APPENDIX – 6 (R)
UNIVERSITY OF MADRAS

B.Sc. DEGREE COURSE IN HOME SCIENCE – NUTRITION,
FOOD SERVICE MANAGEMENT AND DIETETICS
CHOICE BASED CREDIT SYSTEM
(w.e.f.2013-14)

I. That in the Regulations relating to B.Sc. Degree Course in Home Science – Nutrition, Food Service Management and Dietetics under Regulation No.6- Scheme of Examinations of I to VI semesters be modified as follows:

### 6. Revised Scheme of Examination:

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**NON – MAJOR ELECTIVE – PAPER I & II - CREDITS – 2x2=4**
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II. The above amendments to the Regulations take effect from the academic year 2013-2014 and thereafter.

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AC.S’13
OBJECTIVES:

a) To enable students to obtain knowledge of different food groups and their contribution to nutrition.

b) To help them study the different methods of cooking and their advantages and disadvantages.

c) To enable them gain them to experience in the preparation of foods with attention to the preservation of their nutritive value - oriented to Indian cooking.

d) To help them understand the scientific principles governing the acceptability of food preparations.

1) NUTRIENT CONTENT OF FOODS

Classification of foods according to nutrient content. Food groups for balance diets - Food in relation to health.

2) COOKING METHODS

Study of the different cooking methods, merits and demerits - solar cooking - Microwave cooking.
3) **CEREALS AND MILLETS**

Source of manufacture, structure, composition, storage, processing, milling, parboiling, scientific methods of preparation and cooking, acceptability and palatability of rice, wheat, maize and millets, factors affecting gelatinization.

4) **PULSES**

Source of manufacture, nutritive value, judicious combination of cereals and pulses, storage high-lighting soya beans, lathyris - removal of toxins.

5) **VEGETABLES**

Classification, colour, nutritive value, effect of cooking on colour, texture, flavour, appearance and nutritive value, Purchase - storage and preservation.

6) **FRUITS**

Classification, nutritive value, uses, preservation.

7) **FLESH FOODS**

Meats - nutritive value, methods of cooking, purchase, storage. Fish - classification, nutritive value, purchase, storage, cooking and preservation.

8) **EGGS**

Structure and composition, nutritive value, palatability, methods of storage, preservation and uses in cookery.

9) **MILK AND MILK PRODUCTS**

Nutritive value, cow's milk as compared with human milk, coagulation of milk, digestion of milk, milk products - whole and skimmed milk, milk powders and yogurt, ghee, butter, cheese. Storage and preservation.
10) **BEVERAGES**

Classification, nutritive value and uses, coffee, tea and cocoa, malted beverages. Sources, manufacture, processing, methods of preparation, serving.

11) a) **NUTS AND OIL SEEDS**: Nutritive value, toxins.
b) **Fats and Oils**: Source and manufacture, usage, hydrogenation, rancidity, smoking point, emulsification.

12) **SUGAR COOKERY**

Stages in sugar cookery, types of sugars available, crystallisation in sugar cookery, jaggery.

13) **SPICES AND CONDIMENTS**

Origin, use in food preparation, excess consumption.

14) **FOOD ADDITIVES**

Leavening agents, shortenings, stabilizers, flavouring agents and food substitutes.


**REFERENCES**

CORE PAPER II - MICROBIOLOGY

OBJECTIVES:

To enable the students to
1. Gain knowledge of the role of micro-organisms in health and disease
2. To understand the role of micro-organisms in spoilage of various foods.
3. To gain knowledge of micro-organisms in relation to food and food preservation

THEORY

1. Introduction to microbiology and its relevance to everyday life-general characteristics of microorganisms-bacteria, virus, yeasts, moulds, algae, protozoa. Morphology, classification, motility, nutrition, respiration and reproduction.

   PROTOZOA
   Morphology, reproduction, motility and classification.
   Entamoeba histolitica - Plasmodium Vivax - Balantidium Coli.

2. DISTRIBUTION AND ROLE OF MICRO ORGANISM IN

   a) Soil
      i) Micro-organisms in the soil.
      ii) Nitrogen Cycle.

   b. Water

      i) Micro-organisms in water
      ii) Total bacterial count in water.
      iii) Sanitary tests done on water.
      iv) Listing of water borne infections.
c) Air

i) Micro-organisms present in air.
ii) Total bacterial count of air.
iii) Listing of air borne infections

d) Sewage

i) Composition of sewage


3) DESTRUCTION OF BACTERIA

a) Sterilization

i) Application of dry heat, burning, flaming and hot air oven.
ii) Application of moist heat, boiling, pasteurization, steam steriliser and autoclave.
iii) Sterilization with the use of filters

b) Pasteurization

Advantages involved in pasteurization / methods - holder, flash.

c) Disinfection

Methods of disinfection, natural, physical and chemical.

4) PURIFICATION OF WATER INDUSTRIAL AND DOMESTIC METHODS

i) Industrial method of purification of water, sedimentation, filtration - slow sand fibers rapid sand filters.
   Differences between slow and rapid sand filters - disinfection of water with the use of chemicals.

5. MICRO-ORGANISM IN INFECTION, RESISTANCE AND IMMUNITY

i) Different modes of spread of infection.
ii) Reaction of the body to infection cellular and chemical defenses - phagocytoses -antigens - antibody. 2 examples of antigen antibody reactions.
iii) Immunity - active and passive - artificial and natural

6. ALLERGY AND HYPER SENSITIVITY

i) Different types of allergies like idiosyncrasies, allergy of infection, contact dermatitis and drug allergy.

ii) Hypersensitivity - definition - anaphylaxis and serum sickness.

7. CHEMOTHERAPY AND ANTIBIOTICS

i) Chemotherapy - use of sulphonamides, sulphones and PAS. Antibiotics - use of anti-biotics, spectrum of activity, mode of administration, complication arising due to constant use of antibiotics, sensitivity tests done on antibiotics. Brief knowledge of any four common antibiotics

8. GENERAL PRINCIPLES UNDERLYING SPOILAGE

Chemical changes caused by Micro-organisms, fit or unfit food for consumption -causes of spoilage - classification of food by the case of spoilage - factors affecting -kinds and numbers of micro-organisms in food - growth and chemical changes - caused by micro-organisms.

9. PRINCIPLES OF FOOD PRESERVATION

Use of high and low temperatures. Canning of fruits and vegetables. Preservation by drying, use of chemicals in food preservation. Part played by antibiotics in the preservation of fleshy food.

10. FOOD MICRO-BIOLOGY CONTAMINATION AND SPOILAGE OF FOODS

Principles of food spoilage by micro-biological, physical and biological factors.

a) Cereal and Cereal products and baked products.
i) Contamination, preservation and spoilage of cereals.

ii) Spoilage of bread, ropiness in bread, Red bread and chalky bread.

b) Fruits and vegetables and their products: Contamination. Preservation and spoilage of fruits and vegetables.

c) Fleshy food 1. Meat, 2. Poultry 3. Fish
   i) Contamination of Meat, fish and poultry.

   ii) Preservation of Meat, fish and poultry.

   iii) General principles underlying the spoilage of meat, fish and poultry.

d) Eggs : Contamination, preservation and spoilage occurring in eggs.

e) Milk and Milk Products:
   i) Contamination, preservation and spoilage of milk.

   ii) Brief knowledge of butter, cheese and fermented milk.

f) Fats and Oils : Contamination, preservation, storage and spoilage of fats and oils.

11. FERMENTATION, PUTREFACTION AND DECAY:

   i) Fermentation - aerobic respiration, anaerobic respiration, products of fermentation.

   ii) Part played by micro-organisms in putrefaction and decay.

12. MICRO-BIOLOGY OF FOOD POISONING, FOOD INFECTIONS AND FOOD BORNE DISEASES, PRINCIPLES OF FOOD PRESERVATION

   i) Microbial food poisoning by Staphylococci, Salmonella food poisoning group and clostridium botulinum (Botulism). Measures to prevent microbial food poisoning.

   ii) Food infections - food borne diseases - Dysentery, diarrhoea, Typhoid, Cholera.
REFERENCES

5. Pelazar J. Michael : Micro-biology concepts and Application

SEMESTER - II
CORE PAPER III - HUMAN PHYSIOLOGY

OBJECTIVES:

a. To enable students to understand the structure and physiology of various organs in the body.

b. To help students to obtain a better understanding of the principles of nutrition and dietetics through the study of physiology.
1. CELL

Introduction - cell under e/m. Recent concepts.

2) TISSUES

Classification, structure and function.

3) PHYSIOLOGY OF NERVE AND MUSCLE

Conduction of nerve impulses - Physiology of muscle contraction.

4) NERVOUS SYSTEM

General anatomy of nervous system, functions of the different parts, reflexes, autonomic nervous system.

5) SENSE ORGANS

Physiology of vision, hearing, taste, smell and cutaneous sensations.

6) BLOOD

Composition, constituents, functions, wounds, hemorrhage, reticulo-endothelial system, body defence against diseases.

7) HEART AND CIRCULATION

Anatomy of the heart-structure of the heart and blood vessels, properties of cardiac muscle, origin and conduction of heart beat, cardiac cycle, cardiac output, heart sounds, blood pressure - definition and factors affecting blood pressure and ECG.

8) RESPIRATORY SYSTEM

Anatomy and physiology of respiratory organs. Gaseous exchange in the lungs, mechanism of respiration.

9) DIGESTIVE SYSTEM
Anatomy of gastro-intestinal tract. Digestion and absorption of carbohydrates, proteins and fats.

10) **EXCRETORY SYSTEM**

Structure of kidney, formation of urine, acid-base balance, skin-temperature regulation, water balance.

11) **ENDOCRINOLOGY**

Pituitary, thyroid, parathyroid, adrenal and pancreas - functions of the hormones and their relationships.

12) **REPRODUCTIVE SYSTEM**

Anatomy of male and female reproductive organs, hormonal regulation of female reproductive function, menstruation, fertilization, pregnancy, lactation - hormone influence.

**REFERENCES**


CORE PAPER IV - MICROBIOLOGY AND PHYSIOLOGY PRACTICAL

RELATED EXPERIENCES

OBJECTIVES:

a. To enable students to estimate the various blood constituents
b. Gain knowledge of the role of micro-organisms in health and disease
c. To understand the role of micro-organisms in spoilage of various foods

2. Simple staining, identification of organism in contaminated water and food.
4. Demonstration of sterilization methods - Hot air oven and autoclave
5. Field trip to dairy and food industries.
6. Microscopic studies of different tissues. Epithelial, connective, muscular and nervous tissues.
7. Microscopic study of blood, WBC, RBC estimation, Hemoglobin estimation.
9. Respiratory rate and pulse rate.

REFERENCES

1 Joshua A.K. : Micro-biology - India Printing works, Madras - 1971
3 Salie, A.J. : Fundamental principles of Bacteriology - MCGraw Hill Book Co
5 Pelczar J.Michael : Micro-biology concepts and Application

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SEMESTER III  
CORE PAPER V - FAMILY MEAL MANAGEMENT

OBJECTIVES:
To enable the students to:

a. Acquire knowledge of the principles of planning diets for various stages of life cycle.

b. Develop ability to plan balanced diets for various activity groups and for various socio-economic levels.

Course Content  No. of Lectures

1. Introduction to meal management. Balanced diet - food guide, food pyramid  2

2. Basic principles of meal planning - objectives - steps in meal planning - food cost  2

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4. Nutrition during lactation - Physiology of lactation - nutrition requirements, special foods given during lactations.


6. Nutrition during early childhood (Toddler/ Pre school)  
Growth and Nutritional needs - nutrition related problems. 
Feeding patterns - acceptance,


9. Geriatric nutrition - Factors affecting food intake and nutrient use - nutrient needs -nutrition related problems

**PRACTICAL**

**Objectives:** To enable the students to:

1. Learn the principles of meal planning.
2. Plan & prepare meals for the family members at different income levels.
3. Plan meals for special groups - infants, preschoolers, adolescents, pregnant & nursing mothers and the aged.

**Course Content**

<table>
<thead>
<tr>
<th>Course Content</th>
<th>No. of Lectures</th>
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<tbody>
<tr>
<td>1. Basic principles of meal and menu planning</td>
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<tr>
<td>2. Daily food guide - The 5 food groups, the use of the food groups. Food Costing.</td>
<td>4</td>
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4. Planning and Preparation of a balanced diet for a pregnant woman - Nutrient requirements, modifications of dietary pattern.  

5. Planning and preparation of a balanced diet for a nursing mother - modification of normal meal pattern - nutritional requirements.  

6. Nutrition during infancy - nutritional requirements during infancy-advantages of breast feeding - disadvantages of bottle feeding  

7. Supplementary feeding-preparation of weaning foods  

8. Planning and preparation of diet for a toddler, pre-school child-nutritional requirements - food pattern.  


11. Planning a diet for a senior citizen - factors affecting food intake and nutrient use - special needs - nutritional requirements - Preparation of meals.  

REFERENCES  


CORE PAPER VI – NUTRITION- I

OBJECTIVES

1. To introduce the students to the principle of Human Nutrition.

2. Understand the importance of various macronutrients in relation to health.

THEORY


   Introduction to nutrition – food as a source of nutrients, function of foods, definition of nutrients, adequate, optimum and good nutrition, malnutrition. Inter relationship between nutrition and health, visible symptoms of good health. Uses of food in the body, digestion, absorption, transport and utilization of the nutrients in the body.

2. ENERGY

   Energy units – Kilocalories, Megajoules, determination of energy value of foods, using Bomb calorimeter, diagram of Bomb Calorimeter – gross calorific values. Physiological energy, value of foods, relation between oxygen used and calorific value.

   Determination of energy requirements, direct calorimetry. Relation between Respiratory quotient and energy output – Specific dynamic action of food (Thermogenic food in REE) indirect calorimetry – Basal metabolism – definition, determination – Benedict Roth basal Metabolism Apparatus – factors affecting BMR – determination of energy metabolism, during work – energy requirements for various types of activities, factorial methods for calculation of the daily energy requirements of an adult for varying degrees of physical activity – recommended allowances for calories, energy requirements of adults expressed in terms of Reference man and Reference woman – FAO committee and ICMR committee percent calories supplied by carbohydrates, fats and proteins in average Indian diets – Energy requirements for different age groups.
3. CARBOHYDRATES
Definition and composition, classification, Review of digestion, absorption and metabolism – word diagram – Regulation of blood sugar, Hormonal controls, functions of carbohydrates in the body. Dietary fibre – Definition, soluble and insoluble fibres, sources of fibre, components, physiological effects of dietary fibre; Role of fibre in human nutrition, sources and requirements.

4. LIPIDS
Classification, Composition function – essential fatty acids, deficiency, food sources of EFA, Function of TGL, Characteristics of animal and vegetable fats, sterols – cholesterol – function, food sources, phospholipids – function, ketone bodies – fat requirements – food sources, dietary lipids and their relation to the causation of Atherosclerosis and Ischaemic heart disease.

5. PROTEINS

REFERENCES
OBJECTIVES
To introduce the students to
1. The principles of Biochemistry
2. A basic understanding of the functions of biological systems in relation to Nutritional biochemistry
3. The skills in qualitative tests and quantitative estimation of nutrients.

UNIT I
INTRODUCTION TO BIOCHEMISTRY-
Definition and relation to nutrition, Enzyme classification, Nomenclature, Factors affecting enzymatic activity, Mechanism of action. Co-enzyme and prosthetic group-role of B vitamins.

UNIT II

UNIT III

UNIT IV
UNIT V

Nucleic acids and protein biosynthesis bases, nucleotides, purines and pyrimidines-structure and function.

UNIT VI

Inter relationship between carbohydrate, fat and protein metabolism – Hormonal regulation of metabolism.

Inborn errors of metabolism with reference to carbohydrate – Fructosuria and galactosemia. Protein – Phenyl ketonuria, Alcaptonuria, amino aciduria.

PRACTICALS

1. Qualitative tests for sugars – glucose, fructose, lactose, maltose and glucose.
2. Quantitative estimation of reducing sugar.
3. Qualitative tests for proteins
4. Demonstration Experiments.
   a. Estimation of total nitrogen in foods (Micro or Macro kjeldahl methods)
   b. Lipid extraction
   c. Determination of Iodine value

REFERENCES


SEMMESTER – IV
PAPER VII DIET THERAPY

OBJECTIVES
To enable students to:
- Obtain knowledge on the role of diet in disease conditions
- Gain experience in planning, preparing and serving therapeutic diets
- Understand the role of dietitian in the hospital and community

Course content

I. INTRODUCTION TO THERAPEUTIC DIETS
Principles of diet therapy-Routine hospital diets-Pre and Post operative diets
Special feeding methods- Tube feeding and Total Parenteral nutrition
Metabolic change in fevers- Modification of diet in Typhoid and Tuberculosis
Diet in Burns and HIV
Role and responsibilities of Dietician, Bnef on Indian Dietetic Association.

II. DIET IN GASTRO INTESTINAL, LIVER AND GALL BLADDER DISEASES
Etiology and modification in gastro intestinal diseases (a) Peptic ulcer (b) Diarrhoea
(c) Constipation (d) Malabsorption syndrome e) gluten enteropathy and lactose intolerance
Etiology and modification of diet in Hepatitis, Cirrhosis and Hepatic coma, Wilson’s Disease
Etiology and modification of diet in Cholecystitis and Cholelithiasis
III. DIET IN METABOLIC DISEASES
Etiology, Diagnosis and modification of diet in Obesity and Underweight
Diabetes mellitus-Prevalence, types, symptoms and metabolic changes, Diagnosis, treatment with diet and insulin, complications. Nutrition management in acute and chronic pancreatitis

IV. DIET IN DEGENERATIVE DISEASES
Etiology and modification of diet in Hypertension
Prevalence, risk factors and modification of diet in atherosclerosis
Risk factors and modification of diet in cancer-Nutritional problems of cancer therapy
Role of antioxidants in the prevention of degenerative diseases

V. DIET IN KIDNEY DISORDERS
Etiology, symptoms and modification of diet in nephritis, nephritic syndrome, acute renal failure and chronic renal failure-Dialysis
Etiology and modification of diet in urinary calculi, gout, phenylketonuria. Diet therapy in nutritional anemia

REFERENCES
1. Maurice Edward Shils, Modern nutrition in Health and Disease (2006), Lippincot, Williams & Wilkins.
JOURNALS
1. Journal of American Dietetic association, American Dietetic Association, USA.
2. Indian Journal of Nutrition and Dietetics, Avinashilingam Deemed University, Coimbatore.

CORE PAPER VIII - NUTRITION AND DIETETICS PRACTICAL

OBJECTIVES:

a) To gain skill in qualitative tests and quantitative estimation of nutrients.
b) To enable the students to understand the modifications in nutrients and dietary requirements for the therapeutic condition and dietary management of different diseases.

1. Qualitative tests for minerals
2. Quantitative estimation of calcium
3. Quantitative estimation of phosphorus
4. Quantitative estimation of vitamin C
5. Demonstration Experiments.
   a) Estimation of Iron
   b) Qualitative tests for vitamin A
   c) Quantitative estimation of carotene

DIETETICS PRACTICALS

I. Planning and preparing diets for the following conditions:

1. Clear fluid, full fluid and soft diet
2. Typhoid and Tuberculosis
3. Peptic ulcer, Diarrhea and Constipation
4. Hepatitis and Cirrhosis
5. Obesity and Underweight
6. Type 1 and Type 2 Diabetes mellitus
7. Hypertension and atherosclerosis
8. Nephritis and Nephrotic syndrome
9. Anemia
10. Renal failure, renal calculi, cholelithiasis

II. Visit to a dietary department of a hospital

III. Dietary Internship for 1 month in a teaching hospital

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ALLIED PAPER IV – COMMUNITY NUTRITION

OBJECTIVES:

1. To enable students to understand the importance of nutrition in national progress and the significance of assessment of nutritional statues.

2. To recognize the solutions to overcome problems of malnutrition in the company and the role of national and international agencies in this area.

Course Content

1. (a) Nutrition and health in National development
   (b) Nutritional problems confronting our country – The causes of malnutrition in India-Balances food production and population growth.

2. Methods of assessment of nutritional status
   - Sampling techniques.
   - Identification of risks groups.
   - Direct assessment – Diet surveys, Anthropometry, Clinical and Biochemical estimations.
   - Indirect assessment – food balance sheets and Agricultural data, Ecological parameters and vital statistics.
   - Use of growth charts.

3. Nutrition intervention schemes in the company lecture and demonstration, nutrition exhibitions and visual aids.

4. National and International agencies in community nutrition
   ICDS, SNP, ANP, Midday meal programme, FAO, WHO, UNICEF, CARE, AID, ICMR, CSIR, NIN, CFTRI

5. Breast feeding and its implications, Hazards pf bottle feeding – Review

6. Weaning foods-planning, formulating and preparing importance of correct and timely weaning – Review


8. Recent advances in community nutrition research-Fortification & enrichment of foods.
REFERENCES

3. Reh, Emma-1976. Manual on Household Food consumption surveys, FAO. Nutritional studies No.18 Rome

PRACTICALS

The objectives of this practical course are to enable the students to learn and prepare different types of visual aid for the community, to gain practical experience in giving demonstration and conducting survey and other methods of assessments.

Course outline:

1. Diet and Nutrition surveys
   a) Identifying vulnerable and at risk groups.
   b) Diet survey and breast feeding and weaning practices of specific groups.
   d) Use of anthropometric measurements in children.
2. Methods of Extension used in community-
   a) Preparation of visual aids-charts, posters models, etc. for exhibition.
   b) Lecture and Method Demonstrations to target groups.
3. Field visits to –
   a) Observe the working of nutrition programmes.
   b) Hospitals to observe nutritional deficiencies.
OBJECTIVES:
To enable the students to
1. Know the development of an individual from infancy to adolescence.
2. Develop an awareness of the problems of children, adolescent and exceptional children.

UNIT I Growth and development
- Meaning and importance of growth and development, principles of governing growth and development – developmental task of different stages.
- Methods of study of human development.

UNIT II Infancy and Babyhood (0-2 years)
- Characteristics, physical, social and emotional development, cognitive and language development
- Effect of stimulation – caser of the infant, feeding, toilet training, bathing, clothing, sleeping and immunization, importance of mothering, importance of psychological needs.
- Common ailments and safety measures.

UNIT III Early childhood period (2-6 years)
a. Characteristics, physical, social, emotional, intellectual, language development.

UNIT IV Late childhood period (6-12 years)
a. Characteristics, physical, social, emotional, intellectual, language and moral development.
b. Nursery School – Aims and objective, building equipments curriculum program and personnel.
UNIT V Adolescence

a. Adolescence – physical and psychological changes, emotional, moral and social development, Problems of adolescence.
b. Delinquency – causes, prevention and rehabilitation.
c. Educational and vocational guidance, role of family and schools and colleges in guiding adolescence.

REFERENCES

CORE PAPER- X  FOOD SERVICE MANAGEMENT – I

OBJECTIVES:

a) To enable the students to develop skills in organizing and managing Food Service institution and to gain knowledge about the food service and responsibilities of each.

UNIT I

Definition and scope of Food Industries – classification of Commercial and Non-commercial food service and welfare food service institutions.

UNIT II

Management Definition, principles and functions of management Organization – Types and theories of organisation. Tools of management
UNIT III

Staffing Manpower Planning  Labour sources, Selection, Recruitment and training wages, salaries, incentives, promotion demotion, transfer, dismissal. Managerial Problems of Food Service Unit. Directing and direction, leadership, delegation and controlling decentralization, centralization, supervision, human relation industry, authority and responsibility, motivation, communication evaluation techniques. Leadership styles and qualities.

UNIT IV

Food cost and review of maintenance of accounts Accountability Daily, Weekly, Monthly accounts for food, labour equipment and furnishing, rent, water, fuel, light, licences, cleaning supplies, maintenance, miscellaneous. Double entry book keeping, ledger accounts journal and balance sheet, budgetary control. Cost control, fixed, variable, average marginal and unit cost, break even analysis – production planning control.

UNIT V

Application of Computers in catering.

REFERENCES:


JOURNAL


CORE PAPER XI- NUTRITION -II

OBJECTIVES

❖ To learn the role of various micronutrients in body functions.
❖ To gain skill in qualitative tests and quantitative estimation of nutrients.
UNIT I
FAT SOLUBLE VITAMINS
Metabolism, Functions, effects of deficiency, food sources, requirements, unit of measurements and hypervitaminosis of vitamins A, D, E and K.

UNIT II
WATER SOLUBLE VITAMINS
Ascorbic acid and B Complex vitamins- Thiamine, Riboflavin and Niacin- Functions, effects of deficiency, food sources and requirements for different age groups.
Importance of folic acid, Pyridoxine, Vitamin B12, Biotin and Pantothenic acid to the body.

UNIT III
MACRO MINERALS- Calcium, Phosporous, Magnesium, Potassium, Sodium and Chloride-
Distribution in the body; functions, effects of deficiency, food sources and RDA.
MICRO / TRACE MINERALS in human nutrition - Iron, Zinc, Fluoride and Copper
Distribution in the body; functions, effects of deficiency, food sources and requirements for different age groups.

UNIT IV
ULTRATRACE MINERALS- Iodine, Selenium, Manganese, Chromium, Molybdenum and Cobalt.
Distribution in the body; functions, effects of deficiency, food sources and requirements.
Selenium and Vitamin E relationship.
Chromium and glucose tolerance factor.

UNIT V
WATER – as a nutrient, functions, sources, requirements. Distribution of water in the body, exchange of water in the body, composition of body fluids, water exchange between plasma and interstitial fluid.Water imbalance – dehydration- water intoxication, water and electrolyte mechanism - ADH , vasopressin.

REFERENCES
CORE PAPER XII - SPORTS NUTRITION

OBJECTIVES:

1. To learn about the importance of Nutrition in sports personnel
2. To find out the sources of generation of energy for muscle and force generation
3. To know about the ergogenic aids and supplements available in the market.

UNIT I – Fuel Sources for Muscle and Exercise Metabolism


UNIT II – Macro and Micro Nutrients in Sports Nutrition


Micronutrients – role of antioxidants – essential function of vitamins and minerals for athletes, ergogenic effect


UNIT III – Weight Management and Body Composition

Weight management- Ideal body weight and composition – weight loss – making weight and rapid weight loss strategies
Eating disorders – types, prevalence, risk factors, effect on sports performance, treatment and prevention
Body composition analysis-importance of body composition, different techniques-normative values for comparison.

UNIT IV-Practical Sports Nutrition
Pre event and post event meal- preparing for competition, dealing with cramps, stitch GI distress-electrolyte balance-sports drinks
Eating for anaerobic power-aerobic power timing of meals and snacks-guidelines for the travelling athlete-recovery food
Food for power sports, endurance sports, combined power
Nutrition for special population: child athlete, ageing athlete, athletic diabetes, vegetarian and disabled athlete.

UNIT V – Ergogenic aids and supplements
Overview of supplements and sports foods – use of performance enhancing substances among athletes – finding proof of efficacy of supplements and sports foods-anabolic steroids-sports foods (cereal bar, sports drinks, carbohydrate gels, liquid meal replacements, vitamins)-different types of protein supplements, creatine, glutamine, BCAA, HMB, caffeine, glycerol, bicarbonate, citrate – WADA-Anti doping rules and regulations.

PRACTICALS
1. Body fat analysis-learn to use skin fold calipers, bio electrical impedance analysis technique. Observe DEXA analysis.
2. Measurement of Blood pressure, heart rate, calculate METs, VO2 max
3. Learn to take whole body measurements from a certified fitness trainer using a measuring tape
4. Observe fitness testing methods by a sports physiotherapist or certified fitness trainer- to measure cardio vascular fitness, core strength, muscular endurance, explosive power, flexibility, agility, stability, strength, speed
5. Planning diets for strength sports, endurance sports, racquet sports, team games
6. Planning diets for competition, recovery (case studies)
7. Assignment on sports foods and supplements available in the market
8. Guest lecture by a sports nutritionist, fitness trainer, sports physician or physiotherapist on career opportunities
9. Attend a sports tournament-swimming or tennis or hockey or cricket or track and field sports etc.

REFERENCES:

**ELECTIVE I - FUNDAMENTALS OF TEXTILES**

**OBJECTIVES:**

To help the students

1. Study the science of Textiles and use this knowledge in wise buying.
2. Select clothing appropriate for various family members.
3. Learn the techniques involved in Garment Construction.

**UNIT - I Fibre study**

(a) Classification of fibres – study of properties common to protein, cellulose, mineral and thermoplastic fibres.

(b) Manufacture, uses and properties of Cotton, Jute, Viscose Rayon, Wool, Silk, Nylon, Terylene and Acrylic.

**UNIT – II Yarn processing :**

Steps involved in processing cotton yarns – classification of yarns based on direction of twist, count – simple and novelty yarns.

**UNIT – III Techniques of clothing construction**

a) Selection, use and care of sewing machine and sewing tools.
b) Study of basic hand stitches-temporary and permanent.
c) Seams and seam finishes.
d) Methods of introducing fullness into a fabric-darts, tucks, pleats and gathers.

**UNIT IV - Principles of Pattern Making:**

a) Steps in preparing the basic bodice, sleeve and skirt pattern for children and adult women based on body measurements.
c) Pattern Layout.
d) Methods of transferring pattern markings on to a fabric.

UNIT V – Fabric Embelishment
a) Embroidery
b) Applique
c) Sequince and Zari work

PRACTICALS:
1. Sewing process:
   a) Hand stitches – temporary and permanent.
   b) Seam and seam finishes
   c) Preparation and application of true bias, bias facing, shaped facing & bias binding
   d) Plackets and opening – continuous placket, bound & faced placket.

2. Garment construction:
   a) Saree petticoat
   b) Apron / Jabala

REFERENCES:
2. Banes – complete guide to fashion illustrated.
4. Graves Ryan - Complete Encyclopedia for Stitchery
7. Erwin - Clothing for Moderns.
8. Irwin - Practical Dress Designing.
10. Lewis, Bowar, Kettunen - Clothing Construction and Wardrobe Planning.
OBJECTIVES:

To enable the students to
1. Gain knowledge about the principles of management
2. Acquire ability to make use of resources efficiently
3. Impart the skill of peer and others around.

Unit I: Management
   a. Definition and significance,
   b. Management process – planning controlling and evaluating,
   c. Qualities of an ideal Home maker

Unit II: Managerial Inputs
   a. Values, goals and standards.
   b. Resources -meaning and classification. Optimizing the use of family resources.
   c. Decisions – Definition, types of decision. Decision making process
   d. Methods of resolving conflicts.

Unit III: Time Management
   a. Tools in Time Management – Peak Loads, work curve and rest periods.

Unit IV: Energy Management
   a. Work simplification Definition,techniques and Mundel’s classes of changes.
   b. Fatigue – Concept, types – Physiological and Psychological fatigue.
Unit V: Money Management

a. Family Income – types, methods of handling family income, methods of augmenting
   family income.

b. Family expenditure – Budget – Meaning, steps involved in planning a budget.

PRACTICAL

1. Identification of personal and family values and goals – their interrelationship.
2. Formation of family budget.
3. Assessment of convenient work heights – maximum and comfortable reach in sitting
   and standing positions.
4. Preparation of a time schedule.

REFERENCE

   Boston, Houston Mufftime.
   publishing company New York
   sons, INC London, chapman & Hall Ltd
   distributors New Delhi.

CORE PAPER- XIV  FOOD SERVICE MANAGEMENT – II

OBJECTIVES:

1. To understand the applications of basic principles to bulk production of the food
2. To gain knowledge regarding selection and purchase of food
3. To develop skills in menu planning for quality preparation
4. To understand the different styles of food service in volume feeding
5. To gain knowledge of food service layout
6. To gain knowledge to develop skills in handling equipment and maintenance

**UNIT I**  Equipment in food service

Classification of equipment, factors affecting selection of equipments-electrical and nonelectrical equipment for food storage, preparation, service and dishwashing
Base materials and insulating materials

**UNIT II**  Planning of Food Service unit

Layout of food plants, different work area, planning of storage, production and service areas. Lighting and ventilation.

**UNIT III**  Menu planning – Definition, types, menu planning for various sectors and institutions, health safety in menu planning, standardization of recipes, portion control.

Types of food and beverage services.

**UNIT IV**  Sanitation and safety in food service institutions, garbage disposal, pest control.

**UNIT V**  FSSAI (Food safety standard authority of India), HACCP, Entrepreneurial ship in catering.

**REFERENCES**

1) Food service system and Lewis J. Minor, Ronald. Cichy, Avi Publishing Co.
2) Food Service operations: Mahmood A. Khan, Avi Publishing Co 1987
5) Dorothy Tompikins (1969). Table Layout and Decoration, Wardlock & co Ltd

REFERENCES

1) www.codexalimentarius.org
2) www.fssai.gov.in

PRACTICALS

OBJECTIVES:

1. Develop skills in food production and service

Course content

1. Standardization of four selected recipes from each of the following cuisines-South Indian
   North Indian, East Indian and West Indian.
2. Organizing, preparing and serving food for three different meals for 50 members or more
   (list attached)
3. Setting up the restaurant-laying of table cloth changing, setting up the silver and other
   table arrangements.
   Folding of serviettes correct use of waiter’s cloth.
   Preparation for customers.
5. Service of beverage tea, coffee, juices and alcoholic beverages.
7. Tray service.
8. Order taking, making out checks bills presentation of bills.
9. Up keep and cleaning of cutlery, crockery, other equipments.

CORE PAPER XV- PRINCIPLES OF INTERIOR DECORATION

OBJECTIVES
To enable students to
1. Gain understanding of the basic art principles.
2. Learn to apply colour in the interiors.
3. Understand the basic Principles of House Keeping.
4. Prepare for housekeeping jobs.

UNIT I
Art in daily living - importance of good taste objectives of interior design.
Design - elements of design - line, shape, size, space, texture, pattern, colour and light, Types and Characteristics of design, Principles of design - Harmony, Balance, Rhythm, Proportion, Emphasis.

UNIT II
Colour - Qualities of colour - Hue, value, and intensity, Colour harmony, developing colour schemes for different rooms.

UNIT III
Furniture and Furnishings - selection and arrangement of furniture in different rooms. Different types of furnishing materials - Factors considered in their selection. Floor coverings, Curtains and draperies, Window treatment.

UNIT IV
Accessories - Selection, Use and Care of accessories, Types - traditional and modern - art objects - pictures, flower arrangement-Types, use and care-Flower arrangement for different rooms. Indoor plants - use and care

UNIT V
Lighting - Importance of lighting - Principles and types of Lighting - Lighting needs for various activities.

PRACTICAL
I. Analysis design for their qualities
II. Arranging various areas using the different principles of design
III. Special area arrangement-Hotels, Restaurant, Auditoriums, Airports etc.

IV. Harmonious combination of colour in different areas

REFERENCES


ELECTIVE - PAPER II - HEALTH PSYCHOLOGY

OBJECTIVES:

1) To understand the basic concepts of Human behavior and Health Psychology
2) To study the psychological and other psycho social factors that affect health
3) Understand the interrelationship between Nutrition and Psycho social disorders.
4) To understand the special needs and health challenges of the human life cycle.
5) To familiarize with the health promoting treatment and inventions in health psychology.

UNIT I Foundation of Health Psychology

Health and health psychology-health and illness-trends that shape health psychology-

UNIT II Stress and Health

Stress-measurement-physiology of stress-sources-psychological factors in stress-stress response-

UNIT III Health psychology through life span

Childhood and adolescence-childhood nutrition, childhood obesity, adolescents and risk taking
interventions, adulthood and ageing theories of ageing life style and aging.
UNIT IV Nutrition and Illness
Nutrition-obesity-treatment-eating disorders-substance abuse-alcoholism and tobacco abuse, chronic and life threatening illness-Psychological factors in cardio vascular disease, managing stress following CVD, Health psychology and diabetes, coping with cancer, Intervention strategy for AIDS, Coping with AIDS or HIV

UNIT V Intervention Strategies
Applications of principle of counseling and psychotherapy in disease management and health care. Relaxation technique, somatic oriented cognitive and behavioral skills in the management of diseases. Support group-family counseling, alternative healing systems.

REFERENCES

ELECTIVE PAPER III - HUMAN DEVELOPMENT-II
(Development from Adulthood through Old age)

OBJECTIVES:
To enable the students to:
1. Understand the developmental tasks during adulthood till old age.
2. Impart knowledge on pregnancy and prenatal Development
3. Create an awareness on special children.

UNIT I Adulthood
Characteristics and developmental tasks, all aspects of development and vocational adjustments.

UNIT II Marriage and family
a) Characteristics and developmental tasks-types of family-Indian, traditional and modern.
b) Functions of family and marriage, motives of marriage, marriage and family as a basic social institution.
c) Adjustment in marriage-adjustment towards mate, sex, finance, society and in-laws

d) Family life cycle-stages-beginning family, expanding family, contracting family, adjustment in different stages.

e) Crisis in the family-critical family situation and impact on children.

f) Maternal and Paternal deprivation and their effect on child growth and development

g) Paternal attitudes and their influence on their children, styles of parenting.

h) Small family norms-concepts, advantages and limitations.

UNIT III Pregnancy and Prenatal Development

a) Conception-test tube baby, periods of prenatal development, factors affecting prenatal development, prenatal care.


c) Post natal care, normal peurperium, prevention of gynecological complications, adjustment of new born, temperature, breathing, feeding and elimination.

UNIT IV Introduction to Children with Special Needs

a) Gifted children d) Orthopedically challenged

b) Mentally retarded e) Hearing impaired

c) Visually handicapped f) Learning disability

UNIT V Old age

Characteristics of old age, physical changes, Psychological changes. Place of the aged in Indian Society.

PRACTICALS

1. Preparation of case study, observing various development-physical and motor, social emotional and intellectual-of a particular child.

2. Socio-metric study of adolescents.

3. A survey on preferences of adolescents in choosing a life partner.

4. Visit to an institution for exceptional children.

5. Survey on problems of old age.

REFERENCES


INTERNSHIP

CATERING/DIETETICS/FOOD PROCESSING/MICROBIOLOGY

ONE MONTH INTERNSHIP IN THE SUMMER HOLIDAYS WHEN STUDENTS PASSES HER SECOND B.Sc COURSE AND GOES TO THE THIRD YEAR.

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A.C.S.’13.