

UNIVERSITY COLLEGE FOR WOMEN, OSMANIA UNIVERSITY
DEPARTMENT OF FOOD AND NUTRITION
B.Sc. NUTRITION AND DIETETICS
COURSE OUTLINE AND SCHEME OF EXAMINATION

THEORY

2017-2020

Year	Semester	Paper	Sub code	Title of paper	Credits	Instruction Hrs / wk	Duration of exam	Max marks
I	I	I	101	Introduction to Foods	4	4	2	50
	II	II	201	Nutritional Biochemistry	4	4	2	50
II	III	III	301	Human Physiology	4	4	2	50
	IV	IV	401	Family Meal Management	4	4	2	50
III	V	V	501	Therapeutic Nutrition	3	3	2	50
		VI	502	Public Health /Community Nutrition and Health Education	3	3	2	50
	VI	VII	601	Diet Therapy	3	3	2	50
		VIII	602	Food Adulteration and Hygiene /Food Microbiology	3	3	2	50
TOTAL CREDITS					28			

PRACTICALS

Year	Semester	Paper	Sub code	Title of paper	Credits	Instruction Hrs / wk	Duration of exam	Max marks
I	I	I	151	Introduction to Foods	1	3	3	25
	II	II	251	Nutritional Biochemistry	1	3	3	25
II	III	III	351	Human Physiology	1	3	3	25
	IV	IV	451	Family Meal Management	1	3	3	25
III	V	V	551	Therapeutic Nutrition	1	3	3	25
		VI	552	Public Health /Community Nutrition and Health Education	1	3	3	25
	VI	VII	651	Diet Therapy	1	3	3	25
		VIII	652	Food Adulteration and Hygiene /Food Microbiology	1	3	3	25
TOTAL CREDITS					8			
Total Practical Marks								200
Total of Theory and Practical								400 + 200 = 600

Note: Theory Total 50 marks (35 marks for final semester end exam and 15 marks Internals 10 marks for Average of 2 Internal Assessments and 5 marks for assignment)

Practical Total 25 marks (20 marks for final practical semester end exam and 5 marks Internal Assessment)

B.Sc. NUTRITION AND DIETETICS
First Year – First Semester
Theory
NFT 101 INTRODUCTION TO FOODS

Objectives:**CREDITS - 4**

- ❖ To provide an understanding of composition and nutritive value of various food commodities.
- ❖ To familiarize students with changes in nutritive value in various food stuffs as a result of processing.

UNIT I CEREALS, MILLETS AND PULSES**(15 LECTURES)**

Composition, Nutritive Value, Nutrient losses during Processing

- Cereals- Rice, Wheat, Breakfast cereals
- Millets- Ragi, Jowar, Bajra
- Pulses and Legumes
- Toxic Constituents – Trypsin Inhibitors, Lathyrins, Favism, Haemagglutinins, Cyanogenic Glycoside, Saponins and Goitrogens

UNIT II: VEGETABLES & FRUITS & SPICES**(15 LECTURES)****Vegetables**

Classification, Composition and Nutritive Value, Changes during cooking, Loss of nutrients during cooking, Storage, Factors affecting storage.

Fruits

Classification, Composition and Nutritive Value and Storage, Ripening of fruits, Enzymatic browning and its prevention,

Spices: General functions and Role of spices in cooking**UNIT III: ANIMAL FOODS****(15 LECTURES)**

- Milk- Nutritive Value, Fermented and Non Fermented Milk Products
- Egg- Nutritive value and Quality of Egg
- Meat- Nutritive Value and Changes during cooking
- Poultry- Classification, Composition and Nutritive value
- Fish- Classification, Composition and Nutritive value

UNIT IV: FATS AND OILS AND SUGARS**(15 LECTURES)**

- Fats & Oils – Properties , Composition and Nutritive Value
 - Processing of Groundnut oil
 - Hydrogenation of oils
 - Rancidity of Oils- Definition, Types and Prevention
- Sugars – Types and Stages of sugar cookery

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.

B.Sc. NUTRITION AND DIETETICS**First Year –Second Semester****Theory****NFT 102 NUTRITIONAL BIOCHEMISTRY****Objectives:****CREDITS - 4**

- ❖ **Enable the students to understand the role of nutrients in the body.**
- ❖ **Know the classification, functions and metabolism of carbohydrates, lipids, proteins, vitamins and minerals.**

UNIT I : CARBOHYDRATES AND LIPIDS

- **Carbohydrates-** Definition, Introduction, Composition, Classification (Monosaccharides, Oligosaccharides, Polysaccharides, Complex polysaccharides), ties, Functions, Dietary sources, Recommended Dietary Allowance, Digestion and Absorption
- Steps in Glycolysis, Tri Carboxylic acid Cycle.
- **Lipids-** Definition, Introduction, Composition, Classification, Functions, Dietary Sources, Recommended Dietary Allowance, Digestion and Absorption
- **β- OXIDATION** of Fatty Acids and biosynthesis
- Essential fatty acids

UNIT II : AMINO ACIDS AND PROTEIN**(15 LECTURES)**

- **Amino acids-**Nutritional Significance, Classification – based on nutritional requirement (essential, semi and non essential amino acid) and Dietary Sources.
- **Proteins-** Definition, Introduction, Composition, Classification – based on the function, Functions, Dietary sources, Recommended Dietary Allowance, Deficiency, Digestion and Absorption.
- Evaluation of Protein Quality-Protein Efficiency Ratio, Digestibility Coefficient, Biological Value, Net Protein Utilization and Net Protein Ratio.

UNIT III : VITAMINS AND MINERALS**(15 LECTURES)**

- Definition, Classification, Functions, Dietary sources, Recommended Dietary Allowance and Deficiency of
 - **Vitamins- Fat Soluble Vitamins** – A,D,E,K and **Water Soluble Vitamins-** Thiamine, Riboflavin, Niacin, Pyridoxine, Pantothenic Acid, Folic Acid, Vitamin B₁₂, Biotin, Ascorbic Acid and choline
 - **Major Minerals-** Calcium, Phosphorus, Sodium, Potassium
 - **Micro elements-** Iron, Iodine, Zinc, Selenium, Fluorine

UNIT IV: ENZYMES AND WATER – ELECTROLYTE BALANCE**(15 LECTURES)**

- **Enzymes** – Definition, Classification (IUBMB), Properties, Mechanism of Enzyme Action, Factors Effecting Enzyme Action, Enzyme Inhibitors.
- **Water and Electrolyte Balance in the Body** -Functions, Distribution of Water in the Body, Water Intake and Elimination, Water Balance, Electrolyte concentrations, Intracellular and Extra cellular fluids and Osmotic pressure
- **Acid Base balance in the body**

Books Recommended:-**Text Books:**

- ❖ 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.

B.Sc. NUTRITION AND DIETETICS

Second Year – Third Semester

Theory

NFT 301 HUMAN PHYSIOLOGY**CREDITS - 4****Objectives:**

- ❖ To understand the basic structure and functions of various organs of the body.
- ❖ To obtain better understanding of the principles of Foods and Nutrition through the study of physiology.

UNIT I : INTRODUCTION TO CELL AND CIRCULATORY SYSTEM**(15 LECTURES)**

- Structure & Functions of cell
- Blood- cellular fraction and plasma fraction (diffusible and non-diffusible), basics of blood coagulation, blood groups and Lymph
- Structure & function of Heart, Heart rate, Cardiac cycle. Cardiac output. Blood pressure & their regulations.

UNIT II : DIGESTIVE AND EXCRETORY SYSTEM**(15 LECTURES)**

- Digestive System: Parts and functions of GI tract, Digestion and absorption of food.
- Excretory System: Parts and functions of Urinary system, structure of Nephron, Formation of Urine.
- Skin: Functions and its role in regulation of body temperature.

UNIT III : ENDOCRINE SYSTEM**(15 LECTURES)**

- Endocrine glands and their functions.
- Role of hormones in metabolism
 - Effect of hormones on protein metabolism
 - Effect of hormones on Fat metabolism

UNIT IV : NERVOUS AND RESPIRATORY SYSTEM**(15 LECTURES)**

- Nervous System: classification , parts and functions of Central Nervous System and Peripheral Nervous System
- Parts of respiratory system and functions
- Mechanism of Respiration
- Oxygen and Carbon di oxide transport

Books Recommended:**Textbooks:**

1. Chatterjee C.C. (1987): Human Physiology, Vol. I & II, Medical Allied Agency, Calcutta.
2. Wilson, K.J.W and Waugh, A. (1996): Ross and Wilson, Anatomy and Physiology in Health and Illness, 8th Edition, Churchill Livingstone

Reference Books

1. Swaminathan M, Advanced Textbook on Food and Nutrition, Vol. I, Bappco.
2. Jain, A.K., Textbook of Physiology, Vol. I and II, Avichal Publishing Co., New Delhi.
3. Meyer B J, Meij H S and Meyer A C., Human Physiology, AITBS Publishers and Distributors

B.Sc. NUTRITION AND DIETETICS
Second Year – Fourth Semester
Theory
NFT 401 FAMILY MEAL MANAGEMENT

CREDITS - 4

Objectives:

- ❖ To provide an overview of the critical role of diet as a determinant of health, nutritional status.
- ❖ 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)

- Food groups based on functions, origin and Nutritive value
- Food Guide Pyramid
- Balanced Diet
- Principles of meal planning
- Steps involved in planning a meal
- Recommended Dietary allowances
- Explanation of terms- Optimum Nutrition and malnutrition

UNIT II: NUTRITIONAL THROUGH LIFE CYCLE

(15 LECTURES)

- 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
- Infancy – Nutritional Requirement, Importance of Breastfeeding, Artificial Feeding (Comparison of various milks Vs Human Milk) , Weaning and Supplementary Food

UNIT III: NUTRITIONAL THROUGH LIFE CYCLE (contd...)

(15 LECTURES)

- Pre-Schoolers – Nutritional Requirement, Factors affecting Nutritional Status
- School Going Child – Nutritional Requirement and School Lunch Programmes
- Adolescence – Nutritional Requirement, Eating Disorders
- Geriatrics – Nutritional Requirement, Physiological changes and Dietary Modification

UNIT IV: METHODS OF FOOD PREPARATION

- Objectives of Cooking
- Methods of Cooking
- Advantages and Disadvantages of Preliminary Preparations- Cleaning, cutting and Grating, Peeling, Sieving, Roasting and
- Classification of Cooking- Moist heat, Dry heat and Combination methods

- Moist Heat- boiling, simmering, Poaching, Stewing, Blanching, Steaming and Pressure cooking- Advantages and disadvantages of various cooking methods
- Dry Heat – Roasting, toasting, grilling/broiling, baking, sautéing and frying - Advantages and disadvantages of various cooking methods
- Microwave cooking - Advantages and Limitations
- Solar cooking – Advantages and Limitations
- Changes in Nutrients during cooking – Carbohydrates, Proteins, Lipids, Vitamins and Minerals

Books Recommended:**Text Books:**

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

Reference Books:

- ❖ Park K - Text book of Preventive and Social Medicine 19th edition, Banarsidas Bhanot Publishers. Jabalpur, India, 2007
- ❖ Swaminathan N - A Handbook of Food and Nutrition, 5th edition volume 1, Bangalore printing and publishing Co.Ltd, 1986.
- ❖ Antia F.P - Clinical Dietetics and Nutrition, Oxford University Press, New Delhi – 110001, 2003.

B.Sc. NUTRITION AND DIETETICS
Third year – Fifth Semester
Theory
NFT 501 THERAPEUTIC NUTRITION

CREDITS - 3

Objectives:

- ❖ To understand the importance of diet in health and disease conditions
- ❖ To know the modifications of normal diet as per the disease condition
- ❖ To enlighten on the dietary modifications.

UNIT I: INTRODUCTION TO THERAPEUTIC NUTRITION

(11 LECTURES)

Role of Dieticians in Hospital, Nutritional Support Team

Therapeutic modifications of normal diets in terms of

- Nutrients
- Consistency and
- Special feeding methods- Enteral feeding and Parenteral feeding

UNIT II: NUTRITION IN GASTRO – INTESTINAL DISEASES

(11 LECTURES)

Diarrhoea - Definition, Causes, Types, Symptoms, Complications And Dietary Modifications , Foods To Be Included And Foods To Be Avoided

Constipation - Definition, Causes, Types, risk factors, Symptoms, Complications and Dietary Modifications, Foods to Be Included and Foods to Be Avoided

Peptic Ulcer - Definition, Causes, Types, risk factors, Symptoms, Complications and Dietary Modifications, Foods to Be Included and Foods to Be Avoided

UNIT III: DIETARY MODIFICATIONS IN LIVER AND GALL BLADDER DISEASES

(12 LECTURES)

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

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

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

UNIT IV: DIETARY MODIFICATIONS IN OTHER CONDITIONS

(11 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 – 110001, 2003.
- ❖ Mahtab S. Bamji, Prahlad Rao N, 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. NUTRITION AND DIETETICS**Third Year – Fifth Semester****Theory****NFT 502 PUBLIC HEALTH****Discipline Centric – Elective****Objectives****CREDITS - 3**

- 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 : HEALTH EDUCATION AND SCHOOL HEALTH**(11 LECTURES)**

- **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
- **School Health Services** – Objectives and Aspects
- Schedule for Immunization for School Children
- School Health Administration
- Vital Statistics – Importance, Uses, Sources, Maternal and Infant Mortality and Morbidity

UNIT II: METHODS TO ASSESS NUTRITIONAL STATUS**(11 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 : EPIDEMIOLOGY OF COMMUNICABLE DISEASES (12 LECTURES)

- Causes, Symptoms, Treatment and Control Measures of Communicable Diseases: Dengue Syndrome, Cholera, Diphtheria, Measles, Mumps and Pneumonia

UNIT IV: MEASURES TO COMBAT MALNUTRITION & VITAL STATISTICS. (12 LECTURES)

- Applied Nutrition Programs in India – Objectives, Action Programme at State Level, Production of Protective Foods
- Measures of National Organizations in combating Malnutrition – **ICDS, MDM**
- Measures of International Organizations in combating Malnutrition –**WHO, CARE and UNICEF**

- Health Programs in India – Urban Measles Campaign, Dengue Fever Control

Books Recommended:**Text Books:**

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

Reference Books:

- ❖ Swaminathan N - A Handbook of Food and Nutrition, 5th edition volume 1, 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. NUTRITION AND DIETETICS**Theory****Third year – Fifth Semester****NFT 502 COMMUNITY NUTRITION AND HEALTH EDUCATION****Discipline Centric- Elective****CREDIT - 3****Objectives-**

- To educate the community about health, nutrition and hygiene
- The purpose of this model is to introduce different models of communication for use in health promotion activities and also in community based health activities

UNIT -I: COMMUNICATION AND HEALTH EDUCATION**(11 LECTURES)**

- **Communication** –Definition, Process, Types and Barriers

Tools and techniques of health education

- Audio aids
- Visual aids
- Audiovisual aids, advantages and disadvantages
- Types of approaches: personal, group and mass, advantages and disadvantages
- Responsibilities of nutritional counselor at community level

UNIT-II- PRINCIPLES OF COMMUNITY NUTRITION**(12 LECTURES)**

Definition and concepts of community

Nutritional problems in the community

- Prevalence of malnutrition in India- Factors contributing to malnutrition
- Low Birth Weight
- Protein Energy Malnutrition
- Vitamin A Deficiency
- Nutritional Anemia
- Iodine Deficiency Disorders
- Endemic Fluorosis

UNIT- III: HEALTH ADMINISTRATION**(11 LECTURES)**

- Central level
- State level
- Village level
- Primary Health Care

UNIT- IV: OCCUPATIONAL HAZARDS:**(11 LECTURES)**

- Physical and chemical

- Biological

Protection of health and nutritional status of workers:

- Women employees in industries and establishments
- Medical measures
- Infrastructure measures and legislation- The Factories Act and the ESI Act

BOOKS RECOMMENDED

Text Books:

- Text book of Preventive And Social medicine, K.Park, 19 th edition,

Reference Book:

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

B.Sc. NUTRITION AND DIETETICS**Third year – Sixth Semester****Theory****NFT 601 DIET THERAPY****CREDITS - 3****This course will enable the students to:**

- ❖ To impart in-depth knowledge regarding prevalence, etiology, diagnosis, patho physiology, medical, nutritional and lifestyle management in different disease conditions.
- ❖ To enable students to focus on advancements in clinical nutrition, emerging modes of therapy, intervention and ongoing research in the field
- ❖ To emphasize the importance of nutrition in the prevention of chronic disease.

UNIT I : DIET IN MALNUTRITION AND FEBRILE CONDITIONS**(11 LECTURES)**

Underweight, Obesity and Fevers (Typhoid and Tuberculosis) - Definition, Causes, Types, risk factors, Signs, Symptoms, Complications and Dietary Modifications

UNIT II: DIET IN CARDIO VASCULAR DISEASES AND DIABETES**(11 LECTURES)**

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

UNIT III: DIET IN RENAL DISEASES**(12 LECTURES)**

Renal Diseases- Nephritis, Nephrosis, Renal Calculi and Renal Failure - Definition, Causes, Types, risk factors, Signs, Symptoms, Complications and Dietary Modifications

UNIT IV: DIET IN GENETIC DISORDERS AND FOOD ALLERGY**(11 LECTURES)**

Inborn Errors of Metabolism - Phenylketonuria, Galactosemia and Lactose Intolerance
Food Allergy –Gluten and Egg White- Definition, Causes, Types, Signs, Symptoms, Complications and Dietary Modifications

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. NUTRITION AND DIETETICS**Third Year – Sixth Semester****Theory****NFT 602 FOOD ADULTERATION AND HYGIENE****Discipline Centric – Inter Disciplinary Elective****Objectives:**

- To impart the knowledge of Food Adulteration and focus on national and international food laws.
- To provide the students a basic knowledge about various aspects of Food Hygiene and Personal Hygiene

CREDITS - 3**UNIT I: FOOD ADULTERATION AND STANDARDS ACT****(12 LECTURES)**

- Food Adulteration, Types of Adulterants –
 - Incidental – Pesticides residues, Tin from cans, Dropping from rodents
 - Intentional Adulterants and methods of detection
 - Metallic Contamination- Arsenic, Lead and Mercury
- Voluntary Standards and Certification of System- Bureau of Indian Standards(BIS), Agricultural Products (Grading and Marking Act)(AGMARK)and Export Inspection Council
- International Standards- Codex Alimentarius

UNIT II: FOOD CONTAMINATION**(11 LECTURES)**

Food Contamination – Sources of Contamination

Food Borne Illness- Classification

- Food Poisoning – Bacterial food Poisoning-Staphylococcus, Food intoxication, Botulism and Bacillus Cereus food poisoning
- Food Infections – Bacterial infections, Fungal Contamination, Parasitic Infestation
- Insect and Rodent Contamination of Stored Food
- Control of Food Borne Illnesses

UNIT III: FOOD HYGIENE AND QUALITY CONTROL**(11 LECTURES)**

Food Hygiene:

- Purchasing and receiving safe food
- Important points to be observed for various food commodities
- Importance of sanitary procedures while preparing, cooking and holding of foods
- Food Storage: General Guidelines for Storage of Food
 1. Dry Storage
 2. Refrigerated Storage
 3. Freezer Storage
- Importance of pest control

UNIT IV: DISPOSAL OF WASTE AND PERSONAL HYGIENE**(11 LECTURES)**

- Storage and Disposal of waste
 - Solid waste

- Liquid waste
- Gaseous waste

Personal hygiene:

- Personal Hygiene –Necessity, Personal Appearance and Sanitary Practices
- Management and Sanitation – Good Manufacturing Practices and Good Handling Practices
- HACCP

Book Recommended

Text Books:

- ❖ Srilakshmi B Food Science, 5st Edition, New Age International Publishers, New Delhi – 2011.
- ❖ Roday, S Food Hygiene and Sanitation –Tata Mc Graw Hill Publishing Co. Ltd.,4rd reprint,2004

Reference Books

- ❖ Shakuntala Manay N - Food Facts and Principles, New Age International Publishers, New Delhi – 2005.
- ❖ Swaminathan, M Food Science, Chemistry and Experimental Foods –, the Bangalore Printing & Publishing Co. Ltd., Mysore.
- ❖ Vanisha Nambiar- Food Contamination and Safety.
- ❖ Venkateshwara Rao Y- Food Safety and Standards Act, Food Law Publication –2011

B.Sc. NUTRITION AND DIETETICS
Third Year – Sixth Semester
NFT 602 FOOD MICROBIOLOGY
Discipline Centric- Interdisciplinary Elective

CREDIT - 3

Objectives

- To Have an insight on the role of micro-organisms in health and disease
- To Understand various methods involved in preservation of foods.

UNIT-I – INTRODUCTION TO MICRO ORGANISMS

(11 LECTURES)

- General Characteristics of Bacteria, Yeast and Moulds.
- Sterilization, pasteurization, and disinfection.
- Role of micro organism in Food- Moulds, Yeast and bacteria.
- Principles of food spoilage by microbiological, physical , Chemical and biological factors

UNIT-II - FACTORS AFFECTING THE MICROBIAL ACTIVITY

(11 LECTURES)

- Hydrogen ion concentration, Moisture requirement, Oxidation and Reduction potential, Nutrient content, Accessory Food Substances , Inhibitory Substances and Biological Structure, Combined effects of Factors affecting growth of Micro organisms.

UNIT-III - PRESERVATION OF FOODS

(12 LECTURES)

- Food Preservation: Principles of Food Preservation
- Factors affecting Food Preservation
- Physical methods – Drying, freeze drying, Cold Storage, heat treatment, Irradiation, High pressure processing chemical Preservatives and natural antimicrobial compounds.

UNIT IV: DISPOSAL OF WASTE AND PERSONAL HYGIENE

(11 LECTURES)

- Storage and Disposal of waste
 - Solid waste
 - Liquid waste
 - Gaseous waste

Personal hygiene:

- Personal Hygiene –Necessity, Personal Appearance and Sanitary Practices
- Management and Sanitation – Good Manufacturing Practices and Good Handling Practices
- HACCP

Books Recommended

Text books:

- Frazier.W.C; Food Microbiology-McGraw Hill Book and Co; New York.

Reference Books:

- Salie. A.J. Fundamental Principles of Bacteriology -MCGraw Hill Book Co.,
- R.C.Rubey & D.K. Maheshwari; A Textbook of Microbiology
- Pelczar J. Michael; Microbiology concepts and Application
- Ananthanarayan. R. & Paniker C.K.J; Textbook of Microbiology.

PRACTICAL SYLLABUS**B.Sc. NUTRITION AND DIETETICS**
First year – First Semester
NFT 151 INTRODUCTION TO FOODS

- Cereal Preparation
- Pulse Preparation
- Preparation of Cereal-Pulse combination
- Preparation to store Fruits- Squashes and Jams
- Preparation to store Vegetables- Pickles
- Quality of Egg
- Stages of Sugar Cookery

B.Sc. NUTRITION AND DIETETICS
First year – Second Semester
NFT 251 NUTRITIONAL BIOCHEMISTRY

- Qualitative tests for carbohydrates:
 - Glucose
 - Fructose
 - Galactose
 - Maltose
 - Sucrose
 - Lactose
 - Xylose
 - Starch
- Qualitative Analysis of Amino Acids

B.Sc. NUTRITION AND DIETETICS
Second Year – Third Semester
NFT 351 HUMAN PHYSIOLOGY

- Estimation of human blood sample for
 - Hemoglobin
 - RBC count
 - WBC count
 - Packed Cell Volume
- Identification of blood group
- Estimation of Blood Glucose
- Estimation of urinary Glucose
- Estimation of urinary albumin

B.Sc. NUTRITION AND DIETETICS
Second year – Fourth Semester
NFT 451 FAMILY MEAL MANAGEMENT

- Standardization of Weights and Measures
- Planning, Calculation and Preparation of Diet for
 - Adulthood- Male and Female
 - Pregnancy
 - Lactation
 - Infancy -Weaning Mix
 - Preschoolers
 - School Going Child- Packed Lunch
 - Adolescence- Boy and Girl
 - Geriatrics

B.Sc. NUTRITION AND DIETETICS
Third year – Sixth Semester
NFT 651 DIET THERAPY

- Planning, Calculation and Preparation of Diets for
 - Clear Fluid , Full Fluid and Soft Diet
 - Diarrhea
 - Constipation
 - Peptic Ulcer
 - Hepatitis
 - Cirrhosis
 - Gallstones
 - Cancer

B.Sc. NUTRITION AND DIETETICS
Third Year – Fifth Semester
NFT 552 PUBLIC HEALTH (Discipline Centric Elective)

- Develop a questionnaire to assess the Nutritional Status of individuals
- Assessment of Nutritional Status by Anthropometry
- Assessment of Nutritional Status by Diet Survey by Oral questionnaire method
- Assessment of Nutritional Status using Clinical Methods- Signs & Symptoms
- Consolidation of Data Collected
- Report on the Survey conducted
- Planning of cyclic menu for school going children and adolescents
- Visit to a hostel

B.Sc. NUTRITION AND DIETETICS**Third year – Fifth Semester****NFT 552 COMMUNITY NUTRITION HEALTH EDUCATION (Discipline Centric Elective)**

- Preparation of various Visual Aids- posters, folders, pamphlet
- Techniques of nutrition education- Preparation of low cost nutritious recipes
 - Pregnancy
 - Lactation
 - Preschoolers
 - School going
- Assessment of food intake by food frequency questionnaire
- Consolidation and results of the food frequency questionnaire

NUTRITION AND DIETETICS**Third year – Sixth Semester****NFT 651 THERAPEUTIC NUTRITION**

Planning, Calculation and Preparation of Diet for

- Underweight
- Obesity
- Fevers (Typhoid and Tuberculosis)
- Hypertension
- Diabetes Mellitus
- Nephritis
- Nephrosis
- Renal calculi

B.Sc. NUTRITION AND DIETETICS**Third year – Sixth Semester****NFT 652 FOOD MICROBIOLOGY (Inter Disciplinary Elective)**

1. Examination of Slides
 - Yeast
 - Moulds
 - Bacteria
2. Examination of Unstained Organisms, wet methods and Preparations
3. Simple Staining
4. Demonstration of Common culture media Preparation

B.Sc. NUTRITION AND DIETETICS

Third year – Sixth Semester

NFT 652 FOOD ADULTERATION AND HYGIENE (Inter Disciplinary Elective)

- Simple tests to Identify Adulterants
 - Food grains, flours
 - Oil and fats
 - Spices and Condiments
 - Canned foods
 - Milk and milk products
 - Sugar and Preserves
 - Beverages
 - Food Colors –Dye, Artificial
- Visit to HACCP certified Food Industry

OPEN STREAM ELECTIVE
FUNDAMENTALS OF FOOD AND NUTRITION

2 CREDITS (30 LECTURES)

Objective:

To create awareness about the importance of nutrition and modification of normal diets .

UNIT 1: (6 Lectures)

- Definition of terms- Food, nutrition and Nutrients
- Functions of Food
- Basic five Food groups
- Food Pyramid
- Balanced diet – definition and its importance

UNIT 2: (8 Lectures)

- Classification of nutrients based on chemical composition- Macro and Micro
- Macro Nutrients- sources, function, deficiency symptoms of
 - Carbohydrates
 - Proteins
 - Fats
- Macro Nutrients- sources, function, deficiency symptoms of
 - Vitamins- fat soluble and water soluble
 - Minerals – macro minerals (calcium and phosphorous)
 - Micro minerals(iron and iodine)

UNIT 3: (8 Lectures)

- Methods of Cooking- Moist heat , Dry heat and Combination methods
- Advantages and Disadvantages and Effect on the Nutritive Value of the cooking methods
- Improving Nutritional Quality of Foods
 - Germination
 - Fermentation

UNIT 4: (8 Lectures)

- Modification of normal diet Based on consistency: indications , foods to be included and avoided
 - Clear fluid and full fluid diets
 - Soft diet
- Based on nutrient: indications , foods to be included and avoided
 - High calorie diet
 - High protein diet
 - High fiber diet
 - Low calorie diet
 - 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.