



ST.PHILOMENA'S COLLEGE (AUTONOMOUS), MYSURU

(AFFILIATED TO UNIVERSITY OF MYSORE)

REACCREDITED BY NAAC WITH A GRADE

UNDER GRADUATE COURSE – SEMESTER SCHEME

CBCS SYLLABUS

Academic year 2018-19 onwards

DEPARTMENT OF FOOD SCIENCE AND NUTRITION

ST. PHILOMENA'S COLLEGE (AUTONOMOUS), MYSURU-570 015

Subject: FOOD SCIENCE AND NUTRITION

Syllabus for B.Sc., under CBCS Scheme.

The Scheme of Teaching & Examination

FROM THE ACADEMIC YEAR -2018 ONWARDS

Semester	Title of the Paper	TYPE	Subject Code	Teaching Hours per Week Theory/ Practical	Credits Theory/ Practical	Exam Duration in Hours Theory/ Practical	Max. Marks Theory/Practical		
							Theory/Practical	I A Theory/Practical	Total Marks
I	Paper-I Title : Human Physiology-I	DSC		03	03	03	50	20	100
	Practical Paper-I	DSC		03	1.5	03	20	10	
II	Paper-II Title : Human Physiology-II	DSC		03	03	03	50	20	100
	Practical Paper-II	DSC		03	1.5	03	20	10	
III	Paper-III Title : Principles of Nutrition-I	DSC		03	03	03	50	20	100
	Practical Paper-III	DSC		03	1.5	03	20	10	
IV	Paper-IV Title : Principles of Nutrition-II	DSC		03	03	03	50	20	100
	Practical Paper-IV	DSC		03	1.5	03	20	10	
V	Paper-V Title : Food Science	DSC		03	03	03	70	30	100
	Practical Paper-V	DSC		03	03	03	70	30	
	Paper-VI Title : Life Span Nutrition	DSC		02	01	03	35	15	100
	Practical Paper-VI	DSC		02	01	03	35	15	
VI	Paper-VII Title: Food Processing and Preservation	DSC		03	03	03	70	30	100
	Practical Paper-VII	DSC		03	03	03	70	30	
	Paper-VIII Title : Diet Therapy	DSC		02	01	03	35	15	
	Practical Paper-VIII	DSC		02	01	03	35	15	
		DSE 1		02	02	03	30	20	150
		DSE 2		02	02	03	30	20	
					38	-	760	340	1100

Discipline Specific Elective (DSE or Soft Core (SC))

Sl No	Title of the Paper	Type	Subject Code	Examination Scheme
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			Semester		Theory	Exam Duration in Hours	Theory Max. Marks	I A Max Marks	Total Marks
1.	Immunology And Genetics	DSE	II Or		3	03	30	20	50
2.	Advances in Nutrition	DSE			3	03	30	20	50
3.	Public Health Nutrition	DSE	III		3	03	30	20	50
4.	Food Safety and Quality Control	DSE			3	03	30	20	50
5.	Nutrition Education	DSE	V Or		3	03	30	20	50
6.	Nutrition Counselling	DSE			3	03	30	20	50
7.	Entrepreneurship	DSE	VI		3	03	30	20	50

Note: DSC or HC- Discipline Specific Core (DSC) or Hard Core (HC) & DSE or SC- Discipline Specific Elective (DSE or /Soft Core (SC)

FIRST SEMESTER

FOOD SCIENCE AND NUTRITION PAPER-I

Title: HUMAN PHYSIOLOGY - I

Class duration – 03 hours per week. 16 weeks = 48hrs

Marks: Theory - 50 + Internal Assessment - 20= 70

48 Hours

SUBJECT DESCRIPTION: The course will introduce the discipline and profession of food science and nutrition through an overview of food composition, nutritional constituents, commodities, food quality and deterioration, food preservation, product development, nutrition during life time and nutrition for disease conditions.

GOAL: To enable the students to learn the basic concept of Food science and Nutrition.

OBJECTIVE: On successful completion of the course the students should have the basic Food Science and Nutrition and their application in various fields.

Unit- 1 Introduction to human body 6 hrs

- 1.1 Definition of Anatomy and Physiology, Body fluids, Cell, Tissues of the body.

Unit - 2 Skeletal system 6 hrs

- 2.1 Functions, Types of bones, Growth of long bone.

Unit – 3 Blood and Circulatory system 10 hrs

- 3.1 Blood –composition, RBC, WBC, platelets – Structure,formation and function, coagulation of blood, blood groups and Rh factor,
3.2 Heart – structure and function, circulation of blood and blood pressure
3.3 Principle blood vessels

Unit - 4 Digestive System

- 4.1 Teeth and mastication
4.2 Structure and functions of salivary glands, Pharynx, oesophagus, stomach, small and large intestine
4.3 Duodenum, Liver and gall bladder, pancreas
4.4 Process of digestion and absorption.

Unit - 5 Respiratory system 6 hrs

- 5.1 Respiratory passages
5.2 Physiology of respiration – rate and control

Unit – 6 Organs of special senses 6 hrs

- 6.1 Tongue, nose, Ear, Eye and Skin – Structure and function

PRACTICAL-I

1. Introduction to microscope
2. Identification of tissue slides – skeletal, digestive system, heart, lungs
3. Bleeding and clotting time (both methods)
4. Blood groups and Rh factor
5. Estimation of Haemoglobin (Sahli's Method)

6. Enumeration of RBC, WBC, Differential count of WBC

SECOND SEMESTER
FOOD SCIENCE AND NUTRITION PAPER-I
Title: HUMAN PHYSIOLOGY - II
Class duration – 03 hours per week
Marks: Theory - 50 + Internal Assessment - 20= 70

48 Hours

Unit- 1 Endocrine system	14 hrs
1.1 Structure and functions – Hypo and hyper secretory effect of pituitary thyroid, parathyroid, and the adrenal gland.	
1.2 Islets of Langerhans,.	
Unit - 2 Excretory system	12 hrs
2.1 Structure of kidney and its functions	
2.2 Structure of Nephron and its function – (formation of urine)	
2.3 Composition of urine.	
2.4 Regulation of water and acid – base balance.	
Unit – 3 Nervous system	10hrs
3.1 Nerve cells, nerve fiber – types, structure	
3.2 Brain and spinal cord – structure and function.	
3.3 Types of nervous system (in brief)	
Unit - 4 Reproductive system	10 hrs
4.1 Male and female organs of reproduction structure and function, puberty, Menarche, Reproduction (conception, fertilization) and menopause.	
4.2 Mammary glands – structure and physiology of milk production.	
Unit - 5 Human genetics	2 hrs
5.1 Inheritance and variations	

PRACTICAL-II

1. Identification of tissues – endocrine, excretory, nervous, reproductive system.
2. Determination of ESR – demonstration
3. Determination of body temperature
4. Determination of blood pressure (under various positions) – demonstration
5. Urine analysis – microscopic observation, pH, glucose and albumin
6. Visit to anatomy and physiology units in medical college.(If Permitted)

THIRD SEMESTER
FOOD SCIENCE AND NUTRITION PAPER-III

Title: PRINCIPLES OF NUTRITION - I
Class duration – 03 hours per week
Marks: Theory - 50 + Internal Assessment - 20= 70

48 Hours

Unit- 1 Introduction to Nutrition	2 hrs
Unit - 2 Composition of the body	8 hrs
2.1 Chemical composition, body compartments- lean body mass, fat mass, water.	
2.2 Methods of studying body composition	
Unit – 3 Energy	8 hrs
3.1 Forms of energy, food as a source of energy, units of measurements.	
3.2 Determination of energy content in foods (Bomb calorimeter), physiological fuel values (at water factors), energy expenditure at rest (BMR/RMR)- methods of determination of BMR.	
3.3 Factors effecting energy expenditure for physical work, energy cost of physical activities, post- prandial thermogenesis.	
Unit - 4 Macronutrients	2 hrs
4.1 Introduction, classification and composition	
4.2 Carbohydrates	10 hrs
4.2.1 Classification (available, non-available), dietary sources and functions	
4.2.2 Digestion, absorption, transport and utilization and excretion.	
4.2.3 Glycemic response and glycemic index of foods	
4.2.4 Dietary fiber- types, properties, sources and its role	
4.3 Lipids	8 hrs
4.3.1 Classification, sources, composition, functions	
4.3.2 Distribution- visible and invisible,	
4.3.3 Digestion, absorption, transport, utilization, storage & excretion.	
4.3.4 Essential fatty acids – sources, function and effect of deficiency.	
4.3.5 Cholesterol- sources, functions and implications.	
4.4 Proteins	10 hrs
4.4.1 Classification, essential and non-essential amino acids,	
4.4.2 Sources – animal vegetable proteins for growth, maintenance and energy	
4.4.3 Digestion, absorption, transport, utilization and excretion.	
4.4.4 Methods of determining protein quality- PER/growth study, NPU, BV, NDP cals, chemical score (PDCCA).	
4.4.5 Protein energy malnutrition	

PRACTICAL-III

- Food groups : calculation of mean energy, carbohydrates, protein, fat and fiber content of foods using ICMR tables. Preparation of a table for all the food groups and identification of their contributions to Indian diet.
- Standardization of house hold measures and hand measures – dry and liquid

measures.

- 3 Identification and preparation of energy and protein rich recipes and method of supplementing energy/protein/carbohydrate/fat to menu items.

FOURTH SEMESTER
FOOD SCIENCE AND NUTRITION PAPER-IV
Title: PRINCIPLES OF NUTRITION - II
Class duration – 03 hours per week
Marks: Theory - 50 + Internal Assessment - 20= 70

48 Hours

Unit - 1 Water	4 hrs
1.1 Functions, requirements, sources	
Unit – 2 Micronutrients	19 hrs
2.1 Minerals	
2.1.1 Classification, functions, sources, dietary requirements	
2.1.2 Biological availability, body stores, effects of deficiency, toxicity	
2.1.3 Calcium, phosphorus, iron, copper, iodine, fluoride, zinc, chromium, magnesium.	
2.2 Vitamins	19 hrs
2.2.1 History, classification, sources functions, dietary requirement, effects of deficiency and toxicity.	
2.2.2 Fat soluble vitamins – A,D,E,K.	
4.2.2 Water soluble vitamins - Thiamine, riboflavin, niacin, folic acid vitamin B ₁₂ and ascorbic acid.	
Unit – 3 Recommended dietary allowances for Indians (ICMR)	6 hrs
3.1 Brief knowledge of derivation, uses, applications and limitations.	
3.2 Food groups and their uses.	

PRACTICAL-IV

1. Identification of rich sources of vitamin – A, calcium, iron and ascorbic acid. Preparation of nutrient dense recipes and calculation
2. Determination of edible portions of vegetables and fruit as purchased from the market calculate percent edible portion and nutrient content (emphasize rich sources).
3. Determination of cooked weights of selected food preparations (in relation to raw weights of major ingredients and portion size).

FIFTH SEMESTER
FOOD SCIENCE AND NUTRITION PAPER-V
Title: FOOD SCIENCE
Class duration – 03 hours per week
Marks: Theory - 50 + Internal Assessment - 20= 70

48 Hours

Unit- 1.1 Cereal, Millets and products	8 hrs
1.1.1 Structure and composition of rice and wheat grains	
1.1.2 Starch, nature and effect of cooking	
1.1.3 Dough development and use in various preparations.	
Unit – 1.2 Legumes and oilseeds	8 hrs
1.2.1 Structure of bean legume	
1.2.2 Composition of legumes	
1.2.3 Factors affecting the cooking quality of pulses	
1.2.4 Oilseed meal and their uses.	
Unit – 2 Vegetables and fruits	6 hrs
2.1 Classification of fruits and vegetables	
2.2 Effects of cooking on colour, texture and acceptability.	
2.3 Browning reaction and its prevention.	
Unit – 3.1 Milk and Milk Products	6 hrs
3.1.1 Composition of milk	
3.1.2 Factors affecting the quality	
3.1.3 Use of milk and its products.	
Unit- 3.2 Eggs	6 hrs
3.2.1 Structure, composition and grading for quality	
3.2.2 Factors affecting the quality	
3.2.3 Effect of cooking on egg quality	
3.2.4 Use of eggs in Indian preparation	
Unit- 3.3 Meat, poultry and fish	6 hrs
3.3.1 Structure of muscle and meat quality, Post – mortem changes	
3.3.2 Factors to be considered in selection and preparation of meat, poultry and fish.	
Unit- 4 Fats and oils	6 hrs
4.1 Physico – chemical properties of fats and oils	
4.2 Functions of fat in food	
4.3 Importance of smoking point and its application	
4.4 Rancidity in fats substitutes/ specialty fats	
Unit- 5 Sugar and confectionary	2 hrs
5.1 Crystallization of sugar and its application in food preparations.	

PRACTICAL -V

1. Cereals
 - a. Microscopic examination of starch molecules
 - b. Gelation of cereal flours (compare the time taken for gel formation)

- c. Observation of cooking time and quality of aged and parboiled rice.
- 2. Pulses – Effect of soaking, sprouting, addition of acid and alkali on cooking Quality. (Any one or two pulses like green gram, Bengal gram, Cowpea etc.,)
- 3. Vegetables and fruits
 - a. Effect of adding acid and alkali on Green, Red, Yellow and White vegetables.
 - b. Methods of preventing browning
- 4. Milk and milk products factors affecting curding of milk (Demonstration)
Separation of cream and preparation of pannier and khoa (Demonstration)
- 5. Eggs
 - a. Demonstration of grading eggs for quality
 - b. Ferrous sulphide formation and prevention
 - c. Effect of beating egg white on stiffness of foam and its uses (custard and omelet)
- 6. Sugar cookery – determination of stages of crystallization and its uses
- 7. Oils – smoking points of oils.
- 8. Visit to milk processing unit – Submission of report

FIFTH SEMESTER
FOOD SCIENCE AND NUTRITION PAPER-VI
Title: LIFE SPAN NUTRITION
Class duration – 03 hours per week
Marks: Theory - 50 + Internal Assessment - 20= 70

48 Hours

Unit- 1 Food habits of family and community	4 hrs
1.1 factors affecting food habits and consumption pattern of different age group in India – Pregnant women, lactating mother and children.	
1.2 Methods of assessing nutritional status.	
1.2.1 Indirect methods – Demography, Vital statistics, Mortality and morbidity patterns, Literacy rate, unemployment rate, Socio –economic profile.	
1.2.2 Direct methods – Anthropometry, Clinical assessments, Biochemical estimations, Diet survey. (Reference standards)	
Unit- 2 Nutrition during pregnancy & lactation	
2.1 Pregnancy- physiological stages of pregnancy complications of pregnancy, nutritional requirements, food selection.	
2.2 Lactation – Physiology of lactation, nutritional requirements	
Unit – 3 Nutrition during infancy & early child hood	hrs
3.1 Infancy-Growth and development, nutritional requirements, breast feeding, Infant formula, weaning and supplementary foods.	
3.2 Early child hood – (Toddler/Preschool) growth and nutrient requirements feeding patterns.	
Unit – 4 Nutrition during school years & adolescence	hrs
4.1 School children – Nutritional requirements	
4.2 Importance of snacks, school lunch,	
4.3 Nutritional problem in the school age child	
4.4 Adolescence – growth and nutrient needs, food choices, eating habits factors influencing.	
Unit- 5 Nutrition of adults & elderly	hrs
5.1 Adult hood – food and nutrient requirements. Nutrition related problems.	
5.2 Elderly – Factors affecting food and nutrient use, Nutrient needs Nutrition Related problems.	
Unit- 6 Prevalence of nutrition problems & intervention programmers.	hrs
6.1 Prevalence of nutritional problems in India with special reference to Pre-school children and women, Energy protein Malnutrition, Nutritional Anemia, Deficiency of Vitamin A, Iodine, Fluorine and other vitamin and mineral deficiencies.	
6.2 Nutrition intervention programmes – Supplementary feeding, School lunch, Anemia and vitamin A prophylaxis, Goiter control programmes, Integrated child development services, Nutrition and health education, Food supplementation, Fortification & en- richment (brief)	

PRACTICAL - 6

1. Nutritional anthropometry
 - a. Taking measurements of heights, weights and mid arm circumference of individual students in the class and comparing them with norms.
 - b. Taking the above measurements on pre-school children of a nursery school and comparing with NCHS standards, interpretation of data.
2. Planning, calculation and evaluation of normal diets for adults (men and women) pregnant women, lactating women, elderly, preschool, school adolescent (boy & girl) family.
3. Planning, preparation & evaluation of different types of weaning foods and comparing with commercial weaning foods in terms of nutritive value and cost
4. Visit to Anganwadi & other community centers to observe their activities. – Submission of report.

SIXTH SEMESTER
FOOD SCIENCE AND NUTRITION PAPER-VII
Title: FOOD PROCESSING AND PRESERVATION
Class duration – 03 hours per week
Marks: Theory - 50 + Internal Assessment - 20= 70

48 Hours

Unit- 1 Importance of Food Processing & preservation	6 hrs
1.1 Types and its uses of processing	
1.2 Principles of preservation	
1.3 Manipulative techniques involving physical and chemical changes in foods	
Unit- 2 Food Spoilage	8 hrs
2.1 Causes of food spoilage	
2.2 General characteristics of Micro organisms & their importance in foods	
2.3 Factors affecting their growth and destruction	
Unit – 3 Contamination of Foods	10 hrs
3.1 Sources and types	
3.2 Cereal and cereal products, Sugar and sugar products, vegetable and fruits, Meat and meat products, fish and other sea foods, Canned foods.	
Unit – 4 Food preservation	12 hrs
4.1 Traditional and modern methods.	
4.2 Preservation at different temperature -	
4.2.1 Food preservation by heat – pasteurization & canning.	

- 4.2.2 Food preservation using low temperature – freezing and refrigeration
- 4.3 Preservation by dehydration
- 4.4 Preservation using chemicals
- 4.5 Irradiation

Unit- 5 Food additives

4 hrs

Unit 6 Food adulteration

4 hrs

- 6.1 Classification & detection methods of Food adulterants

Unit 7 Sensory Evaluation of Foods

4 hrs

- 7.1 Subjective and objective methods of evaluating food acceptability

PRACTICAL -VII

1. Manipulative techniques of food processing – methods of cooking, germination, Fermentation and malting
2. Study of micro organisms
 - a. Preparation of Bacterial smear and simple staining techniques
 - b. Microscopic of observation of yeast & molds
3. Sensory methods of evaluating Food Quality – Recognition, Threshold & other simple tests
4. Preparation of jam or jelly, fruit concentrate, chutneys, pickles, ketchup, dehydrated Products with demonstration on packaging (standards to be emphasized)
5. Identification of adulterants in common foods
6. Visit to food industry - Collection of information from media. Submission of Report.

SIXTH SEMESTER

FOOD SCIENCE AND NUTRITION PAPER-VIII

Title: DIET THERAPY

Class duration – 03 hours per week

Marks: Theory - 50 + Internal Assessment - 20= 70

48 Hours

Unit- 1 Objectives of diet therapy		6 hrs
1.1	Definition of dietetics and clinical nutrition.	
1.2	Role of dietitian in hospital and community importance and mode dietary counseling.	

Unit- 2 Methods of assessing the nutritional status of patients		
2.1	Planning, nutritional care for hospitalized patients	
Unit – 3 Planning of Hospital diets-		12 hrs
3.1	Rationale for modifications of nutrients (protein, calorie, sodium, fat and fiber) and texture - soft and fluid diets, nutrition in surgical conditions and burns,	
3.2	Special feeding methods – enteral and parenteral feeding, Correction/ maintenance of fluid Balance	
Unit – 4 Dietary management of nutritional disorders		10 hrs
4.1	PEM, Vitamin A deficiency,	
4.2	Anemia and other related disorders – underweight and over weight.	
Unit- 5 Dietary management in disorders of organ systems		16 hrs
5.1	Peptic ulcer, colon disease, constipation and diarrhea	
5.2	Liver and gall bladder - hepatitis, cirrhosis	
5.3	Cardiovascular – Myocardial infarction, stroke, atherosclerosis, hypertension and Heart failure	
5.4	Renal – Nephrotic syndrome, acute / chronic renal failure	
5.5	Diabetes Mellitus	
5.6	Cancer	
Unit- 6 Organization and management of Food service in a hospital and community feeding centers.		4 hrs
PRACTICAL -IX		
1.	Assessing the nutritional status of individual in health / sickness using Anthropometry and Diet history [dietary recall, food frequency as components]	
2.	Conversion of cooked weights to raw weights, calculation of mean nutritive value-energy, carbohydrate, fat, protein for the food groups and exceptional value (to be used for the diet recall)	
3.	Planning diets for the hospital dietary	
4.	Regular diet and its modification – convalescent, liquid, energy, protein, fat and sodium	
5.	ORT preparation	
6.	Visit to hospital dietary unit	
7.	Collection of information from media and report submission.	

LIST OF REFERENCES

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11. Logree.k. Quantity Food Sanitation, Interscience Publishers, New York, 1967
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13. Frazier W C Food Microbiology, Mcgraw Hill Book Company, 1999.
14. Chatterji Text Book of Human Physiology volume 1 and volume 2
15. Lillian Hoagland Megar „Food Chemistry”
16. Jay J.H. “Modern Food Microbiology” CBS Pub New Delhi.
17. ISI Publications.
18. Prevention of Food adulteration Act 1985, FASSI.
19. Ranganna Handbook of analysis and quality control for fruit and vegetable product.

DISCIPLINE SPECIFIC ELECTIVES (DSE)

FOOD SCIENCE AND NUTRITION DSE(For 2nd, 3rd&4th Semesters)

Title:- IMMUNOLOGY AND GENETICS

CLASS DURATION – 03 HOURS PER WEEK

MARKS-Theory - 30 + Internal Assessment -20= 50

Unit 1:Immune System	12hrs
1.1 Introduction to the Immune System Cells and Organs of the Immune system	
1.2 Innate immune responses Cells of the innate immune system, Inflammatory response	
1.3 Antigen capture and presentation to lymphocytes. Antigen recognition in the adaptive immune system	
1.4 Cell mediated Immune responses. Effector mechanisms of Cell mediated Immune responses	
1.5 Humoral immune responses. Effector mechanisms of Humoral Immune responses	
Unit 2:Immunization	7hrs
2.1 Immunisation, vaccines, immunisation schedule	
2.2 Congenital and acquired Immuno-deficiencies	
Unit 3: Genetics	7hrs
3.1 Introduction to Genetics – Concept of Genes, Chromosome, DNA structure;	
3.2 Gene principles; Linkage and Crossing over	
3.3 Gene Mutations; Chromosome abbreviations (Numerical and Structural variation)	
3.4 Sources of variation; Sex-linked genes, genetic imprinting, polygenic inheritance.	
Unit 4: Genetic disorders	6hrs

- 4.1 Chromosomal and Gene-linked Syndrome – Down’s syndrome, Klinefelter’s syndrome, Fragile X syndrome, Turner syndrome, XYY syndrome.

References

1. Immunology. Roitt, L., Brostoff, J. and Male, D. Grower Medical Publishing, London. 1990.
2. Immunology –Instant notes. Lydyard, P.M., Wheldan, A., and Fanger, M.W. Viva Books Pvt. Ltd., New Delhi, 2000.
3. An Introduction to Immunology. C.V.Rao. Narosa Publishing House, New Delhi. 2002,
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5. Microbiology. Prescott, Lansing M, Harely, John P, Klein, Donald A.Oxford, W M.C. Brown publishers, 1993.
6. Microbiology. Sharma, P.D. Meerut, Rastogi Publications, 1991.
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FOOD SCIENCE AND NUTRITION DSE (For 2nd, 3rd & 4th Semesters)

Title:- ADVANCES IN NUTRITION

CLASS DURATION – 03 HOURS PER WEEK

MARKS-Theory - 30 + Internal Assessment -20= 50

Unit 1: Nutraceuticals		?????
1.1	Introduction & definition	
1.2	use of nutraceuticals in health sciences	
1.3	Their role in preventing and controlling diseases.	
Unit 2: Prebiotics and probiotics		?????
2.1	Usefulness of probiotics and prebiotics in gastro intestinal health and other benefits	
2.2	Beneficiary microbes; prebiotics ingredients in foods- types of prebiotics and their effects on gut microbes.	
Unit 3: Nutrition for special conditions		????
3.1	Nutrition and work performance including exercise and sports.	
3.2	Nutrition for space, mines and under water	
3.3	Nutrition during disaster and emergency.	
Unit 4: Nutrition and drug interactions		?????
4.1	Effect of food on drug absorption, ,	
4.2	Effect of drug on digestion	
4.3	Absorption, storage and excretion of food/nutrients	
4.4	Recent concepts in human nutrition- Nutrigenomics, metabolomics.	

	References:	
	<ol style="list-style-type: none"> 1. Gropper, Advanced Nutrition and Human Metabolism. 7th edition. 2017. 2. Ross, Modern Nutrition in Health and Disease. 11th edition. 2012. 3. Srilakshmi.B. Dietetics , New age international Pvt. Ltd. New Dehli, 2007. 4. David L Katz. Nutrition in Clinical Practice: A Comprehensive, avid Evidence-Based Manual for the Practitioner (Nutrition in Clinical Practice), 2nd Edition 5. Carolyn D. Berdanier, Johanna T. Dwyer, Elaine B. Feldman. Handbook of Nutrition and Food, Second Edition 	

FOOD SCIENCE AND NUTRITION DSE (For 2nd, 3rd&4th Semesters)

Title:- PUBLIC HEALTH NUTRITION

CLASS DURATION – 03 HOURS PER WEEK

MARKS-Theory - 30 + Internal Assessment -20= 50

Unit 1: Common Infections and Food Borne Disease		?????
1.1	Infection through gastrointestinal tract	
1.2	Infection through respiratory tract	
1.3	Infection through skin and mucous membranes & anthropod	
1.4	Food borne illnesses	
Unit 2: Environmental Sanitation and Food Safety		?????
2.1	Environmental hazards and food chain	
2.2	Control of hazards associated with different foods	
2.3	food safety control programmes	
Unit 3: Primary health care		????
3.1	Concept of health	
3.2	common health problems in India	
3.3	evolution of health care delivery systems	
3.4	national health policy and national health programmes	
Unit 4: Demography and Population Statistics		?????
4.1	Health Statistics	
4.2	Nutritional Epidemiology	
4.3	Demographic and Socio-Economic Transitions	
4.4	Nutrition and Health Transitions	

References:

1. <http://dx.doi.org/10.1136/jech.2004.028985>
2. Popkin BM. Global nutrition dynamics: the world is shifting rapidly toward a diet linked with noncommunicable diseases. *Am J Clin Nutr.* 2006; 84:28998.
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6. Emily Grundy, Demography and public health, 2011
7. Bruce F. Eldridge, Thomas W. Scott, Jonathan F. Day, Walter J. Tabachnick Arbovirus Diseases, Medical epidemiology, Kluwer Academic Publishers, 2004.
8. Adetokunbo O. Lucas, Herbert Michael Gilles, Arthropod-Borne Infections, Short Textbook of Public Health Medicine for the Tropics, 4th edition, CRC press, 2002.
9. M.W. Service (ed.), The Encyclopedia of Arthropod-transmitted Infections of Man and Domesticated Animals.2001, 579 pp. CABI Publishing, Wallingford,
10. William Marquardt (ed.), Biology of Disease Vectors, 2nd Edition, Academic Press, 2004
11. Beaton GH, Bengoa JM, Nutrition in Preventive Medicine. The Major Deficiency Syndrome, Epidemiology and Approaches to Control, World Health Organization, 2008.
12. <https://books.google.com> › Science › Life Sciences › Microbiology
13. S Roday, Food Hygiene and Sanitation, Tata McGraw-Hill Education, 01-Nov-1998
14. British Columbia's foodservice and hospitality industry, Food Safety, Sanitation, and Personal Hygiene 2012
15. Rai Bahadur Jaising P. Modi, Elements of Hygiene and Public Health (Second Edition), Copyright © 1920 Elsevier Ltd

FOOD SCIENCE AND NUTRITION DSE (For 5th & 6th Semesters)

Title:- FOOD SAFETY AND QUALITY CONTROL

CLASS DURATION – 03 HOURS PER WEEK

MARKS-Theory - 30 + Internal Assessment -20= 50

Unit 1: Concept of food safety and quality

?????

- 1.1 Meaning, objectives, quality dimensions of food
- 1.2 Assurance of food safety
- 1.3 International food regulatory systems
- 1.4 National food regulation
- 1.5 Food safety management tools
- 1.6 Food hazards

Unit 2: Food hygiene and sanitation

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- 2.1 General principles of food hygiene, ,

- 2.2 personal hygiene and food handling habits
- 2.3 sanitary aspects of water supply,
- 2.4 Cleaning agents and waste disposal.

Unit 3: Food packaging

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- 3.1 Principles and importance of packaging
- 3.2 food packaging materials and forms
- 3.3 food and nutritional labeling
- 3.4 packaging materials hygiene and safety

Unit 4: Food laws and standards

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- 4.1 Need for food laws
- 4.2 Indian food laws
- 4.3 integrated food law
- 4.4 International food laws.

References:

1. Mahindra SN (2000) Food Safety-A techno legal analysis. Tata McGraw New Publishing Company Limited, New Delhi.
2. Prevention of Food Adulteration Act, 1954 (1998). Law Publishers (India) Pvt Ltd New Delhi.
3. Heijden KVD., Younes M., Fishbein I and Miller S (1999). International Food Safety Handbook. Marcel Dekker, New York.
4. Omaye ST (2004) Food and Nutrition toxicology. CRSPress, New York.
5. <http://www.fssai.gov.in>

FOOD SCIENCE AND NUTRITION DSE (For 5th & 6th Semesters)

Title:- NUTRTION EDUCATION

CLASS DURATION – 03 HOURS PER WEEK

MARKS-Theory - 30 + Internal Assessment -20= 50

Unit 1: Nutrition education and challenges

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- 1.1 Definition, goals, objectives of nutrition education and challenges for nutrition educators
- 1.2 Theories of nutrition education
- 1.3 Need assessment for nutrition education
- 1.4 Planning, executing and evaluation of nutrition education programs

Unit 2: Approaches in Nutrition and Health Education

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- 2.1 Approaches - Meaning and Types
- 2.2 Traditional Approaches, Modern Approaches.

- 2.3 Health Education and Nutrition Education – Definition and Objectives

Unit 3: Health and nutrition education

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- 3.1 Themes and Messages in Health and nutrition education
3.2 Theme for Community Health- Communicable diseases and Infections
3.3 Non-communicable diseases
3.4 Maternal Health, Pregnancy Complications
3.5 Reproductive Health Problems
3.6 Child's Health

Unit 4: Methods of Communication in Nutrition and Health Education

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- 4.1 Communication – Meaning and Influencing factors
4.2 group communication –methods and advantages
4.3 mass Communication Methods
4.4 Teaching Aids.

References:

1. Varadarajan B and Mayilvaganan S (2012). Antyodaya anna yojana sheme is to ensure food security to the poorest of the poor. International journal of business economics and management research. 2(2): 178-182.
2. National food for work program. Guidelines. A report of government of India. Ministry of rural development. 2006.
3. Brahman GNV, Nair KM and Laxmaiah A. (2000). Community trials with iron and iodine fortificationsalt (double fortified salt) proceedings of 8th world salt symposium. 1:955-60
4. Begum R (1999). Nutrition education. Foods, Nutritionand Dietetics. Sterling publishers. New Delhi. P333-349.
5. Contento RI (2006). Nutrition education: linking research, theory and practice. Jones and Barlett publishers. Bosto

FOOD SCIENCE AND NUTRITION DSE (For 5th & 6th Semesters)

Title:- NUTRITION COUNSELLING

CLASS DURATION – 03 HOURS PER WEEK

MARKS-Theory - 30 + Internal Assessment -20= 50

Unit 1: Communication in nutrition counseling

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- 1.1 Definition and significance of communication
1.2 Communication skills
1.3 Organizational communication and training
1.4 Professional communication and team collaboration

Unit 2: Designing and counseling plans

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- 2.1 Assessment component
- 2.2 Data analysis
- 2.3 Writing goals and objectives
- 2.4 planning learning experience

Unit 3: Counseling approaches and counseling application

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- 3.1 Approaches to counseling
- 3.2 Counseling therapies
- 3.3 Models for learning
- 3.4 Evaluation of learning and self-management

Unit 4: Implementation and evaluation aspects of counseling

?????

- 4.1 Nutrition counseling for diabetes mellitus
- 4.2 Nutrition counseling for cardiac problems and hypertension
- 4.3 Nutrition counseling for obesity
- 4.4 Ending counseling sessions

References

1. Dick, L. (2013) Nutrition Counseling and Education Skill Development, Second Edition, Journal of Nutrition Education and Behavior, 45: 383-388.
2. Schiller, R.M., Miller, M., Moore, C., Davis, E., Dunn, A., Mulligan, K. & Zeller, P. (1998). Patients Report Positive Nutrition Counseling Outcomes. Journal of Academy of Nutrition and Dietetics, 98 (9): 977-982
3. Monk, A., Barry, B., McClain, K., Weaver, T., Cooper, N., Franz, M.J. Practice guidelines for medical nutrition therapy provided by dietitians for persons with non-insulin-dependent diabetes mellitus. J Am Diet Assoc. 1995 ;95:999–1006
4. Rhodes, K.S., Bookstein, L.C., Aaronson, L.S., Mercer, N.M., Orringer, C.E. Intensive nutrition counseling enhances outcomes of National Cholesterol Education Program dietary therapy. J Am Diet Assoc. 1996;96:1003–1010
5. Milkererr, J., Graves, J.S. Follow-up dietary counseling benefits attainment of intake goals for total fat, saturated fat, and fiber. J Am Diet Assoc. 1992;92:603–605.
6. Weese, N., Jones, J., Miller, M.A. Successful strategies for reimbursement of outpatient nutrition services. J Am Diet Assoc. 1993;93:458–459.
7. Walker, B.H., Beman, M.K.M., Tomazic, T.J., Sawicki, M.A., Sawicki, M.A. (2000).Provision of Nutrition Counseling, Referrals to Registered Dietitians, and Sources of Nutrition Information Among Practicing Chiropractors in the United States. Journal of Academy of Nutrition and Dietetics, 100 (8): 928-933.

FOOD SCIENCE AND NUTRITION DSE (For 5th & 6th Semesters)

Title:- ENTREPRENEURSHIP

CLASS DURATION – 03 HOURS PER WEEK

MARKS-Theory - 30 + Internal Assessment -20= 50

Unit 1: Introduction **8hrs**

- 1.1 Importance of entrepreneurship and its relevance in career growth
- 1.2 entrepreneurship and enterprise
- 1.3 Types of enterprise
- 1.4 Charms of being an entrepreneur
- 1.5 Creativity and innovation and Problem solving

Unit 2: Business Plan **7hrs**

- 2.1 Importance, Content, Preparing a business plan.
- 2.2 Business Communication – importance
- 2.3 Oral and written communication
- 2.4 Improvement exercises.

Unit 3: Accounting **????**

- 3.1 Books of accounts – Importance of accounting assessment
- 3.2 Different books
- 3.3 Accounting Stationery, Operating mechanism
- 3.4 Financial Statements - Importance and interpret action
- 3.5 Profit and loss account
- 3.6 Balance Sheet, Cash – flow and fund flow

Unit 4: Marketing Management **10hrs**

- 4.1 Marketing for small business
 - 4.1.1 Sales promotion – Strategies
 - 4.1.2 Tools and techniques
 - 4.1.3 Pricing policy
- 4.2 Export marketing
 - 4.2.1 Understanding international business environment,
 - 4.2.2 Do's and don'ts for exports
- 4.3 Legal implication

- 4.3.1 Income tax, Sales, excise, ,
- 4.3.2 Labour laws
- 4.3.3 factory act, etc
- 4.4 Supporting Entrepreneurship
- 4.4.1 IDBI, KSFC, KSSIDC
- 4.4.2 Small scale trades
- 4.4.3 Rozgar Yojana
- 4.4.4 Self-employment programme for woman.

References:

1. Small Scale Industries and Entrepreneurial Development by C.S.V. Murthy.
2. Entrepreneurship and Small Business Management by C.B. Gupta and Khanka.
3. Entrepreneurial Development by S.Anil Kumar, S.C.Poornima, M.K.Abraham and K. Jayashree
4. Small Business Management and entrepreneurship by Vasant Desai.
