

DEPARTMENT OF FOOD AND NUTRITION

B.Sc. NUTRITION & DIETETICS

(WITH EFFECT FROM ACADEMIC YEAR ²⁰²⁴ 2019-2020)

The following updated syllabus will be in force for all the semesters of B.Sc. Nutrition & Dietetics with effect from July 2024.

Kindly follow the syllabus for regular students of I to VI semesters.

Approved by Chairman,
Board of studies
Nutrition Department.

Jineyne
11/07/2024.

B.Sc. NUTRITION & DIETETICS

PROPOSED SCHEME FOR CHOICE BASED CREDIT SYSTEM IN

B.Sc. NUTRITION & DIETETICS

EFFECTIVE FROM 2020-21

FIRST YEAR - SEMESTER I				
Code	Course Title	Course Type	HPW	Credits
BS 101		AECC 1	2	2
BS 102		CC-1A	4	4
BS 103		CC-2A	4	4
BS 104	Introduction to Foods & Nutrition	DSC - 1A	4T+2P=6	4+1=5
BS 105		DSC - 2A	4T+2P=6	4+1=5
BS 106		DSC - 3A	4T+2P=6	4+1=5
	TOTAL			25
SEMESTER II				
BS 201		AECC 2	2	2
BS 202		CC-1B	4	4
BS 203		CC-2B	4	4
BS 204	Nutritional Biochemistry and Human Physiology	DSC - 1B	4T+2P=6	4+1=5
BS 205		DSC - 2B	4T+2P=6	4+1=5
BS 206		DSC - 3B	4T+2P=6	4+1=5
	TOTAL			25
SECOND YEAR- SEMESTER III				
BS 301	Food service management	SEC - 1	2	2
BS 302	Bakery Science	SEC - 2	2	2
BS 303		CC-1C	3	3
BS 304		CC-2C	3	3
BS 305	Normal and Therapeutic Nutrition	DSC- 1C	4T+2P=6	4+1=5
BS 306		DSC- 2C	4T+2P=6	4+1=5
BS 307		DSC- 3C	4T+2P=6	4+1=5
	TOTAL			25
SEMESTER IV				
BS 401	Diet counselling skills	SEC - 3	2	2
BS 402	Strategies for weight management	SEC - 4	2	2
BS 403		CC-1D	3	3
BS 404		CC-2D	3	3
BS 405	Diet in Disease	DSC- 1D	4T+2P=6	4+1=5
BS 406		DSC- 2D	4T+2P=6	4+1=5
BS 407		DSC- 3D	4T+2P=6	4+1=5
	TOTAL			25
THIRD YEAR- SEMESTER V				

BS 501	Nutrition, Health and Fitness	GE <i>Opted out</i>	4T	4
BS 502		CC-1E	3	3
BS 503		CC-2E	3	3
BS 504	A- Clinical Dietetics	DSE-1E	4T+2P=6	4+1=5
	B- Diet Therapy			
BS 505		DSE-2E	4T+2P=6	4+1=5
BS 506		DSE-3E	4T+2P=6	4+1=5
	TOTAL			25
SEMESTER VI				
BS 601		CC-1F	3	3
BS 602		CC-2F	3	3
BS 603	A-Public Health Nutrition	DSE-1F	4T+2P=6	4+1=5
	B-Community Nutrition			
BS 604		DSE-2F	4T+2P=6	4+1=5
BS 605		DSE-3F	4T+2P=6	4+1=5
BS 606	Project Work/ Optional		4	4
	TOTAL			25
	TOTAL CREDITS			150
Credits under Non-CGPA	NSS /NCC /sports / Extra curricular	6	Up to 6 (2 in each year)	

CC- Core Course

AECC- Ability Enhancement Compulsory Course

DSC- Discipline Specific Core

SEC- Skill Enhancement Course

DSE- Discipline Specific Elective

GE- Generic Elective

HPW - Hours per week

SUMMARY OF CREDITS FOR B. Sc. PROGRAM

S. No.	Course Category	No. of courses	Credits per course	Credits
1	AECC	2	2	4
2	SEC	4	2	8
3	CC	12	4 (year1) 3 (year 2) 3 (year 3)	40
4	DSC	12	5	60
5	DSE	6	5	30
6	GE	1	4	4
7	Project work			4
	TOTAL	37		150

B.Sc. NUTRITION & DIETETICS
OSMANIA UNIVERSITY
REVISED SYLLABUS (CBCS) WITH EFFECT FROM 2020-21

B. Sc. I YEAR SEMESTER I PAPER I

DSC - 1A

Code BS 104 INTRODUCTION TO FOODS AND NUTRITION (Theory)

CREDITS -4; 60 HOURS

Objective:

CREDITS - 4

- To familiarize students with various food groups, their nutritive value and effect of processing on nutritive value of foods

UNIT I: INTRODUCTION TO FOOD GROUPS, CEREALS & MILLETS & PURE CARBOHYDRATES **(15 HOURS)**

- Definition- Food, nutrition, nutrients; food groups based on functions, origin and nutritive value; Food guide pyramid, balanced diet
- Cereals and Millets - Composition, nutritive value and nutrient losses during processing; breakfast cereals
- Sugars - Types of sugars and stages of sugar cookery
- Jaggery - Manufacture and stages of jaggery cookery

UNIT II : PULSES & LEGUMES, NUTS & OIL SEEDS AND FATS & OILS

(15 HOURS)

- Pulses & Legumes - Composition, nutritive value, nutrient losses during processing, importance of germination and malting; anti nutritional factors
- Nuts & Oilseeds - Nutritive value, toxins and role in cookery
- Fats & Oils - Composition, nutritive value, properties- physical and chemical, functions of oils and fat in foods
- Rancidity of Oils- Types and prevention

UNIT III: VEGETABLES , FRUITS & FOOD PRESERVATION **(15 HOURS)**

- Vegetables - Classification, composition and nutritive value, changes during cooking, loss of nutrients during cooking, storage, factors affecting storage
- Fruits - Classification, composition, nutritive value, storage and ripening
- Enzymatic browning and its prevention
- Food preservation - principles, methods- dehydration, low temperature, high temperature and preservatives.

UNIT IV: ANIMAL FOODS AND FOOD ADULTERATION **(15 HOURS)**

- Milk- Composition, nutritive value, fermented and non fermented milk products
- Egg - Composition, nutritive value and quality ; poultry- Classification, composition and nutritive value

- Meat -Nutritive Value and changes during cooking; fish - classification, composition and nutritive value
- Food Adulteration- intentional and incidental

Books Recommended:

Text Books

- ❖ Srilakshmi B- Food Science, 5th Edition, New Age International Publishers, New Delhi - 110002, 2011.

Reference Books

- ❖ Shakuntala Manay N - Food Facts and Principles, New Age International Publishers, New Delhi - 110002, 2005.
- ❖ Norman Potter N -Food Science, CBS Publishers and Distributors, New Delhi - 110002, 2007.

BS104 DISCIPLINE SPECIFIC COURSE IA- (DSC IA)

Introduction to Foods and Nutrition (Practical)

CREDIT 1

I. Standardization, Preparation and Nutritive value calculation of the recipes based on the following food group and combination

1. Cereal, millet and malting of grains
2. Pulse, germination of grains
3. Cereal-pulse combination
4. Stages of sugar cookery, preparation with jiggery

II. Methods of Preservation of

5. Fruits- Squashes and jams
6. Vegetables by Pickling

III. 7. Determination of quality of an egg

IV. Detection of Adulterants

8. Water, urea and starch in milk
9. Hydrogenated fat in ghee and butter
10. Identification of food colours and textile colours

Reference Books:

- ❖ Srilakshmi B- Food Science, 5th Edition, New Age International Publishers, New Delhi - 110002, 2011.
- ❖ Longvah T. , Ananthan R. , Bhaskarachary K. and Venkaiah K. Indian Food Composition Table, National Institute of Nutrition, Tarnaka, 2017.

Code BS 204 NUTRITIONAL BIOCHEMISTRY AND HUMAN PHYSIOLOGY (Theory)**CREDITS -4; 60 HOURS****Objectives:**

- ❖ To enable students to understand the biochemistry and physiology of Human body

UNIT-I: MACRO NUTRIENTS**(15 HOURS)**

- Carbohydrates - Composition, classification, sources, functions, deficiency and excess, glycolysis, citric acid cycle, glycogenesis, glycogenolysis and gluconeogenesis
- Lipids - Composition, classification, sources and functions; deficiency and excess of fats; essential fatty acids, beta-oxidation and synthesis of fatty acids.
- Proteins- Composition, classification, sources, functions, deficiency and excess, basic steps in protein synthesis
- Amino acids- Classification - chemical and nutritional; deamination, transamination and urea cycle

UNIT II: MICRONUTRIENTS, WATER, ELECTROLYTES AND ENZYMES**(15 HOURS)**

- Vitamins- Classification, sources, functions and deficiency symptoms of fat soluble and water soluble vitamins
- Minerals-Classification, sources, functions and deficiency symptoms of macro and micro minerals
- Water - Functions, distribution, intake and elimination, water balance
Electrolytes - Concentrations in intracellular and extra cellular fluids and osmotic pressure; acid base balance
- Enzymes - Definition, classification (IUBMB), properties, mechanism of enzyme action

UNIT III: CELL, CIRCULATORY SYSTEM, NERVOUS SYSTEM AND ENDOCRINE SYSTEM**(15 HOURS)**

- Cell- Structure & functions
- Circulatory system- Parts & functions of heart, heart rate, cardiac cycle, cardiac output; blood pressure, Blood- Composition, coagulation and blood groups
- Nervous system - Classification and functions
- Hormones- Endocrine glands their secretion and functions

UNIT-1V: RESPIRATORY, DIGESTIVE AND EXCRETORY SYSTEM**(15 HOURS)**

- Respiratory system- Parts and functions, mechanism of respiration; oxygen and Carbon- di-oxide transport

CBCS

2019-2022

- Digestive system- Parts and functions of GI tract, digestive glands, digestion, absorption and transport
- Excretory system - Urinary system - parts and functions, structure of nephron, formation of urine
- Skin: functions and its role in regulation of body temperature

BOOKS RECOMMENDED

Text Books:

- Chatterjee C.C., Human Physiology, Vol. I & II, Medical Allied Agency, Calcutta (1987).
- AVSS Rama Rao - A Text Book of Bio Chemistry, 9th edition, UBS Publishers distribution Pvt. Ltd, 2002.

Reference Books:

- Swaminathan N - A Handbook of Food and Nutrition, 5th edition volume 1, Bangalore printing and publishing Co.Ltd, 1986.
- Mahtab S. Bamji, N Prahlad Rao, Vinodini Reddy -Text book of Human Nutrition, 2nd edition, Oxford and IBH publishing Co. Pvt. Ltd 2004.
- Swaminathan M, Advanced Textbook on Food and Nutrition, Vol. I, Bappco.

II -SEMESTER

BS 204 DISCIPLINE SPECIFIC COURSE IB- (DSC IB)

Nutritional Biochemistry and Human Physiology (Practical)

CREDIT 1

Objectives:

- ❖ To acquaint the students with analysis of various nutrients and components in blood and urine
1. Qualitative tests of carbohydrates
 2. Qualitative tests of amino acids and proteins
 3. Quantitative analysis of calcium by titrimetry
 4. Quantitative analysis of vitamin C 2,6 dichloro indophenol dye method
 5. Determination of rancidity parameters: acid value, peroxide value
 6. Estimation of hemoglobin
 7. Estimation of blood glucose
 8. Identification of blood group
 9. Estimation of urinary glucose
 10. Estimation of urinary albumin

REFERENCE BOOKS

- Raghuramulu, Madhavan nair, Kalyansundram, A manual of laboratory techniques, NIN. Hyderabad (2003).
- Sawhney SK, Randhir Singh, Introductory practical biochemistry, Nasora Publishers, New Delhi (2000).

BS 301 FOOD SERVICE MANAGEMENT

CREDITS- 2; 30HOURS

Objectives:

- ❖ To gain knowledge on requirements and management of various food service establishments and skills required to become an entrepreneur.

UNIT I: FOOD SERVICE INSTITUTIONS

(15LECTURES)

- Classification of food service institutions according to function: Profit oriented, service oriented and public health facility oriented.
- Types of menus- A la carte, table d'hôte, cyclic and combination; Types of food service - Self service, tray service and waiter-waitress service
- Planning a layout for food service institutions, Factors involved in selection of equipments.
- Methods of food purchasing; Food cost - components and behavior of cost, factors affecting cost

UNIT II: ENTREPRENEURSHIP

(15LECTURES)

- Entrepreneurship- Meaning, Importance, Functions, issues and problems faced by entrepreneurs
- Government policies and programs for Entrepreneurship development in food sector.
- Setting up of a small enterprise- Steps in setting up of a small enterprise, Phases of Entrepreneurial venture.
- SWOT Analysis and Market Survey - SWOT: Meaning and Concept. Market Survey- Meaning, Steps in conducting market survey

REFERENCE BOOKS:

- MohiniSethi, SurjeetMalhan, "Catering Management - An Integrated Approach" 2nd edition, New Age International Publishers.
- R.R.Chole, P.S. Kapse and P.R. Deshmukh, "Entrepreneurship Development and communication skills", Scientific Publishers, India.

B. Sc. II YEAR SEMESTER III
SKILL ENHANCEMENT COURSE (SEC) - 2

BS 302 BAKERY SCIENCE

CREDITS- 2; 30HOURS

Objectives:

- ❖ To equip the students with the knowledge on the techniques and skills in Baking

UNIT I: BASICS OF BAKING

- Introduction , Principles of Baking
- Basic ingredients of baking- Types of flour, Sugar, Nuts and Dry fruits, Shortenings, leavening agents, Emulsifiers and Antioxidants
- Steps involved in mixing ingredients- Kneading, stirring, whipping, creaming.
- Bakery Machinery and Equipment - Mixing equipment –Dry blenders, horizontal dough mixers, vertical planetary mixers, continous mixers ; Baking Equipment- Oven – Types (Chamber type, Drow plate oven, Reel oven, Tunnel oven), Slicing

UNIT II: BAKERY PRODUCTS

(15LECTURES)

- Preparation of bread - ingredients used; methods of dough preparation; steps in bread processing; evaluation of the baked bread; staling of bread; spoilage of bread.
- Preparation of Cookies: Preparation of cookies, ingredients used and types
- Preparation of cakes - types of cakes; ingredients used and Role of ingredients in cakes, methods of batter preparation; steps in cake making; evaluation of the baked products, possible causes of loss of quality in cakes,
- Preparation of pastry - types of pastries (short crust, puff/flaky and choux pastry); ingredients; dough development, principles of pastry making, faults and remedies

BOOKS RECOMMENDED:

- Dubey SC. Basic Baking-Science and Craft. Society of Indian Bakers, Delhi 2007
- Edward, W P, The Science of Bakery Products, RSC Publishing, 2007.
- Ajay Kr. Gupta, The complete technology book on bakery products by NIIR board , Delhi

B. Sc. II YEAR SEMESTER III PAPER III
DSC - 1C

Code BS 305 NORMAL AND THERAPEUTIC NUTRITION (THEORY)

CREDITS -4; 60 HOURS

Objectives:

- ❖ To understand the changes in human body composition during different stages of life.
- ❖ To study the influence of nutrition during the different stages of life cycle.

UNIT I: MEAL PLANNING

(15 LECTURES)

- RDA- factors affecting RDA, derivation; Principles of meal planning; Steps involved in planning a meal
- Adulthood - Nutritional Requirements for an Adult Man and Adult Woman
- Pregnancy - Physiological Changes, Increase in Nutritional Requirement Complications of Pregnancy
- Lactation - Role of hormones in milk production, Increase in Nutritional Requirement and Lactogogues

UNIT II: NUTRITION THROUGH LIFE CYCLE

(15 LECTURES)

- Infancy - Nutritional Requirement, Importance of Breastfeeding, Artificial Feeding (Comparison of various milks Vs Human Milk), Weaning and Supplementary Food
- Pre-Schoolers and School Going Child - Nutritional Requirement and School Lunch Programmes
- Adolescence - Nutritional Requirement, Eating Disorders
- Geriatrics - Nutritional Requirement, Physiological changes and Dietary Modification

UNIT III: INTRODUCTION TO THERAPEUTIC NUTRITION (15 LECTURES)

- Introduction to therapeutic nutrition, dietary supplements and adjuncts to diet therapy, therapeutic modifications of normal diets in terms of Nutrients, Consistency
- Special feeding methods- Enteral feeding and Parenteral feeding
- Fevers-Definition, Causes (Exogenous and Endogenous), Types - Typhoid Causative organism, Symptoms, Principles of the Diet, Dietary Modifications, Foods to Be included and Foods to Be Avoided
- Tuberculosis - Causative Organism, Symptoms, Principles of the Diet, Dietary Modifications, Foods to be Included and Foods to be avoided

UNITIV: DIET IN GENETIC DISORDERS AND FOOD ALLERGY (15LECTURES)

- Inborn Errors of Metabolism; Phenylketonuria - Definition, symptoms, Dietary management
- Galactosemia - Definition, symptoms, Dietary management
- Lactose Intolerance- Definition, symptoms, Dietary management
- Food Allergy-Definition, Classification, Clinical Signs and Symptoms, Food as Allergens.

Books Recommended:**Text Books:**

- ❖ Srilakshmi B - Dietetics, 5th edition, New Age International publishers, 2002.

Reference Books

- ❖ Antia F.P - Clinical Dietetics and Nutrition, Oxford University Press, New Delhi, 2003.
- ❖ Mahtab S. Bamji, N Prahlad Rao, Vinodini Reddy -Text book of Human Nutrition, 2nd edition, Oxford and IBH publishing Co. Pvt. Ltd, 2004.
- ❖ Swaminathan, M - Essentials of Food and Nutrition, Vol 2, Bangalore Printing and Publishers Co Ltd, Bangalore, 1985.

Code BS 305 NORMAL AND THERAPEUTIC NUTRITION (PRACTICALS)**CREDIT -1****Objectives:**

- ❖ To acquaint the students with planning, calculation and preparation of diets for

- 1. Standardization of Weights and Measures
- 2. Planning, Calculation and Preparation of Diet for
 - Adulthood- Male and Female
- 3. Planning, Calculation and Preparation of Diet for physiological conditions
 - Pregnancy
 - Lactation
- 4. Planning, Calculation and Preparation of Diet for Infancy -Weaning Mix
- 5. Planning, Calculation and Preparation of Diet for Preschoolers
- 6. Planning, Calculation and Preparation of Diet for School Going Child-Packed Lunch
- 7. Planning, Calculation and Preparation of Diet for Adolescence- Boy and Girl
- 8. Planning, Calculation and Preparation of Diet for Geriatrics
- 9. Planning, Calculation and Preparation of Diet for clear fluid, full fluid and soft diet
- 10. Planning, Calculation and Preparation of Diet for Fevers- typhoid, Tuberculosis

Reference Books

- ❖ Srilakshmi B - Dietetics, 5th edition, New Age International publishers, 2002.
- ❖ Longvah T. , Ananthan R. , Bhaskarachary K. and Venkaiah K. Indian Food Composition Table, National Institute of Nutrition, Tarnaka, 2017.
- ❖ Indian Dietetic Association, Clinical Dietetics Manual 2nd Edition

B. Sc. II YEAR

SEMESTER IV

SKILL ENHANCEMENT COURSECode BS 401 DIET COUNSELING SKILLS SEC -3

CREDITS -2; 30 HOURS

Objectives:

- ❖ To enable the student to develop counseling skills

UNIT I: COUNSELLING STRATEGIES AND TECHNIQUES (15 LECTURES)

- Definition of counseling, Role of a counselor
- Counseling theories-directive counseling, non- directive counseling, eclectic counseling.
- Types of counseling- Individual Counseling - advantages and disadvantages (According to Humler of persons-Individual counseling- Interview, Rational-emotive counseling, Behavioural counseling)
- Group counseling- Advantages and disadvantages

UNIT II: DIET COUNSELING (15 LECTURES)

- Diet counseling- Definition, Process, guidelines for strengthening diet counseling
- Steps in diet counseling- assessment, planning, implementation and evaluation
- Materials needed for counseling- posters, charts, pamphlets, flashcards, flannel graph
- Techniques of obtaining relevant information - 24 hour dietary recall, food frequency questionnaire

Reference Books

- Ramnath Sharma, Guidance and counseling, Surjeet publications, first edition,1999
- Omprakash paul B , The basic principles of guidance and counseling, first edition, Neelkamal publications, 2016.
- A handbook for tommorrow's dietitians, Indian dietetic association.

SKILL ENHANCEMENT COURSE (SEC-4)

Code BS 402 STRATEGIES FOR WEIGHT MANAGEMENT (THEORY)

CREDITS -2; 30 HOURS

Objectives:

- ❖ To enable the student to have insights in to role of nutrition in weight management

UNIT I- STRATEGIES FOR WEIGHT MANAGEMENT

(15 LECTURES)

- Concept of BMI, Determination of Energy needs, Translating RDA into Daily food Intake
- Factors affecting fuel utilization
- Guidelines for planning weight managing diets
- Strategies for weight loss and weight maintenance - Diet therapy, Physical exercise, stress management, Pharmacotherapy, Weight loss surgery

UNIT II - DIETS FOR WEIGHT LOSS

(15 LECTURES)

- Low Carbohydrate Diets: Atkins Diet, Ketogenic diet, The Zone Diet, Summer Bell et.al, Diet , Dukan Diet
- The south beach Diet
- General Motor's Weight loss program
- Intermittent Fasting

Text Book:

- ❖ Srilakshmi B - Dietetics, 5th edition, New Age International publishers, 2002.

BOOKS RECOMMENDED:

- Wardlaw, Smith. Contemporary Nutrition: A functional Approach, 2nd edn 2012 MC Graw Hill
- Williams Melvin. Nutrition for health, fitness and sports 2004 MC Graw Hill
- Joshi AS Nutrition and Dietetics 2010 Tata Mc Graw Hill

Objectives: To equip students with the knowledge of energy balance and dietary management for various ailments

UNIT I: ENERGY METABOLISM

- Energy metabolism- Measurement of energy by direct and indirect calorimetry, determination of energy value of food by bomb calorimeter and benedicts oxy calorimeter
- Energy balance, Factors affecting TEE - BMR, Physical Activity, SDA
- Underweight- Definition, Causes, Principles of the Diet, Dietary Modifications, Foods to Be Included and Foods to be Avoided
- Obesity - Definition, Causes, Assessment (BMI, Body Weight, Brokas Index), Type (Grade I, II, III, Apple and Pear shape) Complications, Principles of the Diet Dietary Modifications , Foods To Be Included And Foods To Be Avoided

UNIT II: DIET IN DIABETES AND CARDIO VASCULAR DISEASES (15 LECTURES)

- Diabetes - Definition, Causes, Types, T2DM- risk factors, Signs, Symptoms, Complications and Dietary Modifications
- T1DM- risk factors, Signs, Symptoms, Complications and Dietary Modifications
- Hypertension- Definition, Causes, Types, risk factors, Signs, Symptoms, Complications and Dietary Modifications
- Atherosclerosis - Definition, Causes, risk factors, Signs, Symptoms, Complications and Dietary Modifications

UNIT III: DIET IN GASTRO - INTESTINAL DISEASES

(15 LECTURES)

- Diarrhoea - Definition, causes, types, symptoms, complications and dietary Modifications, foods to be included and foods to be avoided
- Constipation - Definition, causes, types, symptoms, complications and dietary modifications, foods to be included and foods to be avoided
- Peptic Ulcer - Definition, causes, types, symptoms, complications and dietary modifications, foods to be included and foods to be avoided
- Celiac disease, tropical sprue, irritable bowel syndrome, inflammatory bowel disease- Definition, Symptoms

UNIT IV: DIET IN LIVER AND PANCREATIC DISEASES

(15 LECTURES)

- Hepatitis - Definition, Causes, Types, Symptoms, Complications and Dietary Modifications, Foods to Be Included and Foods to Be Avoided
- Cirrhosis - Definition, Causes, Symptoms, Complications and Dietary Modifications, Foods to Be Included and Foods to Be Avoided
- Gall stones - Definition, Causes, Symptoms, Complications and Dietary Modifications, Foods to Be Included and Foods to Be Avoided

- Pancreatitis- Definition, Causes, Types, Symptoms, Complications and Dietary Modifications, Foods to Be Included and Foods to Be Avoided

Books Recommended:**Text Books:**

- ❖ Srilakshmi B - Dietetics, 5th edition, New Age International publishers, 2002.

Reference Books

- ❖ Antia F.P - Clinical Dietetics and Nutrition, Oxford University Press, New Delhi, 2003.
- ❖ Mahtab S. Bamji, N Prahlad Rao, Vinodini Reddy -Text book of Human Nutrition, 2nd edition, Oxford and IBH publishing Co. Pvt. Ltd, 2004.
- ❖ Swaminathan, M - Essentials of Food and Nutrition, Vol 2, Bangalore Printing and Publishers Co Ltd, Bangalore, 1985.

B. Sc. II YEAR

SEMESTER IV PAPER IV
Code BS 405 DIET IN DISEASE (PRACTICAL)

DSC - 1D

CREDIT -1

- I. Planning, Calculation and Preparation of Diets for
 1. Underweight
 2. Obesity
- II. Planning, Calculation and Preparation of Diets for
 3. Diabetes- T2DM
 4. Hypertension
- III. Planning, Calculation and Preparation of Diets for gastro intestinal diseases
 5. Diarrhea
 6. Constipation
 7. Peptic Ulcer
- IV Planning, Calculation and Preparation of Diets for Liver diseases
 8. Hepatitis
 9. Cirrhosis
 10. Gall stones

Reference Books

- ❖ Srilakshmi B - Dietetics, 5th edition, New Age International publishers, 2002.
- ❖ Longvah T. , Ananthan R. , Bhaskarachary K. and Venkaiah K. Indian Food Composition Table, National Institute of Nutrition, Tarnaka, 2017.
- ❖ Indian Dietetic Association, Clinical Dietetics Manual 2nd Edition

Code BS 501 NUTRITION, HEALTH AND FITNESS (THEORY)

CREDITS -4; 60 HOURS

Objective:

To create awareness about the importance of nutrition in health wellbeing and fitness
(6 Lectures)

UNIT 1: Concepts of Nutrition

- Definition of terms- Food, nutrition and Nutrients, Functions of Food and Nutrients in general
- Basic five Food groups and their functions , Food Pyramid
- Inter-relationship between nutrition and health-visible symptoms of good health. Nutrition to support good health-
- Balanced diet – definition and its importance, my Plate.

UNIT 2: Concept of health and fitness

- Definition of health and fitness. Dimensions of health (physical, psychological, emotional and spiritual)
- Role of nutrition in fitness, Nutritional guidelines for health and fitness.
- Holistic approach to the management of fitness and health – Energy input and output, Diet and exercise.
- Effect of specific nutrients on work performance and physical fitness.

Unit 3: Physical Activity

- Nutrition, exercise, physical fitness and health inter – relationship.
- Importance and benefits of Physical activity
- Physical Activity Guidelines and physical activity pyramid
- Diet and exercise for weight management.

UNIT 4: Diet in therapy**(8 Lectures)**

- Importance of Nutritional supplements and Functional foods (carbohydrate based functional foods, functional proteins and functional lipids) to support health.
- Indications of dietary modification and their importance ;
- Foods to be included and avoided for Liquid and Soft diet
- Nutrient modification of diets and their importance , foods to be included and avoided- High and Low calorie diet, High and Low protein diet, High and low fiber diet, High and low fat diet, Low sodium diet.

Books Recommended:

Text Books: Foods and Nutrition by Sumati R. Mudambi.

Reference Books: 1. Food Science by Sri Lakshmi B.
2. Dietetics by Sri Lakshmi B

Objectives: To equip students with the dietary management for various ailments

UNIT I: NUTRITION IN CRITICAL CONDITIONS**(15 LECTURES)**

- Pre-operative- Nutritional assessment and dietary management
- Post-operative- Nutritional assessment and dietary management
- Burns- Metabolic changes, nutrient requirement
- Immuno nutrition- Definition, immune nutrients.

UNIT II: NUTRIENT AND DRUG INTERACTION**(15 LECTURES)**

- Diet effect on drug disposition
- Drugs effects on nutrients
- Interactions of drugs and nutrients
- Effect of drugs on food intake and absorption

UNIT III: NUTRITION IN RENAL DISEASE**(15 LECTURES)**

- Nephritis- Definition, causes, symptoms, principles of the diet and dietary modifications, foods to be included and foods to be avoided
- Nephrosis- Definition, causes, symptoms, principles of the diet and dietary modifications, foods to be included and foods to be avoided
- Renal Failure - Definition, types (acute and chronic) risk causes, symptoms, principles of the diet and dietary modifications, foods to be included and foods to be avoided
- Renal Calculi- Definition, causes, types, symptoms, principles of the diet and dietary modifications(acid ash, alkaline ash and low oxalate), foods to be included and foods to be avoided

UNIT IV: NUTRITION IN OTHER CONDITIONS**(15 LECTURES)**

- Arthritis - Definition, causes, types, symptoms, and dietary modifications, foods to be included and foods to be avoided
- Gout - Definition, causes, symptoms, and dietary modifications, foods to be included and foods to be avoided
- Cancer - Definition, Types, risk factors, Symptoms, Complications and Dietary Modifications, Foods to Be Included and Foods to Be Avoided
- Acquired Immunodeficiency Syndrome - Definition, Causes, Transmission, Symptoms, Dietary Modifications and Prevention

Books Recommended:

Text Books:

- ❖ Srilakshmi B - Dietetics, 5th edition, New Age International publishers, 2002.

Reference Books

- ❖ Antia F.P - Clinical Dietetics and Nutrition, Oxford University Press, New Delhi, 2003.
- ❖ Mahtab S. Bamji, N Prahlad Rao, Vinodini Reddy -Text book of Human Nutrition, 2nd edition, Oxford and IBH publishing Co. Pvt. Ltd, 2004.
- ❖ Swaminathan, M - Essentials of Food and Nutrition, Vol 2, Bangalore Printing and Publishers Co Ltd, Bangalore, 1985.

CREDIT -1

- I. Planning, Calculation and Preparation of Diets for
 1. Pre-operative condition
 2. Post-operative condition
 3. Burns

- II. Planning, Calculation and Preparation of Diets for
 4. Gout
 5. Cancer

- III. Planning, Calculation and Preparation of Diets for Renal diseases
 6. Nephritis
 7. Nephrotic syndrome
 8. Acute Kidney disease
 9. Chronic Kidney Disease
 10. Renal stones

Reference Books

- ❖ Srilakshmi B - Dietetics, 5th edition, New Age International publishers, 2002.
- ❖ Longvah T. , Ananthan R. , Bhaskarachary K. and Venkaiah K. Indian Food Composition Table, National Institute of Nutrition, Tarnaka, 2017.
- ❖ Indian Dietetic Association, Clinical Dietetics Manual 2nd Edition

B. Sc. III YEAR SEMESTER V PAPER V
Code BS 504 B - DIET THERAPY (THEORY)

DSE - 1E

CREDITS -4; 60 HOURS

Objectives: To equip students with the dietary management for various ailments

UNIT I: DIET IN RENAL DISEASE

(15 LECTURES)

- Nephritis- Definition, causes, symptoms, principles of the diet and dietary modifications, foods to be included and foods to be avoided
- Nephrosis- Definition, causes, symptoms, principles of the diet and dietary modifications, foods to be included and foods to be avoided
- Renal Failure - Definition, types (acute and chronic) risk causes, symptoms, principles of the diet and dietary modifications, foods to be included and foods to be avoided
- Renal Calculi- Definition, causes, types, symptoms, principles of the diet and dietary modifications(acid ash, alkaline ash and low oxalate), foods to be included and foods to be avoided

UNIT II: DIET THERAPY IN OTHER CONDITIONS

(15 LECTURES)

- Arthritis - Definition, causes, types, symptoms, and dietary modifications, foods to be included and foods to be avoided
- Gout - Definition, causes, symptoms, and dietary modifications, foods to be included and foods to be avoided
- Cancer - Definition, Types, risk factors, Symptoms, Complications and Dietary Modifications, Foods to Be Included and Foods to Be Avoided
- Acquired Immunodeficiency Syndrome - Definition, Causes, Transmission, Symptoms, Dietary Modifications and Prevention

UNIT III: Nutritional regulation of Gene Expression & Nutrigenomics:

- ❖ Introduction, Gene - Expression- An overview
- Role of specific nutrients in controlling gene expression

- ❖ Proteins
- ❖ Lipids
- ❖ Minerals and vitamins

Unit IV: Immunonutrition

- ❖ Role of specific nutrients in immune suppression.
- ❖ Role of nutrients in immune promotion
- Functional foods and nutraceuticals in health and disease
- ❖ History, Definition, Classification,
- ❖ Physiological effects, effects on human health and potential applications in risk reduction of diseases

Books Recommended:

Text Books:

- ❖ Srilakshmi B - Dietetics, 5th edition, New Age International publishers, 2002.

Reference Books

- ❖ Antia F.P - Clinical Dietetics and Nutrition, Oxford University Press, New Delhi, 2003.
- ❖ Mahtab S. Bamji, N Prahlad Rao, Vinodini Reddy -Text book of Human Nutrition, 2nd edition, Oxford and IBH publishing Co. Pvt. Ltd, 2004.
- ❖ Swaminathan, M - Essentials of Food and Nutrition, Vol 2, Bangalore Printing and Publishers Co Ltd, Bangalore, 1985.
- ❖ Modern Nutrition in Health and Disease 10th edition by Maurice E. Shils
- ❖ Alfred H.Katz, Prevention and health, the Haworth, Press, New York 1999.
- ❖ Nutritional biochemistry of vitamins David a bendor.
- ❖ Achayya, K.T.:(1998) A Historical Dictionary Of Indian Foods, Oxford Publishing Co. Mahindru, S.N. (2002). Food Additives Characteristics, Detection and Estimation, Tata McGraw-Hill Publishing Co. Ltd. New Delhi.
- ❖ Willims S. R.: Essentials of Nutrition and Diet Therapy, 4th ed., Mosby College Pub. S. Louis, 1986.
- ❖ Thomas, B.: Manual of Dietetic Practice, 1996.
- ❖ L. MatareseGottschlich Contemporary Nutrition Support Practice, Saunders 199

B. Sc. III YEAR SEMESTER V PAPER V DSE - 1E
Code BS 504 B DIET THERAPY(PRACTICAL)

CREDIT -1

I. Planning, Calculation and Preparation of Diets for Renal diseases

1. Nephritis
2. Nephrotic syndrome
2. Acute Kidney disease
3. Chronic Kidney Disease
4. Renal stones

- II. Planning, Calculation and Preparation of Diets for
5. Gout
 6. Cancer

III. Market survey of dietary supplements

7. Composition and brand names of supplements that improve immunity commonly available in the market and role of nutrients listed in immune boosting .
8. Composition and brand names of carbohydrate/fat/protein supplements commonly available in the market.
9. Composition and brand names of supplements with micronutrients commonly available in the market.
10. Composition and brand names of metabolite supplements commonly available in the market.
11. Providing diet for clinical conditions with supplement usage
(Planning the type, quantity and timing of supplement intake.)

Code BS 603 A - PUBLIC HEALTH NUTRITION (THEORY) DSC - 1F
CREDITS -4; 60 HOURS

Objectives:

- ❖ To provide students with an understanding of the scope of the public health issues with regard to communicable disease in India.
- ❖ To understand the role of national and international agencies in combating malnutrition in India.

UNIT I: EPIDEMIOLOGY OF COMMUNICABLE DISEASES (15 LECTURES)

- **Epidemiology**- Definition, Aim, Approach, Measurement- Mortality and Morbidity
- **Epidemiologic methods**: Observational- Descriptive studies, Analytical studies- Ecological, Cross- Sectional, Case-Control and Cohort
- Experimental and Intervention studies - Random Controlled trials, field trials and Community intervention trials, Uses of epidemiology
- **Communicable Diseases**: Causes, Symptoms, Treatment and Control Measures of Measles, Mumps, Pneumonia, Diphtheria and SARS, Cholera and Dengue Syndrome

UNIT II: METHODS TO ASSESS NUTRITIONAL STATUS (15 LECTURES)

- **Anthropometry** – Height, Weight, BMI, Height / Weight, Height / Age, Weight/ Age, Head and Chest Circumference, Mid Upper Arm Circumference and Skin fold Thickness
- **Diet Surveys** – Food Balance Sheet Method, Inventory method, Weighment Method, Expenditure Pattern, Diet History, Oral Questionnaire Method, Duplicate Sample, Dietary score and Recording Method
- **Clinical Assessment** – Signs and Symptoms of Malnutrition, Classification of Clinical Signs and Symptoms used in Nutritional Surveys
- **Biochemical Assessment** – Laboratory Test for Assessment of Nutritional Status, Hemoglobin, stools and urine

UNIT III: FOOD BORNE DISEASES**(15 LECTURES)**

- **Food Borne Illness**- Classification, Food Poisoning or Intoxication – Bacterial food Poisoning-Staphylococcus, Botulism and Bacillus Cereus food poisoning
- **Food Infections**- Bacterial food infections- Salmonellosis, Typhoid, Shigellosis, Cholera, Enteropatheogenic infection and Fungal Contamination, (mycotoxin consumption in general) Parasitic Infestation
- Insect and Rodent Contamination of Stored Food
- Control of Food Borne Illnesses

UNIT IV: HEALTH EDUCATION AND AGENCIES TO COMBAT MALNUTRITION**(15 LECTURES)**

- **Health education** – Aims, Objectives, Approaches, Content and Principles of health education

- Practice of Health Education - Audio Visual Aids, Methods of Health Communication - Individual, Group and Mass Approach
- Role of International organizations to combat malnutrition - WHO, FAO, WFP, UNICEF
- Role of National agencies - ICMR, ICAR, NIN, NINMIS

Books Recommended:

Text Books:

- ◆ Srilakshmi B - Nutrition Science, 5th edition, New Age International publishers, 2002
- ◆ Roday, S Food Hygiene and Sanitation - Tata Mc Graw Hill Publishing Co. Ltd, 4th reprint, 2004
- ◆ Suryastapa Das - Textbook of Community Nutrition, 3rd Edition, Academic publishers, Kolkata, 2018

Reference Books:

- ◆ Swaminathan N - A Handbook of Food and Nutrition, 5th edition volume I, Bangalore printing and publishing Co.Ltd, 1986.
- ◆ Park K - Text book of Preventive and Social Medicine 19th edition, Banarsidas Bhanot Publishers, Jabalpur, India, 2007

B. Sc. III YEAR

SEMESTER VI

PAPER VI

Code BS 603A - PUBLIC HEALTH NUTRITION
(Practical)

DSC - 1F

CREDITS -1

1. Develop a questionnaire to assess the Nutritional Status of individuals
2. Assessment of Nutritional Status by Anthropometry
3. Assessment of Nutritional Status by Diet Survey by Oral questionnaire method
4. Assessment of Nutritional Status using Clinical Methods- Signs & Symptoms
5. Consolidation of Data Collected
6. Report on the Survey conducted
7. Preparation of Visual Aids to impart health education
8. Planning of cyclic menu for school going children and adolescents
9. Field visit to observe the working of nutrition and health oriented programmes (survey based result).
10. Visit to a hostel

B. Sc. III YEAR SEMESTER VI PAPER VI

Code BS 603 B - COMMUNITY NUTRITION (THEORY) DSC - 1F
CREDITS -4; 60 HOURS**Objectives:**

- ❖ To ascertain the major concepts of nutritional assessment.
- ❖ To understand the nutritional problems and strategies to prevent them.
- ❖ To know the role of government in health care management.

UNIT I: COMMUNITY AND HEALTH EDUCATION (15 LECTURES)

- **Community**- Definition, Characteristics, types, Characteristics of rural and urban communities, Community nutrition and its activities
- **Community health:** Factors affecting community health- Demographic factors, Health factors, Social factors, Cultural and religious factors, Practical and administrative factors
- **Health education** - Aims, Objectives, Approaches, Content and Principles of health education
- **Practice of Health Education** -Audio Visual Aids, Methods in Health Communication - Individual, Group and Mass Approach

UNIT II: ASSESSMENT OF NUTRITIONAL STATUS (15 LECTURES)

- **Nutritional status**- Definition, Nutritional assessment, Goal, aim and objectives of nutritional status, Methods of nutritional assessment: Indirect methods -Vital statistics, Ecological factors
- **Direct Methods- ABCD analysis, Nutritional Anthropometry**- Height, Weight, BMI, Height / Weight, Height / Age, Weight/ Age, Head and Chest Circumference, Mid Upper Arm Circumference and Skin fold Thickness , Application of nutritional anthropometry
- **Biochemical and Clinical Assessment** - Laboratory Test for Assessment of Nutritional Status, Hemoglobin, stools and urine, Clinical- Signs and Symptoms of Malnutrition, Classification of Clinical Signs and Symptoms used in Nutritional Surveys
- **Diet Surveys** - Food Balance Sheet Method, Inventory method, Weighment Method, Expenditure Pattern, Diet History, Oral Questionnaire Method, Duplicate Sample, Dietary score and Recording Method

UNIT III: MALNUTRITION AND NUTRITIONAL DISORDERS (15 LECTURES)

- Malnutrition- Types, Prevalence, Aetiology and consequences
- Indicators of malnutrition- Macro, Meso and Micro indicators, Prevention of malnutrition- Family level, Community level, National level and International level
- Nutritional Anaemia, Vitamin A deficiency
- Iodine deficiency disorders, Fluorosis

**UNIT IV: HEALTH ADMINISTRATION AND STRATEGIES TO COMBAT
NUTRITIONAL PROBLEMS**
(15 LECTURES)

- **Health Administration** - Centre level, State level, Village level and Primary health care
- **Supplementary Feeding programs to combat malnutrition** - ICDS, MDM
- **Nutrient Deficiency control programs**- Nutritional anaemia prophylaxis programme, Prophylaxis programme against Vitamin A deficiency
- **NIDDCP**-National Iodine deficiency disorder control programme

BOOKS RECOMMENDED

Text Books:

- Srilakshmi B -Nutrition Science, 5th edition, New Age International publishers, 2002.
- Park K - Text book of Preventive and Social Medicine 19th edition, Banarsidas Bhanot Publishers. Jabalpur, India, 2007.
- Suryatapa Das - Textbook of Community Nutrition, 3rd Edition, Academic publishers,Kolkata, 2018.

Reference Book:

- Jelliffe D (1966) The assessment of Nutritional status of the community. Geneva. WHO.

Code BS 604

B - COMMUNITY NUTRITION

DSC - 1F

CREDITS -1

(Practical)

- Preparation of various Visual Aids- posters, folders, pamphlet
- Techniques of nutrition education -Preparation of low cost nutritious recipes for Pregnant woman
- Preparation of low cost nutritious recipe for lactating mother
- Preparation of low cost nutritious recipe for Preschoolers
- Preparation of low cost nutritious recipe for School going
- Nutrition education through computers to develop a questionnaire
- Nutrition education - Assessment of knowledge, attitude and practices based survey
- Assessment of food intake by food frequency questionnaire
- Consolidation and results of the food frequency questionnaire
- Field visit to observe the working of nutrition and health oriented programmes.

B. Sc. III YEAR

SEMESTER VI

Code BS 606 Nutrition and Yoga for Health

CREDITS -4;

60 HOURS

Objective:

CREDITS - 4

This paper concentrates on Yoga and mindful eating in concepts of prevention and therapeutic purposes various physical, Physiological and psychological disorders

UNIT I: Concept of Yoga

- Definition of Yoga, Objectives and basic concepts of yoga.
- Concept of yoga in Indian traditional systems of medicine – Naturopathy
- Astangayoga (pathanjali astangayoga sutras)

UNIT II : Yogic Diet

- General introduction of Ahara
- Concept of mithahara, Yuktahara and Nirnithahara.
- Concept of trigunas, panch-mahabutas in relation to yogic diet.
- Importance of vegan diet.
- Physio pharmacology of foods: Anti bacterial foods Anti coagulant foods, Anti depressant foods, anti diarrheal foods ,anti diabetic foods, anti inflammatory foods

, anti oxidant foods, anti viral foods, anti hypertensive foods, calming and sedative foods, anti cancerous foods, Diuretic foods, Immunity enhancing foods, Life prolonging foods, Memory enhancing foods, Anti pyretic foods, Oestrogenic foods, Analgesic foods, Aphrodisiac foods.

UNIT III: Yoga in health and Disease:

- Yogic principle of healthy living - ahara, Vihara, achara, vichara
- Health in relation to Asana, Pranayama, Shatkarmas, Mudra and dhyana.
- Role of pancha prana in health and healing.
- Yoga in personality development and education, yoga in sports and social life.

UNIT IV: Yogic practices for health :

Yogic practices - Asana, Pranayama, bandha, mudra, and dhyana -

- Techniques
- salient features and
- benefits.

References :

- Yogic Therapy by Dr. Vinekar , kulalayananda.
- Kriya Yoga by Swami satynandasaraswathi- bihar school of yoga
- Patanjali Yogasutras by Swami Sacchitananda
- Yoga for sports by Bks Iyengar

PROJECT WORK

Min. Hrs.- 60 Hrs

1. Basic concepts of project planning a) Defining objectives- Need, problem, project, feasibility, planning, formulation. - . Identifying resources b) Methods/approaches, Project Appraisal- Project Format
2. Guideline for project writing - Title of the project - Name of the person - Duration of the project, type of project. - Aims and objectives - summary of the proposed project - Project information, location, people and personnel involved. - Working/methodology - Evaluation - Writing and reporting