional disorders and common ailments in infancy, feeding the sick child, immunization schedule and growth charts ● First thousand days of Nutrition
Unit 2	Adolescence: <ul style="list-style-type: none"> ● Physical and physiological changes, nutritional requirements, food preferences and nutritional problems, growth spurt and nutrition, adolescent fads influencing nutrition
Unit 3	Pregnancy: <ul style="list-style-type: none"> ● Physiological changes in pregnancy, weight gain during pregnancy, food and nutrient requirements. Complications of pregnancy and their nutritional management
Unit 4	Lactation: Milk synthesis and secretion, maternal needs during lactation, composition of colostrums and mature human milk. Non-nutritional factors of human milk; immunological factors, enzymes, hormones. Human milk banking
Unit 5	Elderly: <ul style="list-style-type: none"> ● Physical and physiological changes, nutritional requirements, problems of old age, nutrients influencing aging process
References	
<ol style="list-style-type: none"> 1. Dietetics, B Srilakshmi, 8th edition, 2019. 2. Textbook Of Nutrition And Dietetics, Kumud Khanna, Ranjana Mahna & Seema Puri, Sharda Gupta, Santosh Jain Passi, Rama Seth, 2016. 3. Community Nutrition Maternal & Child Nutrition, Minakshi Tripathi, Dr. Payal Jain, Prism Books (India, 2022). 	

Teaching Methodology

- Powerpoint presentations
- Videos
- Chalk and talk method
- Guest Lectures
- Group discussions
- Quiz and Debate

BACHELOR IN FOOD AND NUTRITION
SEMESTER II
CORE COURSE

FN11110- Principle of Micronutrients(Th)	
<p>Course Objectives This course will enable students to</p> <ol style="list-style-type: none"> 1. To understand the fundamentals of the science of nutrition. 2. To understand the underlying biological, chemical, & regulatory mechanism. 3. To understand contemporary issues in the context of current scientific knowledge. 4. To understand the interrelationship between micro-nutrients. 5. To understand the latest developments in Human Nutrition. 	
<p>Course Outcome: This course will help to get in-depth knowledge about various micronutrients, their functions, sources, deficiency, and the effect of excess.</p>	
FN11110- THEORY COURSE CONTENTS(5 CREDIT)	
S.No.	STRUCTURE
Unit 1	<p>Fat-Soluble vitamins- A, D, E, K Structure, sources, absorption, transport, utilization, storage, excretion, functions, RDA, deficiency, toxicity, assessment of status.</p>
Unit 2	<p>Water-Soluble Vitamins- B Complex and C Structure, sources, absorption, transport, utilization, storage, excretion, functions, RDA, deficiency, toxicity, assessment of the status</p>
Unit 3	<p>Macro Minerals: (Calcium, Phosphorus, Magnesium, Chloride, Potassium, Sodium and Sulfur) Structure, sources, absorption, transport, utilization, storage, excretion, functions, bioavailability, requirements and RDA, deficiency, toxicity, assessment of the status</p>
Unit 4	<p>Micro Minerals : (Iron, Zinc, Copper, Iodine, Fluoride, Chromium, Cobalt, Selenium, Manganese, and Molybdenum) Structure, sources, absorption, transport, utilization, storage, excretion, functions, bioavailability, requirements and RDA, deficiency, toxicity, assessment of the status Iron Deficiency Anaemia- Introduction, Government Programme and Scheme to cure this disease.</p>
<p>References</p> <ol style="list-style-type: none"> 1. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd. 2. Garrow, J.S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics, 10th Edition, Churchill Livingstone. 3. Shubhangini A Joshi. (2015). Nutrition and Dietetics:with Indian Case Studies. 4th Edition, McGraw Hill Education. 	

4. Sumati R. Mudambi· (2007). Fundamentals of Foods, Nutrition and Diet Therapy, New Age International (P) Limited.

Teaching Methodology

- Chalk and talk method
- PowerPoint presentations
- Videos
- Posters
- Quiz and Debates

BACHELOR IN FOOD AND NUTRITION
SEMESTER II
CORE COURSE

FN11120- Family Meal Management (Pr)	
Course Objectives This course will enable students	
<ul style="list-style-type: none"> ● To reinforce specific nutrition related to practices and behaviors ● To provide detailed knowledge of the nutritional foundations ● To explain, compare and contrast the nutritional requirements of humans during different stages of life cycle. 	
Course Outcome:	
At the end of the course, the students will be able to understand the role of food and nutrients in health and aging processes and they will be able to prepare and deliver effective presentations of technical information to food science and nutrition professionals and to the general public.	
FN11120-THEORY COURSE CONTENTS (2 Credits)	
S.No	STRUCTURE
Unit 1	<ul style="list-style-type: none"> ● Planning , preparation and nutritional evaluation of diets in relation to activity levels and physiological state. ● Planning and preparation of traditional recipes and its nutritional evaluation.
Unit 2	Planning and preparation of a balanced diet for a pregnant woman.
Unit 3	Planning and preparation of a balanced diet for a lactating woman.
Unit 4	Preparation of weaning foods. Planning and preparation of a balanced diet for a preschool child.
Unit 5	Planning and preparation of a balanced diet for adolescence.
Unit 6	Planning and preparation of a balanced diet for the old age group.
References	
<ul style="list-style-type: none"> ● Dietetics, B Srilakshmi, 8th edition, 2019. ● Indian Food Composition Tables, NIN(ICMR), T.Longvah, R.Ananthan, K. Bhaskarachary, 2017. ● Textbook Of Nutrition And Dietetics, Kumud Khanna,Ranjana Mahna & Seema Puri, Sharda Gupta, Santosh Jain Passi, Rama Seth, 2016. 	
Teaching Methodology	
<ul style="list-style-type: none"> ● Powerpoint presentations ● Videos ● Chalk and talk method ● Guest Lectures ● Group discussions ● Quiz and Debate 	

**BACHELOR IN FOOD AND NUTRITION
SEMESTER II
CORE COURSE**

FN11130- Nutrition in Physical Fitness (Th)	
Course Objectives This course will enable students	
<ul style="list-style-type: none"> ● To understand various aspects of health and fitness. ● To adopt a holistic approach towards health management and disease prevention. ● To develop the ability to provide guidance on healthy diet, exercise & lifestyle modifications in relation to physical fitness. 	
Course Outcome: At the end of the course, the students will be able to understand the role of food and nutrients in health and physical fitness and they will be able to prepare and deliver effective presentations of technical information to athletes, professionals and to the general public.	
FN11130-THEORY COURSE CONTENTS (2 Credits)	
S.No	STRUCTURE
Unit 1	Introduction to Health & Fitness <ul style="list-style-type: none"> ● Definition ● Signs of Good Health ● Physical and non-physical aspects
Unit 2	Different aspects of fitness <ul style="list-style-type: none"> ● Evaluation of fitness ● Body composition ● Exercise practices & injuries ● Stress management ● Yoga
Unit 3	Nutrition, Exercise and Immunity <ul style="list-style-type: none"> ● Types of immunity ● Role of nutrients in immunity ● Stress management ● Hygienic practices during workouts
Unit 4	Uses and misconceptions and side effects of <ul style="list-style-type: none"> ● Ergogenic Aids ● Functional Foods & Phytochemicals ● Nutritional Supplements ● Sports drinks ● Meal Replacers ● Fat Burners ● Appetite Suppressants

References

- Wilmore, J.H., Buskirk, E.R. Digirolamo, M., & Lohman, T.G. (1986). Body composition: A round table. *The Physician and sports medicine* 14(3), 144-162
- Dietary management in health & fitness. SMT.P.N. Doshi women's college, Mumbai.

Teaching Methodology

- Powerpoint presentations
- Videos
- Chalk and talk method
- Guest Lectures
- Group discussions
- Quiz and Debate

BACHELOR IN FOOD AND NUTRITION
SEMESTER II
CORE COURSE

FN11140- Human Physiology- II (Th)	
Course Objectives	
This course will enable students:	
<ul style="list-style-type: none"> ● To give students in-depth instruction about the organization, structures and functions of the human body. ● Students will learn the terminology, anatomy and physiology, and pathology of each body system and how they interrelate to maintain homeostasis. ● To ensure that students understand how the body works. 	
Course Outcome: This course will help the students to have an enhanced knowledge and the functions of important physiological systems including the cardio-respiratory, renal, reproductive and excretory etc. and they will be able to recognise and identify principal tissue structures.	
FN11140-THEORY COURSE CONTENTS (2 CREDIT)	
S.No	STRUCTURE
Unit 1	Reproductive system: <ul style="list-style-type: none"> ● Male and female reproductive organs. ● Menstrual cycle.
Unit 2	Excretory system: <ul style="list-style-type: none"> ● Excretory organs - structure of kidney and functions, formation of urine, composition of urine. Muscles - physiology of muscular action.
Unit 3	Nervous system: <ul style="list-style-type: none"> ● Physiology of the nerve cell, parts of the central nervous system and function.
Unit 4	Musculoskeletal System: <ul style="list-style-type: none"> ● Formation and functions of muscles, bones. Mechanism of muscle contraction, isometric and isotonic muscle contraction.
References	
<ol style="list-style-type: none"> 1. Guyton and Hall Textbook of Medical Physiology, 13th edition,2010. 2. Sathya Narayana, Essentials of Biochemistry (2000). 3. Saratha Subramanian, Text of Human Physiology(2000). 	
Teaching Methodology	
<ul style="list-style-type: none"> ● Powerpoint presentations ● Videos ● Chalk and talk method ● Guest Lectures ● Group discussions ● Quiz and Debate 	

BACHELOR IN FOOD AND NUTRITION
SEMESTER II
CORE COURSE

FN11150- Assessment of Nutritional Status (Pr)	
Course Objectives This course will enable students: <ul style="list-style-type: none"> This course will enable students to use, apply and interpret various methods for assessment of nutritional status, assessment of dietary/nutrient intakes, physical activity and energy expenditure. 	
Course Outcome: At the end of the course, students will be able to assess the overall status of nutrition and health of all by using the various techniques of its measurement.	
FN11150 - PRACTICAL COURSE CONTENTS (2 CREDIT)	
S.No	STRUCTURE
Unit 1	Anthropometric Measurement of infant - Length, weight, circumference of chest, mid-upper arm circumference, precautions to be taken.
Unit 2	Comparison with norms and interpretation of the nutritional assessment data and its significance. Weight for age, height for age, weight for height, body Mass Index (BMI) Waist - Hip Ratio (WHR). Skin fold thickness.
Unit 3	Growth charts - plotting of growth charts, growth monitoring and promotion
Unit 4	Clinical assessment and signs of nutrient deficiencies specially PEM (Kwashiorkor, marasmus) vitamin A deficiencies, Iron deficiency Anaemia, Rickets, B-Complex deficiencies.
Unit 5	Estimation of food and nutrient intake: Household food consumption data, adult consumption unit, 24 hours dietary recall 24 hours record, Weighment method, food diaries, food frequency data, use of each of the above, information available through each individual, collection of data, estimation of intakes.
References <ul style="list-style-type: none"> Textbook of Human Nutrition second edition, Mahtab S. Bamji, N. Pralhad Rao Community Nutrition Maternal & Child Nutrition, Minakshi Tripathi, Dr. Payal Jain, Prism Books (India, 2022) 	
Teaching Methodology <ul style="list-style-type: none"> Powerpoint presentations Videos Chalk and talk method Guest Lectures Group discussions Quiz and Debate 	

BACHELOR IN FOOD AND NUTRITION
SEMESTER II
CORE COURSE

FN11160- Advance Food Science (Th)	
Course Objectives This course will enable students:	
<ul style="list-style-type: none"> ● To study food science involves the chemical and physical changes taking place when processed /cooked/ storage/preservation. ● To understand the concept of retention of nutritive value. 	
Course Outcome: this course will enable the students to understand sources and functions of different nutrients, diseases related to their deficiencies, their transport, digestion and metabolism.	
FN11160-THEORY COURSE CONTENTS (2 CREDIT)	
S.No	STRUCTURE
Unit 1	<p>Food processing and its effect on the nutritive value of food:</p> <ul style="list-style-type: none"> ● Keeping quality of food, spoilage agents, food and microorganisms. ● Canning ● Freezing ● Dehydration ● Radiation <p>Awareness on the concept of Kitchen Gardening- Nutrigarden</p>
Unit 2	<p>Food proteins:</p> <ul style="list-style-type: none"> ● Type, structure and classification of amino acids and protein, chemical and physical properties of protein, determination of protein in food, meat protein, soy protein and microbial protein.
Unit 3	<p>Food carbohydrates:</p> <ul style="list-style-type: none"> ● Classification, chemistry, structure of cellulose and hemicellulose, crude fibre, browning reaction, sweeteners and sweetness, natural vegetable gums.
Unit 4	<p>Food fats:</p> <ul style="list-style-type: none"> ● Chemistry, properties, processing of fat, commercial fats and oils, rancidity, antioxidants.
Unit 5	<p>Food enzymes:</p> <ul style="list-style-type: none"> ● Distribution of enzymes in food materials, factors affecting enzymatic activity, use of enzymes in food processing, enzymatic browning.
References	
<ul style="list-style-type: none"> ● Fundamentals of Foods, Nutrition and Diet Therapy, By Sumati R. Mudambi, 2007. ● Food Science by B Srilakshmi, 7th Edition, 2018. 	
Teaching Methodology	
<ul style="list-style-type: none"> ● Powerpoint presentations ● Videos ● Chalk and talk method ● Guest Lectures ● Group discussion 	

BACHELOR IN FOOD AND NUTRITION
SEMESTER II
CORE COURSE

FN11170- Food Adulteration and Legislation (Th)	
Course Objectives This course will enable students:	
<ul style="list-style-type: none"> ● To introduce students to food safety and standardization act and quality control of foods. ● To educate about common food adulterants and their detection. ● To impart knowledge in the legislative aspects of adulteration. ● To educate about standards and composition of foods and the role of consumers. 	
Course Outcome: This course will enable the students to get basic knowledge on various foods and adulteration. understand the adulteration of common foods and their adverse impact on health.	
FN11170 - PRACTICAL COURSE CONTENTS (2 CREDIT)	
S.No	STRUCTURE
Unit 1	Common Foods and Adulteration <ul style="list-style-type: none"> ● Common Foods subjected to Adulteration-Adulteration-Definition –Types; Poisonous substances, Foreign matter, cheap substitutes, Spoiled parts. Adulteration through Food Additives –Intentional and incidental. General Impact on Human Health.
Unit 2	Adulteration of Common Foods and Methods of Detection <ul style="list-style-type: none"> ● Means of Adulteration Methods of Detection Adulterants in the following Foods; Milk, Oil, Grain, Sugar, Spices and Condiments, Processed Food, Fruits and Vegetables. Additives and Sweetening agents (at least three methods of detection for each food item).
Unit 3	Food additives <ul style="list-style-type: none"> ● Classification, nature and characteristics and use of additives in food such as antioxidants, chelating agents, coloring agents, curing agents, emulsions, flavors and flavor enhancers, flour improvers, humectants and anti caking agents, nutrient supplements, non-nutritive sweeteners, pH control agents, stabilizers and thickeners. Raising agents – types and their role in food processing., artificial colors Artificial flavors
Unit 4	Present Laws and Procedures on Adulteration <ul style="list-style-type: none"> ● Highlights of Food Safety and Standards Act 2006 (FSSA) –Food Safety and Standards Authority of India- Rules and Procedures of Local Authorities.Role of Voluntary Agencies Such As, Agmark, I.S.I. Quality control laboratories of Companies, Private testing laboratories, Quality control laboratories of Consumer co-operatives. Consumer Education, Consumer’s problems, rights and responsibilities, COPRA2019- Offenses and Penalties-Procedures to Complain –Compensation to Victims.
References	
<ul style="list-style-type: none"> ● A first course in Food Analysis – A.Y. Sathe, New Age International (P) Ltd., 1999. ● Food Safety, case studies – Ramesh. V. Bhat, NIN, 1992. 	
Teaching Methodology	
<ul style="list-style-type: none"> ● Powerpoint presentations ● Videos ● Chalk and talk method ● Guest Lecture 	

BACHELOR IN FOOD AND NUTRITION
SEMESTER II
CORE COURSE

FN11180- Food Preservation and Processing (Pr)	
Course Objectives This course will enable students:	
<ul style="list-style-type: none"> ● Apply basic nutrition knowledge in making foods choices and obtaining an adequate diet ● Learn to distinguish and relate the characteristics and properties of foods ● Apply the knowledge gained on characteristics and properties of foods during cooking ● Develop appropriate food preparation and processing methods to ensure quality standards 	
Course Outcome: This course will enable the students to understand the practical importance of processing and preservation in the food industry.	
FN11180 - PRACTICAL COURSE CONTENTS (2 CREDIT)	
S.No	STRUCTURE
Unit 1	Introduction to food preservation practical <ul style="list-style-type: none"> ● Aseptic handling in laboratory ● Principles and methods of food preservation. ● Causes of spoilage of food and favourable conditions for its causes.
Unit 2	Masala and Chutneys <ul style="list-style-type: none"> ● Plain masala, Garam masala, Sambhar masala, Pav bhaji masala, Chaat masala, Panipuri masala, Tea masala, Milk masala ● Dal-coconut chutneys, Coconut chutneys
Unit 3	Sugar preserves <ul style="list-style-type: none"> ● Jam, jellies and murrabas
Unit 4	Sauces and ketchups <ul style="list-style-type: none"> ● Tomato sauce, red & green chilli sauce, tamarind sauce
Unit 5	Syrups and squashes <ul style="list-style-type: none"> ● Synthetic syrups with artificial food colors and flavours ● Natural squash with extracts
Unit 6	Dehydrated foods <ul style="list-style-type: none"> ● Potato wafers ● Sago papdi
References <ul style="list-style-type: none"> ● Manay NS, Shadaksharaswamy M. Foods - Facts and principles, New Age International Publ.,New Delhi, 2010 ● Hughes and Benniion M. Introductory Foods, Macmillan and Co, New York, 1980 ● Dowell P, Bailey A. The Book of ingredients, Dorling Kindersley Ltd., London, 1980 ● Roseville LJ, Viera ER. Elementary food science, 3rd Ed., Chapman and Hall, New York, 1992 	
Teaching Methodology <ul style="list-style-type: none"> ● Powerpoint presentations ● Videos ● Chalk and talk method ● Group discussions 	