

**SARDAR PATEL UNIVERSITY
VALLABH VIDYANAGAR**



SYLLABUS EFFECTIVE FROM: 2018-19

Programme: M.Sc. (Home Science)

Subject: Foods and Nutrition

Semester: IV

PH04CFDN21 MOLECULAR NUTRITION – II

(100 MARKS - 4 HOURS, CREDITS -4)

Objective:

The course will enable the students to:

- Gain knowledge about the physiological and metabolic role vitamins and minerals in human body.
- Learn the requirements of vitamins and minerals for various age groups and factors affecting it.
- Understand the molecular action of vitamins and minerals in health and diseases.
- Acquaint with the role of immune system in gastrointestinal health.

Content:

Unit: 1 Fat Soluble vitamins (Vitamins A, D, E & K)

Functions, deficiency, RDA, food sources, digestion, absorption and metabolism of fat soluble vitamins. Role of fat soluble vitamins in gene expression. Molecular action of fat soluble vitamins in health and disease.

Unit: 2 Water soluble vitamins (Vitamin B-complex and vitamin C)

Functions, deficiency, RDA, food sources, digestion, absorption and metabolism of water soluble vitamins. Role of water soluble vitamins in gene expression. Molecular action of water soluble vitamins in health and disease.

Unit: 3 Major minerals

Functions, deficiency, RDA, food sources, digestion, absorption and metabolism of major minerals. Role of major minerals in gene expression. Molecular action of major minerals in health and disease.

Unit: 4 Trace Elements

Functions, deficiency, RDA, food sources, digestion, absorption and metabolism of trace elements. Role of elements in gene expression. Molecular action of elements in health and disease.

Unit-V Immunity

The immune system associated to mucous and adverse food reactions. The role of mucous in the defence system: intestinal flora. Probiotic food and prebiotics: The intestinal immune system: intestinal barrier and its functions, the intestine as effector in inflammatory reactions. Control of absorption of antigens in the intestine. Oral tolerance

and allergic sensitivity. Immunological reactions (allergies) and non-immunological reactions (intolerances) to foods. Causes, pathogenesis and symptoms of food allergies and intolerances, allergens.

Course Learning Outcome:

- Discuss about the functions and deficiency of vitamins and minerals.
- Describe about the molecular action of vitamins and minerals.
- Describe about the role of vitamins and minerals in health and disease.

Reference Books:

1. Nutritional Genomics: Discovering the Path to Personalized Nutrition by Jim Kaput, Raymond L. Rodriguez, Willi Publications.
2. Nutritional Genomics: Regina Brigelius -Flohe and Hans- Geory Joost, Willi Publication.
3. Krause's Foods and Nutrition Therapy by L. Kathleen Mahan and Sylvia Escott Stump, Saunders Elseviers Publication.
4. Modern Nutrition in health and diseases, by Maurice E. Shills, Lippincott Williams and Wilkins Publication.

Objective:

This course will enable the students to:

- Understand the etiology and metabolic variations in acute and chronic diseases related to the G.I. tract and accessory organs, kidneys, allergies, cancer, and physiological stress.
- Know the effect of the above diseases on the nutritional status and on nutritional and dietary requirements.
- Plan and provide appropriate nutritional care for the prevention and treatment of the above diseases.

Content:

Unit: 1 Disease of the G. I. System - Nutritional Assessment

- Pathogenesis of G.I. Disease with special reference to upper G. I. Tract and ulcers.
- Diseases of esophagus and dietary care
- Diseases of stomach and dietary care
- Gastric and duodenal ulcers
- Predisposing factors and Treatment
- Brief medical therapy, rest, antacids, other drugs and dietary care
- Food acidity, foods that cause flatulence, factors that damage G. I. Mucosa
- Foods stimulating G. I. Secretion
- Diet and Eating Pattern
- Dietary Recommendations
- Liberal Approach Vs Traditional Approach
- Possible nutritional and dietary inadequacies
- Gastrectomy
- Intestinal Diseases
- Flatulence, Constipation, Irritable Bowel, Hemorrhoids, Diarrhoea, Steatorrhoea, Diverticular disease, Inflammatory Bowel Disease, Ulcerative Colitis.
- Treatment and Dietary Care in the above mentioned conditions.
- Malabsorption Syndrome
- Celiac Sprue, Tropical Sprue
- Intestinal Brush border deficiencies (Acquired Disaccharide Intolerance)
- Protein Losing Enteropathy
- Dietary Care Process

Unit: 2 Diet in Diseases of the Liver, Pancreas and Biliary System

- Nutritional care in Liver disease in the context of results of specific Liver Function Tests.
- Dietary Care & Management in Viral Hepatitis, Cirrhosis of Liver, Hepatic Encephalopathy, Wilson's disease.
- Dietary care and management in diseases of Gall Bladder and Pancreas.

- Biliary Dyskinesia, Cholelithiasis, Cholecystitis, Cholecystectomy, Pancreatitis, Zollinger- Ellison Syndrome.

Unit: 3 Renal Diseases

- Functions of a normal kidney - a brief review
- Diseases of the kidney, classification
- Glomerulo nephritis - Acute and Chronic - Etiology, Characteristics, Objectives, Principles of Dietary Treatment and Management
- Nephrotic syndrome - objectives, principles of Dietary Treatment and Management.
- Uremia and Renal Failure
- History, General Principles of Protein Nutrition in Renal Failure and Uremia.
- Acute Renal Failure - Causes, dietary management fluid, sodium and potassium balance, protein and energy requirements
- Chronic renal failure - Medical treatment, Renal transplants. Dialysis and types of hemodialysis, Peritoneal Dialysis & Continuous Ambulatory Peritoneal Dialysis (CAPD). Dietary Management in conservative treatment, dialysis and after renal transplantation.
- Use of Sodium and Potassium Exchange lists in Renal (diet planning).
- Chronic renal failure in patients with diabetes mellitus
- Chronic renal failure in children
- Nephrolithiases - Etiology, types of stones, Nutritional care, alkaline-ash diets

Unit: 4 Allergy

- Definitions, symptoms, mechanism of food allergy
- Diagnosis - History, Food record
- Biochemical and Immunotesting (Brief)
- Elimination diets
- Food selection
- Medications (brief)
- Prognosis of food Allergy in infancy - Milk sensitive enteropathy; Colic, Intolerance to breast milk, prevention of Food Allergy.

Unit: 5 Nutrition in Cancer

- Types, symptoms, detection
- Cancer therapies and treatment - side effects and nutritional implications
- Goals of care and guidelines for oral feeding
- Accommodating side effects
- Enteral tube feeding - Nasogastric, Gastrostomy, Jejunostomy
- Parenteral Nutrition
- Pediatric patients with cancer
- The terminal cancer patient

Unit: 6 Nutrition in Physiological Stress

- Physiological stress and its effect on body, nutritional implications.

- Fevers and infections
- Surgery and Management of Surgical Conditions
- Parenteral Nutrition - Types, mode, and composition of feeds
- Tube feeding - Routes, modes, composition, care to be taken during feeding
- Dietary guidelines
- Burns
- Metabolic implications - nutritional requirement
- Management and nutritional care
- Nutritional Management of Patients with HIV, AIDS

Course Learning Outcome:

- At the end of the course the student will be able to recommend and provide appropriate nutritional care for the prevention and treatment of diseases related to the G.I. tract and accessory organs, kidneys, allergies, cancer, and physiological stress.

Reference Books:

1. Anderson L., M. V. Dibble, P. R. Turkki, H. S. Mitchell and H. J. Rynbergen Nutrition in Health and Disease, 17th ed., J. B. Lippincott Co., Philadelphia, 1982.
2. Antia F. P.: Clinical Dietetics and Nutrition, 3rd ed., Oxford University, Press, Delhi, Reprinted in 1989.
3. Bennion M.: Clinical Nutrition, Harper and Row Pub. New York, 1979.
4. Frances, D. E. M.: Diets for sick children, Blackwell Scientific, Publications, 1974.
5. Hui, Y. H.: Human Nutrition and Diet Therapy, Wadsworth Health ScL Divs. 1983.
6. Karran, S. J. and K. G. M. M. Alberti (ed): Practical Nutrition Support, John Wiley and Sons. Inc. N. Y. 1980.
7. Krus M. V. and L. K. Madan: Food, Nutrition and Therapy, W. B. Saunders Company, London, 1984.
8. Lois, J and C. M. Peterson (ed): Nutrition and Diabetes, Alan R. Liss, Inc. N. Y., 1985.
9. Passemore R. and M.A. Eastwood: Human Nutrition and Dietetics, 8th ed. ELBS, Churchill Livingstone, 1986.
10. Robinson, C. H, M. R. Lawlwr, W. L. Chenoweth and A. E. Garwick: Normal and Therapeutic Nutrition, 17th ed; Mac Millan Pub. Co.
11. Suitor, Co Woo and Moo F.. Hunter: Nutrition, Principles and Application in Health Promotion, J.. Boo Lippincott Co., Philadelphia, 1980..
12. Whitney, E. N. and C. B.. Cataldo: Understanding Normal and Clinical Nutrition, West Pub. S1. Paul, 1983.
13. Willims, S.. R.: Nutrition and Diet Therapy, 4th ed., The C. V. Mosby Co., S1. Louis, 1981.
14. Willims S. R.: Essentials of Nutrition and Diet Therapy, 4th ed., Mosby College Pub. S. Louis, 1986.
15. Thomas, B.: Manual of Dietetic Practice, 1996,.
16. ASPEN; Nutrition Support, Dietetics

PH04CFDN23 DISSERTATION & VIVA VOCE

(350 MARKS - 21 HOURS, CREDITS -14)

Objective:

- To provide students with the opportunity to work independently as researchers
- To make students better researchers

Content:

1. The student will continue the research work taken up in the III semester and will complete it by the end of the semester
2. The student has to submit hard and soft copy of the report in the required format at the end of the semester
3. The student has to face a external viva voce on the research work carried out by the student

Course Learning Outcome:

- The student would have gained in-depth knowledge in the area of work
- The student would have learnt the intricate details for research and report writing

PH04CFDN24 SEMINAR

(50 MARKS - 4 HOURS, CREDITS -2)

Students will select a topic of their choice, collect related recent review of literature and make a presentation.

PH04CFDN25 COMPREHENSIVE VIVA VOCE

(25 MARKS - 2 HOURS, CREDITS -1)

At the end of the semester students will appear for a viva voce based on course content covered in all the theory and practicals of all four semesters.