

UNIVERSITY OF SOLAPUR

Syllabus for

P. G. Diploma in Dietetics and Nutrition

1. Nomenclature of the Degree :-The nomenclature of the degree awarded shall be P. G. Diploma in Dietetics and Nutrition
2. Eligibility for the admission:-The eligibility for the admission to the P. G. Diploma in Dietetics and Nutrition shall be
 - a. Any Medical/AYUSH Graduate (MBBS/BDS/BAMS/BHMS/BUMS)
 - b. Any Nursing Graduate (B. Sc Nursing and above)
 - c. Any Science Graduate
 - d. Any Life Science Graduate
 - e. B.Sc. Home Science
 - f. B. P. Ed / M. P. Ed

3. Mode of Admission:-Admission for P. G. Diploma in Dietetics and Nutrition shall be based on merit basis. The intake capacity will be of 30 students.

4. Duration of the course:-1 year

5. Attendance:-A candidate shall not be allowed to appear for the final examination of the University unless he/she has kept a term in the department and produces a certificate from the Director/Head of the Department.

- a) Of having completed the minimum units in theory and practical as prescribed in the syllabus
- b) Of having attended 70% of the total period devoted to the practical / viva / seminar /Project and Internships

6. Fee Structure – Rs. 25,000/-

Job Opportunities of the course-

- 1) As a Freelance Diet Counsellor
- 2) As a Dietician in Hospitals, Gym, Wellness clinics, Hostels
- 3) In Public health system as public health Nutrition Experts
- 4) In Fitness clubs
- 5) In Corporate sectors as Diet Counsellor
- 6) Where PG Diploma is quoted in eligibility.

P.G. Diploma in Dietetics and Nutrition

SEM-I						
Paper No.	Subject	Theory	Internal	Total Marks	Total periods per week	Credits
	Theory					
C1. Compulsory	Nutrition and dietetics-I	80	20	100	4	4
C2. Compulsory	Nutritional Biochemistry	80	20	100	4	4
E1. Elective	Group 1	80	20	100	4	4
	Practical –I			100	4	2
SEM-II						
C3. Compulsory	Nutrition and dietetics-II	80	20	100	4	4
C4. Compulsory	Food Science and Food Microbiology	80	20	100	4	4
E2. Elective	Group 2	80	20	100	4	4
	Practical-II			150	4	2
	Internship					
	Internship two months			75		
	Case study and Dissertation			75		
				1000	32	
Elective Group 1	Human Physiology Or Research Methodology					
Elective Group 2	Food service management and community nutrition Or Sports nutrition					

Staff requirement and Qualification:-

Required Qualification:

Essential: M. Sc Food and Nutrition or M. Sc Home Science (Food & Nutrition) or M. Sc Dietetics and Nutrition or Any Medical Graduate (MBBS/BAMS/BHMS) with PG Qualification in Nutrition & Dietetics or MPH (Nutrition)

Desirable:

SET/NET/M. Phil/ Ph. D for candidates with PG qualification in Food & Nutrition/Home Science/ Dietetics & Nutrition

For medical graduates without PG qualification in Nutrition & Dietetics, teaching experience in Biochemistry/Physiology

Examination Pattern:-

Theory paper will be of 80 marks,

Internal marks -20

Total:- 100 marks

Theory paper:-

- 1) Examiner will set five questions
- 2) All the questions carry equal marks.
- 3) Question number 1 and 2 will be Long answer type Question of 16 marks for each question.[Q 1=16M,Q2 =16 M]
- 4) Question number 3 and 4 will be short answer type question which will have 4 sub questions (having 4 marks each) of 16 marks for each [Q 3=16 M and Q4= 16M]
- 5) Question number 1,2,3,4 should have options
- 6) Question number 5 will be of short answers having 2 marks each (total 8 questions)[16M]
- 7) Question number 1 will be from unit 1 and unit 2
- 8) Question number 2 will be from unit 3 and unit 4
- 9) Question number 3 and 4 will be from all units

Internal marks Distribution –

Assignment: - 10 marks

Seminar Presentation: –10 marks

For Practical:-

Record book	10 marks
Viva	10 marks
Experiment	30 marks

For Project:-

Project	30 marks
Viva	20 marks

Compulsory Internship of 2 months

Note: - 1 period is of 60 minutes

Objectives:-Develop the concept of balanced diet and role of diet in different physiological conditions.

Unit 1

Introduction to nutrition:-Definition related to nutrition, Food, nutrients, nutritional status .what is nutrition & sign of good nutrition & poor nutrition, guidelines of good health.

Food & our body:-Body composition, Reference man, Reference women, R.D.A., BMR, calorific value of food, Bomb calorimeter, Determining your own calorific needs, food groups, exchange list systems

Unit 2

Diet Counselling & therapeutic diets:-Dietician Classification code of ethics, responsibilities, scopes, nutritional counselling.

Therapeutic diets:-Hospital diets & progressive modification, Additional modifications in texture & consistency, Modifications of a normal diet during illness & convalescence.

Modes of Feeding:-Anteral & Parental feeding, gastrostomy, jejunectomy.Pre & Post-operative care

Unit 3

Nutrition during Pregnancy:-Physiological changes, desirable weight change, nutritional needs, complication.

Nutritional needs for lactating women:-Role of hormones in milk production, Nutritional requirements.

Unit 4

Concept of balance diet:-Nutritional needs, physiological changes & balance diet for school going adolescent & adult, geriatric nutrition.

References:-

- 1] Robinson 'Normal and therapeutic nutrition' New Delhi, TATA McGraw Hill Publication Co. Ltd.
- 2] Antia F.P(1986)'Clinical Dietetics and Nutrition'. Bombay
- 3] Joshi S.A. 'Nutrition and dietetics', New Delhi, TATA McGraw Hill Publication Co. Ltd.
- 4] Crampton E.W. and L.E. Lloyd (1915), 'Fundamentals of nutrition', W.H. Freeman.
- 5] B.Srilakshmi'Dietetics', New Age International Publishers.
- 6] Davidson S.R, Passmore and IF. Brock(1986),'Human Nutrition', Churchill, Livingstone.

Objectives:- Understand the metabolism of nutrient in health and diseases.
Understand role of nutrients and their deficiencies.

Unit 1

General body composition: -General body composition & methods of determining body composition, factors affecting body composition.

Enzymes:-Definition, nature, classification (division) of enzymes, how enzymes acts, characteristics of enzymes action.

Biophysics:-Units of concentration of solution, Filtration, Diffusion, Osmosis, ultrafiltration, Dialysis, surface Tension.

Colloid:-Classification, properties & physiological importance.

Unit 2

Carbohydrates:-Definition, classification, physical & chemical properties, functions, sources, Metabolism, Nutritional aspect of carbohydrate.

Minerals:-Definitions, Functions, requirement of micro & macro minerals.

Unit 3

Proteins:-Definition, classification, physical & chemical properties, Functions, Sources, Biological value of proteins, protein metabolism. Indices for determination of protein quality.

Nucleic acid:-DNA & RNA, structure & functions, metabolism, genetic disorder. e.g. Cancer, autoimmune diseases.

Unit 4

Lipids: - Definition, classification, physical & chemical properties, Functions, Sources, Biological role, metabolism & inborn error of lipid metabolism, nutritional aspects of lipids.

Vitamins:-Definition, classification, characteristics, absorption & role of vitamins in metabolism, deficiency Diseases.

References:-

- 1] Yadav S. 'Food chemistry' New Delhi, Anmol publications Pvt Ltd.
- 2] Lubert Stryer 'Biochemistry'
- 3] Syed et al (1997), 'Experimental methods in food engineering', New Delhi, CBS.
- 4] Meyer 'Food chemistry', New Delhi, CBS publications and distributors.
- 5] Lehninger A.L. (1990) 'Principles of biochemistry' New Delhi, Oxford University Press.
- 6] Potter N.N. (1987), 'Food science', New Delhi, - CBS publications and Distributors.
- 7] Sukumar De. (1997), 'Outlines of dairy technology', New Delhi, Oxford University Press.
- 8] West Staunton et al 'Textbook of Biochemistry', New Delhi, Oxford and IBH publishing Co. Pvt. Ltd.
- 9] Joshi S.A. 'Nutrition and dietetics', New Delhi, TATA McGraw Hill Publication Co. Ltd.

Objectives:-To understand the structure & composition of human body.

Unit 1

Introduction:-Definition of anatomy physiology, synopsis of physiological study.

Cell:-Structure in details, cell division and Elementary composition of human body.

Tissue:-Structure and functions of various types of tissues, organs and organ system.

Sensory organs:-Structure & functions of muscles.

Musculoskeletal system:-Structure & classification of bones, Axial & appendicular skeletal structure, voluntary & involuntary muscles, physiology of contraction & relaxation of muscles.

Unit 2

Digestive system:-Introduction & function of digestive track. Organs anatomical structure, secretory glands & their Secretion, enzymatic action, Digestion & absorption of food.

Circulatory system:-Introduction, Heart-Anatomical structure and functioning.

Arteries:-structure capillaries, veins oxygen of heart beats, spread of cardiac impulse, heart blocks, cardiac cycle,ECG.

Blood:-Function, composition of blood, Haemoglobin-chemistry & count development of RBC, coagulation of blood-Importance & mechanism of coagulation & blood coagulation factors. Thrombosis (Intravascular clotting). Factors preventing & hastening coagulation.

Plasma proteins:-Chemistry & separation of plasma proteins, Relation of diet to plasma proteins, functions of plasma proteins.

Lymphatic system:-Lymph vessels & their functions, concept of circulation at tissue level.

Respiratory system:-Basic anatomy of respiratory system. Process of respiration - transport & exchange of oxygen & Carbon dioxide in the body.

Unit 3

Excretory system:-Structures & function of kidney ,structure of nephron, resumption mechanism of kidney ,renal, threshold values of nutrients ,formation of urine ,fluid & electrolyte balance,composition of urine ,role of skin & liver in excretion.

Defence mechanism of body:-Localisation of infection, inflammation, active & passive immunity introduction T-lymphocytes-lymphocytes, Immunisation, failure of immunity, DiGeorge syndrome, common variable immune Deficiency syndrome.

Unit 4

Endocrine glands:-Structure & functions of hypothalamus, pituitary gland, thyroidgland, pancreas, adrenal gland, testis, Ovaries. General introduction to mode of hormones on target cell. Disorders due to hypo & hyper activity of above glands.

Reproductive system:-Anatomy & function of male & female reproductive organs. Menstrual cycle conception, Parturition contraception, menopause & associated physiological problems.

References:-

1] Chatterjee C.C ‘Human physiology’, Calcutta, Medical Allied agency.

2] L.Antony, C.A (1963), ‘Text book of anatomy and physiology’, the c.v Mosby Co., Saint Louis

- 3] Bell G.H., Davidson, J.N., and Scarborough H. (1972)'Textbook of physiology and Biochemistry' London E.S. Livingston Ltd.
- 4] Best C.H. and Taylor, R.B. (1965)'The Living Body', London, Chapman and Hall Ltd..
- 5]Best C.H., and Taylor, R.B.(1975), 'The Physiological Basis for Medical Practice' Calcutta, The Williams and Wilkinson Scientific Book Agency.
- 6] Guytons, AC. (1966),'Textbook of Medical Physiology', London, W.B. Saundes & Co.
- 7] Rogers, T.S, Elemenry (1961),'Human Physiology', New York, John Willey and Sons, Inc.
- 8] Green, IH (1972), 'an Introduction to Human Physiology 'London, Oxford University Press.

PAPER 3 [C.3] Nutrition & Dietetics-II [Marks 80+20=100]

Objectives:- Know the importance of therapeutic diet.

Knowledge about dietary control of different diseases

Unit 1-

Energy imbalance- underweight & obesity

Gastrointestinal diseases:-Diarrhoea & constipation, peptic ulcer & gastritis, ulcerative colitis, regional enteritis, tropical & non tropical spru. Diverticular diseases, Crohn's diseases, acute appendicitis

Unit 2

Diseases of metabolic disorder :-Diabetes mellitus with Insulin, hypoglycaemic drugs, Arthritis & gout.

Fever:-Metabolic changes during fever, typhoid, Influenza & Tuberculosis, Rheumatic fever.

Liver Diseases & gall bladder diseases:-Hepatitis, cirrhosis, Hepatic coma & pre-coma, cholelithiasis, cholecystitis.

Unit 3

Kidney diseases:-Acute Glomerular nephritis, nephrotic syndrome & chronic renal failure, renal calculi dialysis.

Cardiovascular diseases:-Hypertension, atherosclerosis, Angina pectoris, IHD, Hyperlipidaemia.

Diseases of nervous system:-Polyneuropathy, anorexia nervosa, Bulimia & alcoholism.

Unit 4

Nutritional needs in different physiological conditions:- Dietary management in surgical conditions, trauma, burns, allergies, cancer & AIDS, Anaemia Drug & Nutrient Interaction, Sports nutrition.

Reference Books:-

- 1] Robinson 'Normal and therapeutic nutrition' New Delhi, TATA McGraw Hill Publication
- 2] Antia F.P.(1986)'Clinical Dietetics and Nutrition'. Bombay
- 3] Joshi S.A. 'Nutrition and dietetics', New Delhi, TATA McGraw Hill Publication Co. Ltd.
- 4] Crampton E.W. and L.E. Lloyd (1915), 'Fundamentals of nutrition', W.H. Freeman.
- 5] B.Srilakshmi'Dietetics', New Age International Publishers.
- 6] Davidson S.R, Passmore and IF. Brock(1986),'Human Nutrition', Churchill, Livingstone.
- 7] Anderson, Liennea, Dibble, Majorie, Turkki, P.R. Mitchell, Helen and Rynbergen, Henderika(1982)" Nutrition in Health and disease" 17th edition J.B. Lippincott Co. Philadelphia.
- 8]Gopalan C. , Rama Shastri, B.V. &Balasubramanian S.C.; Revised and updated by Narsingh Rao B.S. Deosthale, Y.G. & Pant, K.C.(1989)"Nutritive value of Indian Foods" 2nd Ed. National Institute of nutrition, Hyderabad.
- 9]Kinney, J.M. ; Jeejeebhoy K.N. Hill G.L. and Owner, O.E. (1988)"Nutrition and Metabolism in patient Care" W.B. Saunders and Co.,Philadelphia.
- 10]Krause, Marie, V. and Mahan, Kathleen, L. (1984) "Food , Nutrition and Diet Therapy – A textbook of Nutritional Care"7th Ed. W.B. Saunders Co.Philadelphia.

11] Mahan, Kathleen, L. & Arlin, Marian, T. (1992) "Krauses Food, Nutrition & Diet Therapy" 8th Ed. W.B. Saunders Co. Philadelphia.

Objectives:-To understand food safety measures.

Impact and importance of cooking of food.

Unit 1

Cooking method:-objectives, cooking methods, preparatory food acceptability procedures & sensory evaluation.

Nutritive value of different food groups ,their general structures & changes due to cooking in the following food groups, milk & milk products, eggs, meat, poultry, fish.

Unit 2

Food groups:-Nutritive value of different food groups, their general structure & changes due to cooking in the following food groups- Cereals & cereal products, Pulses & legumes, Fruits & Vegetables, Sugar & confectionary, Beverages, Condiments & spices, Nuts & Dried fruits.

Unit 3

Contamination of food:-classification of toxicants in details Safe food preparation practices, Detection of food adulteration, Fermentation -Advantages & uses of it, Leavening agent, Food additives.

Unit 4

Food Preservation & food spoilage:-Definition, importance & principles of food preservation. Factors contributing to food spoilage. Methods of food preservation, packaging materials, bottling & canning. Changes in nutritional needs complication.

References:-

- 1]Antia F.P(1986)'Clinical Dietetics and Nutrition'. Bombay
- 2]General Microbiology- Powar
- 3] Good Microbiology- Frazier and Westhoff
- 4]Microbiology- Prescott, Harley, Klein
- 5] Food Microbiology – Adams
- 6] An Introduction of microbiology – P.Tauro
- 7] General Microbiology – Stainer
- 8] Food Microbiology- James M. H Jay
- 9] Food Hygiene, Microbiology and HACCP- 3rd edition – S.J. Forsythe and P.R. Haynes.

PAPER E.2 Food Service Management and Community Nutrition [Marks 80+20=100]

Objectives: -To enable the Students to understand Nutrition and Health situations in community.

To give students a basic understanding of the principles of management to apply in food service administration and menu planning.

Unit 1

Fundamentals of management:- Principles, Functions and tools of management, Management of resources. Review of commercial and non-commercial food service organizations and their development.

Meal planning in Institutions: – Basic factors in Institutional meal planning – Menu, Types of Menu, Menus for different commercial and non-commercial organizations (Hospital, Club, Industrial and Institutional Canteen, Prison, Hotel, Hostel, Orphanage, Transport)

Space Equipment: – Planning and Organization for Kitchen, Stores and service area. Food Service and Inventory management - Food purchasing, receiving, storing, issuing and Inventory management

Organization:–Organizational chart , organizational chart of Dietary management, line of staff, Authority ,Responsibility, Delegation of Authority, Centralization and Decentralization of Food Service.

Unit 2

Personnel Management and Service management: – Manpower planning, Recruitment, Selection, Induction, Performance Appraisal, Training Development. Table service, Dining room management, Delivery and service of food in different systems

Financial management: –Costing and Budgeting, pricing, Food and beverage cost control, Maintenance of Accounts

Food Production and equipment used in food service: – Production planning, methods of food production, types of food and beverage service, clearing, cleaning and waste management. Factors affecting selection of equipment, Features to note during purchase of equipment, Classification of food service Equipment

Floor Planning and Lay out:–Factors to consider in floor planning related to type of food service. Lay out Design-Space Allowances, space relationship, basic and ideal requirements for each work area.

Unit 3

Concept of Health and Nutritional Problems: - Concept of Nutrition and public health nutrition, Scope of public health nutrition, Nutritional Problems in India, Causes and its Remedies, Malnutrition-Definition, over nutrition, under nutrition, Optimum Nutrition

National and International Agencies working to combat malnutrition:-National Agencies- NIN, CFTRI, ICMR

International Agencies – WHO, UNICEF, ICAR, FAO

Applied Nutritional Programs—SNP, ANP, ICDS

Assessment of Nutritional Status: –Nutritional Assessment of Community ,Methods of Assessment of Nutritional Status -Anthropometric measurements, Clinical methods, Biochemical method, Biophysical method , Vital statistics. Diet Surveys –Population sampling ,

and duration of survey ,Diet survey methods, questionnaire, Food list method , Interview method , Food Inventory of log book method , Weightment of raw food , Weightment of cooked food , Analysis of cooked food method.

Unit 4

Diet and Nutrition in India: –Population and food production, Nutritional Adequacies of diets, Food needs and food Availability, Research and education in Nutrition and food Science. Food fads and fallacies: –Importance and ways of effective communication and community participation in any nutrition education program .Food and the future-Genetically modified foods, Organic foods.

Emerging trends in Food Technology:–Biotechnology in food, Bio fortification, Nutraceuticals, Low cost nutrient supplements, Processed and convenience food

Nutrition Education:-Definition, Objectives, Importance, Methods of Nutrition Education, Planning for nutrition and health education, Techniques of nutrition education

References (food service management):-

- 1] Foodservices in Institutions –Wood
- 2] Food service in Institutions –West, Bessin, Brooks
- 3] Food Selection and Preparations –Sweetman,
- 4] Food service in Institutions – Harger V P, Shugart G.SS. And Palacio J.P., Macmillan Publishing co. New York
- 5] Foods and Beverage control –Kotas R. and Davis B. 1981, International textbook company.ltd. Glasgow

References(Community nutrition):-

- 1] Food Science –B. Srilakshmi
- 2] Food Facts AND Principles – N. Sakuntala Manay, M.Shadaksharaswamy
- 3] Advanced textbook on food and Nutrition-9VOL. 1 and 2) M. Swami Nathan, the Bangalore Printing and Publishing co.