

B.Sc [Clinical Nutrition & Dietetics]

SEMESTER-I

ANATOMY & PHYSIOLOGY

Total Marks-60

Unit - I

Human Cell –structure, organelles and inclusions

Tissues - Epithelial, connective, Bone – structure and classification.

Lymphatic System: Formation and composition of Lymph, Lymph glands and their Functions Lymph Node spleen structure and function, Circulation of Lymph, rate of Flow of lymph.

Unit-II-

Blood and blood circulation: Blood composition -Plasma Proteins , RBA, WBC

Platelets –chemistry and count , functions of blood, Blood clotting mechanism

Intrinsic & Extrinsic clotting , Hemophilia , Heparin , factors affecting clotting, blood groups-A,B,.AB,O, Rh Factor, Blood vessel - artery, Vein, sinusoids, capillary-Fenestrated & Muscular , Blood pressure- pulse, systolic, diastolic, Measurement of blood pressure .

Unit-III-

Respiratory system: Organs of respiration-Nose, Principal Bronchi, Bronchioles, lungs and Alveoli , Pulmonary Volumes . Mechanism of respiration

Inspiration and Expiration, Pressure changes, Muscles involved -Diaphragm, Costal Muscles, Chemical respiration, Tissue respiration.- Carriage of Oxygen and carbon dioxide , Anoxia, Asphyxia .

Nervous regulation of respiration- Control of rate and depth of respiration for rhythmic respiration.

Unit-IV-

Digestive Systems: Organs, structure, function- Teeth, tongue, salivary glands saliva composition and function esophagus, stomach small intestine- large intestine, Digestive secretions- Stomach Juice, Intestinal juice , pancreatic juice

Digestive Glands- Liver pancreas and gallbladder.

Unit-V

Muscular system: General account of the system- Types of muscles striated, non-striated, Skeletal, Visceral and cardiac –The band structure , The sarco-tubular structure ,structure of myofibrils –Actin and myosin , Muscular contraction theory .Intercalated Disc ,
Functions of muscular tissue.

**B.Sc [Clinical Nutrition & Dietetics]
II Semester**

PHYSIOLOGY & BASIC NUTRITION

Total Marks-60

UNIT-1

Excretory system: Organs structure and functions -Kidney, urethra nephron – Bowman's capsule , Urinary tubule - Filtration, selective re-absorption and secretion by nephrons, effective filtration pressure, Filtration pores ,Urinary bladder, Formation of Urine, deposition and emptying of urinary bladder , Composition of normal urine Abnormal Constituents of Urine .

Skin structure and function. Dermis and Epidermis .Structure of sweat and sebaceous

gland. Functions of skin.

Other sense organs-

Eye - structure and functions Physiology of vision Defects in vision myopia and hypermetropia.

Ear structure and functions: External, middle and internal ear , Role of semi circular canals for body balancing . Mechanism of hearing.

UNIT-II

Digestion and absorption of Carbohydrates, Protein and Lipids .

Principles of absorption

Role of Different digestive juices

Digestion in mouth, stomach, small intestine, Large intestine.

Nervous system- Structure of a nerve cell, axon and dendrite, nerve fiber – Myelinated and non myelinated ,

Central nervous system - Brain and spinal cord: Functions of different parts of the brain –cerebrum, cerebellum, pons , medulla oblongata , thalamus, Hypo thalamus.

Nerve Impulse -synapse, synaptic transmission, neuro-transmitters , Reflex action, properties of reflex action.

UNIT-III

Reproductive system: Female reproductive organs structure and functions ovary fallopian tubes, uterus, vagina.

Male Reproductive Organs - Structure and functions Testis Vas deferens, Urethra, Penis, prostate gland.

Menstruation, puberty - Menopause Fertilization of ovum placenta its function, parturition.

UNIT-IV - Carbohydrates -Composition, Classification- Mono Saccharides, Di

Saccharides, Poly Saccharides, Food Sources, Functions, Storage in Body

Fats & Oils -Composition, Saturated and Un saturated Fatty Acids ,

Classification, simple and Complex fats , Essential Fatty Acids , Food Sources, Functions of Fats

Proteins-Composition, sources, classification, essential and non essential amino acids. , Sources of Proteins, Functions, Amino Acid Pool, Negative and Positive Nitrogen Balance

Minerals- Functions, Sources, Bio-availability and deficiency of Calcium, Iron, Iodine

Fluorine, Sodium, Potassium, Zinc.

UNIT V -Vitamins, Classification, Structure, Unit of Measurements, Sources,

Functions and Daily requirements of Following Vitamins-

Fat Soluble Vitamins -A,D,E,K

Water Soluble Vitamins- Ascorbic Acid, Thiamine, Riboflavin, Niacin , other Members of B Complex such as B6, Folic Acid and B12

Effect of Deficiency and Excess of the following Nutrients

Minerals - Calcium, Iron, Iodine, Fluorine, Sodium, Potassium, Zinc

Vitamins- Fat and Water Soluble

B.Sc [Clinical Nutrition & Dietetics]
II Semester
PRACTICAL

Total Marks-50

1. Types of Cells : Microscopic examination of prepared slides.
Epithelium – stratified squamous, ciliated columnar Glandular
Connective tissue - Adipose, Bone areolar connective tissue
Muscle - smooth, cardiac, stratified
2. Blood
Microscopic examination of prepared slides -
Fresh amount of blood
Stained blood smear
Testing of blood groups using Anti- sera
Estimation of Coagulation time of blood by Capillary Glass tube method
Estimation of bleeding time by using Filter paper spot method
Hemoglobin estimation using haemocytometer
3. Digestion : Identification Test
Benedicts test for sugar
Barford test for protein.
Iodine test for starch
4. Estimation of blood pressure by Auscultatory method



B.Sc./B.Sc. (Home Science) Part - I
FOOD SCIENCE & QUALITY CONTROL- 1ST SEMESTER
BASIC NUTRITION & FOOD CHEMISTRY

TOTAL MARKS-60

UNIT - I

1. Introduction to nutrition - food as a source of nutrients, function of foods, definition of nutrition, nutrients, adequate optimum and good nutrition, malnutrition.
2. Inter-relationship between nutrition and health-visible symptoms of good health.
3. Food guide-Basic five food groups how to use food guide.
4. Water- as a nutrients, functions, sources, requirement, water, balance-effect of deficiency.

UNIT - II

1. Carbohydrates-composition, classification, food sources, functions, Digestion, absorption, storage in body.
2. Carbohydrates: functions of mono, oligo and polysaccharide in foods.
3. Other sweetening agents Changes on cooking .
4. Fat and oils composition, saturated, unsaturated fatty acids, classification, food sources, functions of fats. Digestion, absorption.
5. Lipid: Nomenclature, classification, Physical properties, Emulsion and emulsifiers.

UNIT - III

1. Proteins-composition, sources, essential, non essential amino acids sources of proteins, functions, protein deficiency (very brief).
2. Amino acids, Peptides, Physical properties of protein.
3. Denaturation.

4. Energy - unit of energy, food as sources of energy, energy value of food. The body's need for energy, B.M.R. activities for utilization of food, energy requirement.

UNIT - IV

1. Minerals- Functions, sources, and deficiency of following minerals-calcium, iron, iodine fluorine, sodium, potassium (in very brief)
2. Enzymes: Nomenclature, definite specificity, catalysis regulations Factors influencing enzyme activity,
Enzyme inhibitors .

UNIT - V

1. Vitamins - classification, unit of measurement, sources, functions and deficiency (very brief) about following vitamins:
 - a) Fat soluble vitamins- vitamin A., Vitamin D, Vitamin E, Vitamin K.
 - b) Water soluble vitamins: Ascorbic acid, Thiamin, Riboflavin, Niacin, Other member of B-complex such as Folic acid.

REFERENCES:

1. Guthrie, Hele, Andrews, Introductory Nutrition. 6th ed. St. Louis, Times Mirror Mosby College- 1988.
2. Mudambi S.R., M.V. Rajgopal, Fundamentals of Foods and Nutrition (2nd ed.) Wiley Eastern Ltd. 1990.
3. Swaminathan S : Advanced text book of Foods Nutrition Vol. I, II (2nd ed.Revised & Engarged) B. app. C. 1985.
4. Willson EVAD Principles of Nutrition, 4th ed. New York John Villy & Sons.

B.Sc./B.Sc. (Home Science) Part - I
FOOD SCIENCE & QUALITY CONTROL- 2ND SEMESTER
FOOD MICROBIOLOGY AND SANITATION

TOTAL MARKS-60

UNIT - I

1. Introduction to microbiology & its relevance to everyday life-General morphology of microorganisms; General characteristics of fungi, virus, protozoa, algae.
2. Control of microorganisms- Effects of environmental factors on growth of microorganisms- pH, Water activity, oxygen available.

UNIT-II

1. Microbiology of different foods spoilage and Contamination: Sources, types effects on the following -
Cereals & Cereal products, Sugar & Sugar products, Vegetable & fruits, Meat & Meat products, Fish & other sea foods, Eggs & poultry, Milk & Milk products, Canned foods.
2. Environmental microbiology water, air, soil and sewage.

UNIT-III

1. Microbial intoxications & Infections-sources of contamination of foods. Toxin production and physiological action. Sources of Infection of foods by pathogenic organisms- symptoms & method of control.
2. Beneficial effect of microorganisms.
3. Relevance of microbiological standards for food safety.

UNIT-IV

1. The relationship of micro organisms to sanitation.
Effects of micro organisms on food borne illnesses- Bacteria, virus, molds, yeasts and parasites.
2. Other Food hazards-chemicals, antibiotics, hormones, metals contamination poisonous foods.

UNIT-V

1. Importance of personal hygiene of food handler-Habits-clothes, illness education of food handler in handing and serving food.
2. Safety in food processing, storage, handling and preparation control of spoilage-safety of left to left -over food.
3. Cleaning methods sterilization and disinfection-products and methods use of detergents, heat, chemicals,
4. Sanitation -kitchen design equipment and systems, structure and layout of food premises, maintaining clean environment, Selecting and installing cleaning equipment.
5. Waste product handling planning for waste disposal.

REFERENCES:

1. Frazier, W.C. "Food Microbiology" 4th ed. 1988. McGraw Hill, New York.
2. Kawata K. "Environmental Sanitation in India" 1963. Lucknow Publ. House.
3. Pleezar H.J. and Rober D. "Microbiology" 2nd ed. 1968 Mcgraw Hill, New York.
4. Banwart G.T. "Basic Food Microbiology" 1987 CBS Publ. New delhi.
5. Jay, JH. "Modern Food Microbiology". CBS Pub. New Delhi.

B.Sc./B.Sc. (Home Science) Part - I
FOOD SCIENCE & QUALITY CONTROL
PRACTICAL

TOTAL MARKS-50

1. Use and care of Kitchen equipment
2. Controlling Techniques A) Weights and Measures standard and household measures for raw and cooked food.
- b) Cereal and flour mixtures-basic preparation- Boiled rice and rice pulao, Chapati, puri, paratha, Sandwiches, Pastas, Pancake, biscuits, cakes, cookies.
3. Pulses and legumes- using whole de-husked and sprouted.
4. Vegetables-Simple salads, Dry Vegetables, Curries
5. Fruits-Fruit preparations using fresh and dried-stewed fruit, fruit salad.
6. Milk-Curds, paneer and their commonly made preparation, Milk based simple desserts and puddings-custards, kheer, ice-cream.
7. Meat-cuts of meat, Meat preparations, Poultry, Fish.
8. Hard and soft cooked poached, scrambled, fried, omelets.
9. Soups-Basic, clear and cream soups.
10. Snacks-Pakorras, cheese toast, upma, poha
11. Peanut, chikki, til ladoo
12. Demonstration of the different parts of microscope their use & care.
13. Preparation of Bacterial smears simple staining. Spore staining, Staining of moulds & yeast.
14. Preparation of common laboratory media for cultivation of Bacteria yeast & fungus,moulds.

B.Sc. (PART- II) CLINICAL NUTRITION & DIETETICS

SEMESTER-III

PAPER - I

BIOCHEMISTRY & MICROBIOLOGY

MARKS-60

Unit - I

Enzymes - Structure, Classification, Factor Affecting the action

Carbohydrates - Structure, Classification, Functions, Properties

Carbohydrates metabolism - Glycolysis. TCA Cycle, Gluconeogenesis, Glycogenolysis, Glycogenesis

Unit-II

Protein - Structure, Classification, Functions, biological Value, Essential and Non-Essential Amino Acids, Properties.

Metabolism - Urea Cycle.

Nucleo- proteins-Basic Structure and functions.

Unit-III

Fats- Structure, Classification, Properties, Essential Fatty Acids, Functions.

Metabolism-B Oxidation of Fat.

Hormones - Insulin, Thyroxin, Sex Hormones, Adrenal Hormones, Pituitary Hormones- their hypo and Hyper Activity.

Unit-IV

Structure and classification of some common microbes- (Bacteria, Fungi, Virus, Yeast, Moulds).

Microbiology of different Foods, Spoilage and contaminations, Effects on the Following

Cereal and Cereal products.

Sugar and Sugar Products.

Vegetables and Fruits

Meat and Meat products

Fish and Other Foods

Egg and Poultry

Milk and Milk Products

Canned Food

Unit - V

Beneficial Effects of Microorganisms.

Food Toxicity due to Microorganism and any five micro-originate diseases.

Environmental Microbiology - Water, Air, Sewage, Soil.

REFERENCES:

Textbook of Biochemistry - G.P. Talwar

Textbook of Biochemisty - O.P. Agrawal

Elements of Biochemistry - Pant

Textbook of Biochemistry - A.C. Deb

Textbook of Biochemistry - Harper

Text book of Microbiology - Purohit

Food Microbiology - Pelzar

Food Microbiology - Frazier

Environmental Sanitation in India - Kawata, K

B.Sc. CLINICAL NUTRITION & DIETETICS
SEMESTER-IV
BASIC DIETETICS & COMMUNITY NUTRITION

M.M. - 60

Unit - I

1. Food Guide and Food Standard.
2. Basic Principles of Meal Planning - Objectives, steps, Balanced Diet.
3. Nutrition During Pregnancy and Lactation - Physiological stages of pregnancy, nutritional requirements.
4. Nutrition during Infancy- Breast Feeding and its Implications- Hazards of Bottle Feeding, Weaning, Foods - Planning, Formulating and preparing. Importance of correct and timely, weaning, Supplementary Foods.

Unit-II

5. Early and Late Childhood, Growth and Development, Nutritional Requirement, Nutritional Deficiencies prevalent in this age group.
6. Nutrition during Adolescence and Geriatric Nutrition - Nutritional Needs, Factors affecting good nutritional Status.
7. Nutrition in Special Conditions- Air Travelling, Space Travelling, For Sports persons.

Unit III

8. a) Nutrition and health in national development.
b) Nutritional Problems confronting our country - the causes of Malnutrition in India, Balance between food and population growth.
9. Methods of Assessment of Nutritional status - Sampling Techniques, Identification of rich groups. Direct Assessments- Diet Survey, Anthropometry, Clinical and Biochemical Estimations.
Indirect Assessments- Food Balance Sheets and Agricultural Data, Ecological Parameters and Vital Statistics.

Unit-IV

10. Nutrition Intervention Schemes in the community, lectures and Demonstrations, Nutrition Exhibitions and Visual Aids, SNP., ANP, Mid Day Meal Programme, FAO, WHO, UNICEF, CARE, AID, ICMR, CSIR, NIN, CFTRI.
11. Recent advances in community nutrition research.

Unit - V

12. Nutrition and Infection- Relationship, Immunization and its importance.

13. Fortification, Enrichment of Foods.
14. Nutrients and Drug Interaction.
- 15) Food Adulteration
- 16) Food Supplements
- 17) Food Additives

B.Sc. (SEMESTER-III & IV)
(PRACTICAL)
Clinical Nutrition & Dietetics
SEMESTER-IV

Marks-50

1. Menu planning and preparation of different dishes according to different stages and conditions of life.
 - a) Pregnancy
 - b) Lactation
 - c) Weaning infant
 - d) Childhood
 - e) Adolescence
 - f) Geriatric Nutrition
2. Planning and preparation of High and Low Calorie diet.
3. Planning and preparation of Liquid and Soft diet.
4. Preparation of Beverages.
5. Rice and Pulses preparation.
6. Preparation of plain and stuffed vegetable.
7. Preparation of Salad and Sauces.
8. Preparation of Snacks.
9. Preparation of Sweets.
10. Preparation of Bakery items.
11. Estimation tests of Glucose, protein, Cholesterol, Blood and acetone etc in urine.
12. Estimation of Ascorbic Acid by 2-6 Di - Chlorophenol- indophenol method in different citrus foods

B.Sc./B.Sc. (Home Science) SEMESTER-III
FOOD SCIENCE & QUALITY CONTROL

FOOD PRESERVATION, SENSORY EVALUATION & FOOD PACKAGING

M.M. - 60

UNIT - I

1. Food and its preservation.
2. Preservation at domestic & industrial level.
3. Principles of Food Preservation.

UNIT - II

4. Spoilage of Food.
5. Methods of Food preservation.
6. Nutritive value of preserved food.

UNIT - III

7. Palatability of Food and the measurement of its acceptance.
8. Sensory Evaluation, Panel of Judges.
9. Sensory Characteristics of food.
10. Data Analysis.

UNIT - IV

11. Factors influencing sensory measurement.
12. Attitude, motivation, Psychological errors adaption.
13. Types of tests (Laboratory) used for sensory evaluation.
14. Objective methods of evaluation - Density, Volume, tenderness, tension, viscosity, weight, moisture loss etc.

UNIT - V

15. Importance of packaging.
16. Various package forms - Products, tubes, tetra-packs, cans, bottles.
17. Packaging material.
18. Food and Food packaging interaction (Quality testing of packaging material).
19. Food packaging laws.

B.Sc./B.Sc. (Home Science) SEMESTER-IV
FOOD SCIENCE & QUALITY CONTROL

POST HARVEST TECHNOLOGY & ANALYTICAL INSTRUMENTATION

M.M. - 60

UNIT - I

1. Principles of Food Processing
 - (1) Physical - Principles underlying food processing operation including thermal processing, ionizing radiations, refrigeration, freezing dehydration etc.
 - (2) Chemical - Principles in Food Processing, Chemical changes in food that affect the texture, colour, flavour, odour, stability and nutritive quality during processing and storage.
2. Processing technology of cereals, legumes, oil seeds, fruits, vegetables, milk products and meat, fish and poultry.

UNIT - II

3. Enrichment and fortification of food.
4. Sprouting and fermentation, Extruded foods.
5. Preservatives and additives.
6. Quality control in food industry methods of evaluation and control of the various aspects of quality of raw material manufacturing process the testing of finished products.

UNIT - III

7. Basics of Instrumentation - Physical - Chemical principles and methodology, Colorimetry, photometry, flame photometry.

UNIT - IV

8. Chromatography. Principles and techniques (Thin layer, Gas liquid and high performance liquid chromatography.)
9. Electrophoresis - Principles and application paper, agar and beta carotene.
10. Spectrophotometry - Phosphorus, ascorbic acids.
11. Fluorimetry - Thiamin, Riboflavin.

UNIT - V

12. Principles and application of different techniques used in food and nutrition research. Computer Basics and application.
13. Radioactive traces techniques.

B.Sc./B.Sc. (Home Science) SEMSTER-IV

FOOD SCIENCE & QUALITY CONTROL

PRACTICALS :-

Marks-50

1. Preparation of Jam, Jellies, Marmalades.
2. Preparation of Pickles & chutneys.
3. Dehydration of Vegetables & Fruits.
4. Preparation of synthetic syrups & squashes.
5. Preparation of Sauces.
6. Preparation of Papad, Badi, Chips.
7. Survey of Market product.
8. Packaging.
9. Paper Chromatography.
10. Spectrophotometer based analysis.

BSc –V semester

CLINICAL NUTRITION AND DIETETICS

NUTRITION FOR HEALTH AND FITNESS

Marks-80

1. **(a) Definition components and assessment criteria of age:** specific fitness and health status
(b) Structure of muscles, contraction process and muscular kinetics
2. **Holistic approaches to the management of fitness and health:** energy input output diet and exercise. Effect of specific nutrition on work performance and physical fitness. Nutrition exercise physical fitness and health interrelationship.
3. **(A) Review of different energy system of endurance and power activity:** fuels and nutrition to support physical activity. Shift in fat and carbohydrate metabolism .mobilization of storage during exercise, effect of glycaemic index on health and fitness.
(B) Effect of nutrients on endurance capacity, zinc and endurance relationship.
4. **Nutrition in sports:** sports specific requirement. Diet manipulation, pre game and post game meals. Assessment of different nutrigenic aids and commercial supplement. Diet for person with high energy requirement, stress and fracture injury
5. **Water and electrolyte balance:** losses and their replenishment during exercise and sports event, effect of dehydration, sports drinks, formula feeds.

6. (a) **significance of physical fitness and nutrition in the prevention and management of weight control, obesity, diabetes mellitus , CV disorders, bone health and cancer.**
(b) **nutritional and exercise regimens for management of obesity.** Critical review of various dietary regimens for weight and fat reduction, prevention of weight cycling.
7. **Defining nutritional goals/guidelines appropriate to health, fitness and prevention and management of the above chronic degenerative disorders.**
8. **Nutrition and exercise regimens for pre and post natal fitness.**
9. **Alternative systems for health and fitness like ayurveda, yoga, meditation, vegetarianism and traditional diets.**

**B.Sc. (SEMESTER- VI)
CLINICAL NUTRITION & DIETETICS
ADVANCED DIETETICS**

M.M. - 80

Unit-I

1. Role of dietician, Nutrition and diet counseling, nutritional assessment of patient, dietary prescription and counseling, follow up, patient education and diet, factors affecting patients diet.
2. a) Types of Diet - Liquid, Semi solid, soft and bland.
b) Types of feeding.

Unit-II

3. Diet in Gastrointestinal Tract Disorder-Peptic Ulcer, Constipation, Diarrhea : Symptoms, treatment.
4. Diet in Diabetes Mellitus, incidence & predisposing factors, symptoms, types and tests for dietician, metabolism in diabetes, dietary treatment and meal management, hypoglycemic agents, Insulin & it's types, Complication of diabetes.

Unit- III

5. Diet in renal diseases, basic renal functions, symptoms & dietary treatment in acute & chronic glomerulonephritis, nephritis, Renal Failure and dialysis, urinary calculi, causes and treatment.
6. Diet in Cardio vascular Diseases- Role of nutrition in cardiac efficiency, incidence of Atherosclerosis, dietary principles, Hypertension and Dietary Treatment.

Unit-IV

7. Diet in Liver Diseases- Jaundice, Hepatitis, Cirrhosis.
8. Diet in Gout & Arthritis-causes, symptoms and treatment.
9. Diet in allergy & skin disturbance- Definition, Classification, Manifestations, common food allergies, tests and dietetic treatment.

Unit-V

10. Diet in Weight Imbalance-Obesity and Under weight.
11. Diet in Fever and Infections: (a) Types, metabolism in fevers, general dietary consideration.
(b) Diet in Influenza typhoid fever, recurrent malaria, tuberculosis and cancer.

REFERENCES:-

1. Anderson L.M.V. Dibbic, P.R. Turkki, H.S. Mitchell and H.J. Rynbergen; Nutrition in Health and disease, 17th edition, J.B. Lippincot; co; Philadephia. 1982.
2. Passmore P. and M.A. Eastwook, Human Nutrition and Dietetics,8th ed.ELBS, Shurchill, Lyvingstone 1986.
3. F.P. Anita "Clinical Dietetics & Nutrition" 3rd 1989. Oxford University Press, New Delhi Bombay.
4. Robinson C.H. & M.R. Larvla W.L. Chenoweth and A.E. Gardwich : Normal and Therapeutic Tutrition 17th ed. Mc Millan. Pub. Co., 1986.

BSc –VI semester
PRCATICAL
CLINICAL NUTRITION AND DIETETICS
&
NUTRITION FOR HEALTH AND FITNESS

Marks-50

Part A

Menu Planning & Preparation of Normal and Therapeutic diet in relation to special nutrient requirement.

1. Adult.
2. Pregnancy.
3. Lactation.
4. Constipation.
5. Diarrhea.
6. Obesity.
7. Under weight.
8. Peptic Ulcer.
9. Jaundice.
10. Viral Hepatitis.
11. Cirrhosis.
12. Acute glomerulus's nephritis.
13. Chronic glomerulus's nephritis.
14. Diabetes Mellitus
 - (a) With Insulin.
 - (b) Without Insulin.
15. Hypertension.
16. Atherosclerosis.
17. Anaemia.

Part B

- 1. Assessment of nutritional status including body composition.**
- 2. Physiological parameters like heart rate and blood pressure.**

3. Assessment of coronary risk profile- RISK factor
 4. Assessment of bone health
 5. Planning diets and formulating dietary guidelines for:
 - Fitness and health
 - Prevention of chronic degenerative disorders
 - Obesity management
 - Management of diabetes mellitus and CVD
 6. Review of existing alternative diet related systems for physical fitness and health.
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B.Sc. (Food Science & Quality Control)
SEMESTER-V
FOOD ANALYSIS AND FOOD TOXICOLOGY

MARKS-60

UNIT - I

1. Food composition and factor affecting - Carbohydrate, Protein, Fats and oils natural emulsifiers. Organic acid, oxidant, antioxidant, enzyme, Pigment and colour, flavour, vitamins & minerals natural toxicants & water.
2. Sampling techniques - Preparation of sample physical method, lactometer refractometry, polymetry, viscosity, surface tension.

UNIT - II

3. General chemical method of analysis.
 - a) Total carbohydrate mono, di, saccharide starch and gum, fiber and dietary fiber
 - b) Total fat and different types of lipids.
 - c) Total protein, non-protein and specific protein.
 - d) Macro & micro elements - Na, K, P, Ca, Mg, Fe, Zn, Vitamin.

UNIT - III

1. Toxicology - Introduction, Importance and Scope
2.
 - a) Food Contamination
 - b) Naturally occurring toxin in various food substance animal and plant food.
 - c) Substance interminably added to food.
 - d) Antioxidant, colors, stabilizers.
3.
 - a) Residual chemicals utilized in food product and processing.
 - b) Chemical preservatives.
 - c) Pesticides
 - d) Heavy Metal's
 - e) Hormones In foods

UNIT - IV

1. Food born illness - microbial & parasites food poisoning.
2. Bacterial Interaction - Staphylococcal, Botulism.
3. Bacterial infection's - salmonellas, E-coli infection.
4. Parasites - Trichinosis, Tapeworm.

UNIT - V

5. Physical treatment of food preservatives -
 - a) Ir-radiation
 - b) Application of irradiation in food preservatives
 - c) effects of irradiation
6.
 - a) carcinogens - definition and classification
 - b) Dietary factors
7. Genetically engineered food definition, Application of General technical safety

B.Sc. (Food Science & Quality Control)
SEMESTER-VI

FOOD MANUFACTURING ADULTERATION AND TESTING

M.M. - 60

UNIT - I

1. Market Research- Concept of Market type of market Scope of market research important of market research procedure of market research.
2. Consumer Research - Consumer meaning and definition Consumer responsibility consumer products. Consumer behaviour, importance of consumer research.
3. food consumption pattern and the various factor effecting this pattern economical, Social psychological and physiological.

UNIT - II

4. Trends in Social Change and its role in diet pattern, Food situation in India and outside.
5. Tapping the unconventional post harvest losses.
6. Prospects of Food processing for export traditional food status and need for renewal in the contact of westernization.
7. Product development primary processing secondary processing types of food products of quick working fast food.

UNIT - III

8. Food law's - State and municipal laws mandatory, national and international. Role of voluntary agencies and legal aspect's of consumer protection. Food standards - India and international.

UNIT - IV

9. Food adulteration and quality criteria for the following-milk and milk products. Flesh food grain's flours, Fruit and vegetable products. Oils and fats, spices and condiments. Beverages - alcoholic and non alcoholic canned food.

UNIT - V

10. Entrepreneurship plant location investment.
11. Food law's equipment and space
12. Costing of product.
13. Advertising and marketing.
14. Transportation - Type/Mode.

BSc –VI semester

PRCATICAL

Food Science & Quality Control

Marks-50

PRACTICALS :-

1. Estimation of Saponification Value of Fat.
2. Estimation of Iodine No. of Fat.
3. Estimation of Acid No. of Fat.
4. Estimation of Total Nitrogen by Kjehldol Method.
5. Separation of Amino Acid by Paper Chromatography.
6. Separation of Amino Acid by Paper Electrophoresis.
7. Testing of Adulteration in Milk & Milk Products, Cereal & Cereal Products, Spices, Fats & Oil.
8. Vitamin C estimation by Dye method

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