

**POST GRADUATE DIPLOMA IN DIETETICS  
AND PUBLIC HEALTH NUTRITION**

**PG ANNUAL SYSTEM  
CURRICULUM**

**DEPARTMENT OF COMMUNITY SCIENCE  
(HOME SCIENCE)**

**BHUPAL NOBLES' UNIVERSITY**

**UDAIPUR**

**2021**

**Post Graduate Diploma in  
Dietetics and Public Health Nutrition  
Courses**

<b>Paper No.</b>	<b>Paper</b>	<b>Marks</b>	<b>Periods/wk</b>	<b>Duration of exam (Hrs)</b>
<b>PGDPH 111</b>	<b>Human Physiology &amp; Nutritional Biochemistry</b>	<b>100</b>	<b>3</b>	<b>3</b>
<b>PGDPH 112</b>	<b>Therapeutic Nutrition</b>	<b>100</b>	<b>3</b>	<b>3</b>
<b>PGDPH 113</b>	<b>Public Health Nutrition</b>	<b>100</b>	<b>3</b>	<b>3</b>
<b>PGDPH 114</b>	<b>Food Service Management-I</b>	<b>100</b>	<b>3</b>	<b>3</b>
<b>PGDPH 115</b>	<b>Practical</b>	<b>100</b>	<b>2</b>	<b>2</b>
	<b>Total</b>	<b>500</b>	<b>14</b>	

Note:

1. Pass percentage: The minimum marks required to pass the examination at the end of the academic year shall be 36 percent in the aggregate of written papers, 36 percent in the aggregate of practical papers, 40 percent in the Seminar and 40 percent in the overall aggregate.
2. The practical examination for all courses shall be conducted over a period of 1 day for 2 hours each.
3. The duration of the Course shall be one academic year followed immediately by 15 days internship in an Institution recognized by the Academic Council. Only those candidates shall be awarded the diploma degree who have passed the examination along with the internship in an institution, as aforesaid to the satisfaction of the Head of the Institution where she has been studying.
4. Eligibility criteria for admission will be graduation degree from any discipline with 40 percent and above.

## DETAILED COURSES

### HUMAN PHYSIOLOGY & NUTRITIONAL BIOCHEMISTRY

<b>Paper No.</b>	<b>:</b>	<b>PGDPH 111</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>
<b>Teaching Periods</b>	<b>:</b>	<b>3/week</b>

#### OBJECTIVES

1. To understand the current state of knowledge about the functional organization of the human body.
2. To be able to correlate physiology with various disorders and their pathogenesis.
3. To augment the biochemistry knowledge acquired at the undergraduate level.
4. To understand the mechanism adopted by the human body for regulation of metabolic pathways.
5. To get an insight into interrelationships between various metabolic pathways.
6. To help a student to use the knowledge of biochemistry in nutritional management.

#### CONTENTS

##### UNIT I

##### A. Blood and Cardio-Thoracic and Excretory Physiology

- Blood -Composition and Function
- Plasma Protein -Composition and Function
- Cardiac cycle, Cardiac output, E.C.G.
- Blood pressure, Hypertension, Coronary Artery Disease
- Lung volume and Capacities.
- Respiratory function tests
- Urine formation, Renal function tests
- Acid Base balance

##### B. Exercise Physiology

- Concept of Fitness
- Energy Metabolism in Sports
- Overview of Diet and Physical Performance

## **UNIT II**

### **A. Gastrointestinal physiology**

- Composition ,function and regulation of :  
Saliva  
Gastric juice  
Pancreatic juice  
Bile  
Intestinal juiceGI  
hormones

### **B. Neuro-Endocrine and Reproductive Physiology**

- Overview of organization of nervous system
- Effects of Pituitary, Thyroid, Parathyroid, Adrenal and Pancreatic hormones
- Physiology of Menstruation and Menopause
- Physiology of Pregnancy and Lactation

## **UNIT III**

### **Carbohydrates**

- Overview of catabolism of glucose, fructose and galactose. and regulation of glycolysis
- Citric acid cycle and its regulation
- Blood sugar regulation
- Hexose monophosphate pathway.

### **Lipids**

- Overview of  $\beta$ -oxidation.
- Denovo synthesis of fatty acids and their elongation.
- Ketosis.
- Fatty liver.
- Metabolism of lipoproteins.
- Metabolism of cholesterol.

### **Proteins**

- Transamination and deamination of amino acids
- Urea Cycle

## **UNIT IV:**

### **Nucleic acids**

- Structure of nucleic acids.
- Genetic code.

- Genetic mutation.
- Protein biosynthesis

## **UNIT V: Classification and physical properties of compounds:**

- Chemical and general properties of Carbohydrates
- Classification of lipids
- Classification of amino acids and proteins
- Overview of biochemical role of macro and micro minerals.

### **RECOMMENDED READINGS**

- Ganong W.F.(2003)-Review of Medical Physiology.21<sup>st</sup> ed. McGraw Hill.
- Guyton A.C. and Hall J.E.(2000)Textbook of Medical Physiology.10<sup>th</sup> ed. India:Harcourt Asia..
- Tortora G.J and Grabowski S.R.(2000) Principles of Anatomy andPhysiology.9<sup>th</sup> ed. John Wiley and Sons.Inc.
- Chaudhari S K(2000) Concise Medical Physiology.3<sup>rd</sup> Edition. Central.
- West J.B.(1996): Physiological Basis of Medical Practice.12<sup>th</sup> Edition. B. I.Waverly Pvt. Ltd.
- Berg JM, Tymoczko JL and Stryer L. (2002) Biochemistry 5<sup>th</sup> ed. W.H. Freeman.
- Devlin Tm. (2002)Text Book of Biochemistry with clinical Correlations. 5<sup>th</sup> ed. John Wiley and sons.
- Murray RK, Granner DK, Mayes PA and Rodwell VW, (2003) Harper's Illustrated Biochemistry, 26<sup>th</sup> ed. McGraw-Hill (Asia).
- Nelson DL and Cox MM. (2005) principles of Biochemistry, 4<sup>th</sup> ed. Freeman and Company.
- Voet D and Voet JG. (2004) Biochemistry 3<sup>rd</sup> ed. John Wiley and Sons

# **THERAPEUTIC NUTRITION I THEORY**

<b>Paper No.</b>	<b>:</b>	<b>PGDPH 112</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>
<b>Teaching Period</b>	<b>:</b>	<b>3 periods/ week</b>

## **OBJECTIVES**

1. To understand the etiology, physiological and metabolic anomalies of acute and chronic disorders / diseases.
2. To understand the effect of various disorders / diseases on nutritional status, nutritional and dietary requirements.
3. To be able to recommend and provide appropriate nutrition care for prevention and treatment of various disorders / diseases.
4. To remain updated on recent advances in Medical Nutrition Therapy (MNT)

## **CONTENTS**

### **UNIT I: Nutrition Care**

- a) Nutrition care process in MNT
  - Nutritional screening and assessment
  - Nutritional interpretation of routine medical and laboratory data
  - Nutrition care plan and implementation– qualitative and quantitative dietary modifications and progressive diets
  - Dietary counselling
  - Monitoring and follow up
  - Ethical issues
- b) Nutritional support methods
  - Enteral nutrition
  - Parenteral nutrition
- c) Diet, nutrient and drug interactions

### **UNIT II: Weight Management and Metabolic disorders**

**Recent advances in etiopathophysiology, clinical and metabolic aberrations, diagnosis, complications, treatment and MNT - prevention and dietary counseling in:**

- Obesity
- Underweight
- Eating disorders
- Metabolic stress - critical care, surgery, burns, injury and trauma, sepsis
- HIV/AIDS
- Diabetes Mellitus

### **UNIT III:**

#### **A. Management of Cardio-Vascular Disorders**

Recent advances in etiopathophysiology, clinical and metabolic aberrations, diagnosis, complications, treatment and MNT - prevention and dietary counselling in

- Diseases of the cardiovascular system: CAD - HT, Hyperlipidemia, Atherosclerosis, Metabolic Syndrome, MI, CHF, Coronary bypass surgery

#### **B. Food Allergy and Food Intolerance**

- Immunological basis, Clinical features, Diagnosis & MNT

### **UNIT IV: Disorders of the G I Tract and accessory organs**

Recent advances in etiopatho-physiology, clinical and metabolic aberrations, diagnosis, complications, treatment and MNT – Prevention and dietary counseling in:

- Upper and lower GIT disorders Gastro-esophageal reflux disease and esophagitis, peptic ulcers, diverticular diseases, malabsorption syndromes, lactose intolerance, celiac disease, IBD: Crohn's disease and ulcerative colitis.
- Liver, gall bladder and pancreatic disorders
  - Cirrhosis
  - Pancreatitis Allergy

### **UNIT V: Renal disorders**

Recent advances in etiopatho-physiology, clinical and metabolic aberrations, diagnosis, complications, treatment and MNT – Prevention and dietary counseling in:

- Nephrotic syndrome
- Glomerulo nephritis
- Acute and chronic renal failure
- Dialysis
- Renal transplant
- Renal stones
- Cancer



## RECOMMENDED READINGS

- Mahan L. K. and Escott Stump S. (2008) *Krause's Food & Nutrition Therapy 12<sup>th</sup> ed.* Saunders-Elsevier.
- Gibney MJ, Elia M, Ljungqvist & Dowsett J. (2005) *Clinical Nutrition*. The Nutrition Society Textbook Series. Blackwell Publishing Company.
- William's Basic Nutrition and Diet Therapy. 13th Edition. Stacy Nix (2009) Elsevier Mosby.
- Garrow, J.S., James, W.P.T. and Ralph, A. (2000) *Human Nutrition and Dietetics. 10<sup>th</sup> ed.* Churchill Livingstone.
- Lee RD & Neiman DC. (2009). *Nutritional Assessment.. 5<sup>th</sup> edition.* Brown & Benchmark.
- Dorland WA Newman. (2003) *Dorland's Illustrated Medical Dictionary. 30<sup>th</sup> ed.* WB Saunders Co.

## **PUBLIC HEALTH NUTRITION & NUTRITION SECURITY**

<b>Paper No.</b>	<b>:</b>	<b>PGDPH 113</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>
<b>Teaching Periods</b>	<b>:</b>	<b>4/week</b>

### **OBJECTIVES**

1. To understand the concept of Public Health Nutrition.
2. To understand the National Health Care Delivery System.
3. To understand the causes and consequences of nutritional problems in the community.
4. To orient the students with the methodologies applied in nutritional assessment of individuals and communities.
5. To understand the concept of Nutrition Security

### **CONTENTS**

#### **UNIT I: Public Health Nutrition**

Aim, scope and content of Public Health Nutrition

- Role of Public Health Nutritionist in National development
- Health – Definition, dimensions, determinants and indicators
- National Health Care Delivery System - Health care of the community, Health care systems

#### **UNIT II: Assessment of Nutritional Status of Individual and Community**

- Direct methods – anthropometry, biochemical, biophysical and clinical methods
- Indirect methods – dietary intake and ecological variables including socio-cultural, biologic, environmental and economic
- Errors in methods of assessing nutritional status

#### **UNIT III: Public Health Aspects of Undernutrition**

Etiology, public health implications, preventive strategies for:

- PEM/CED
- Vitamin A deficiency
- Nutritional Anemias
- Iodine Deficiency Disorders
- Vitamin D deficiency and Osteoporosis
- Zinc deficiency

#### **UNIT IV: Approaches and Strategies for Improving Nutritional and**

## **Health Status**

- Health based interventions including immunization, provision of safe drinking water/sanitation, prevention and management of diarrhoeal diseases
- Food based interventions including fortification, use of biotechnology, supplementary feeding
- Education based interventions including growth monitoring and promotion, communication for health and nutrition behaviour change

## **UNIT V:**

### **A. Nutrition Policies and Programs**

- National policies on health and nutrition
- National Health and Nutrition Programs – their administration and evaluation

### **B: Nutritional Surveillance**

- Definition, objectives, purposes and indicators

### **C: Program Planning**

- Diagnosis of situation, setting of objectives, suitability, relative costs of various situations, implementation, monitoring and evaluation.

## **RECOMMENDED READINGS**

- Gibney M.J., Margetts, B.M., Kearney, J.M. Arab, I. eds (2004) *Public Health Nutrition*, NS Blackwell Publishing. .
- Jelliffe, D. B and Jelliffe, E.F.P. (1989) *Community Nutritional Assessment*, Oxford University Press.
- Owen, A.Y. and Frankle, R.T. (1986) *Nutrition in the Community. The Art of Delivering Services*, 2<sup>nd</sup> ed. Times Mirror/Mosby.
- Park.K. (2009) *Park's Textbook of Preventive and Social Medicine*, 20<sup>th</sup> ed. M/s Banarsida Bhanot, Jabalpur.
- Wadhwa, A. and Sharma, S. (2003) *Nutrition in the Community*. A text book. SCN News, UN ACC/SCN Subcommittee on Nutrition
- Jelliffe, D. B and Jelliffe, E.F.P. (1989) *Community Nutritional Assessment*, Oxford University Press.
- Owen, A.Y. and Frankle, R.T. (1986) *Nutrition in the Community. The Art of Delivering Services*, 2<sup>nd</sup> ed. Times Mirror/Mosby.

# **FOOD SERVICE MANAGEMENT THEORY**

<b>Paper No.</b>	<b>:</b>	<b>PGDPH 114</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>
<b>Periods</b>	<b>:</b>	<b>3/week</b>

## **OBJECTIVES**

1. To understand the different kinds of Food service units & systems.
2. To understand the principles of organization and management.
3. To gain knowledge in various areas of food production.
4. To learn the principles of personnel management.

## **CONTENTS**

### **UNIT I:**

#### **A. INTRODUCTION TO FOOD SERVICE**

- Factors contributing to the growth of food service industry
- Kinds of food service systems Conventional, commissary, ready prepared, assembly/serve

#### **B. SPACE AND EQUIPMENT**

- Layout planning: Preliminary preparation-Information gathering , respects Determining basic units and equipment Design development.- Types of kitchen areas , Flow of work and work area relationship
- Determining equipment needs Types of Equipments Features of equipments Factors affecting selection of equipments Equipment needs for different situations
- Architectural considerations for a Food Service Establishment
- Feasibility assessment in terms of layout design and costs

### **UNIT II: FOOD PRODUCTION**

- Menu planning: Importance of menu, Factors affecting menu planning, Menu construction, Types of menu, Menu card, Qualifications of a menu planner
- Food Purchase: Purchasing methods – Market, Buyer, Vendor, Methods of Purchase: Formal and Informal, Purchasing procedure
- Storage: Types of storage, Store room requirement, Appropriate temperature for storage of different foods, Storeroom Records
- Quantity Food production: Production planning and control, Importance of planning, Production forecast, Estimating quantities to buy Quantity preparation techniques, Production schedule Product evaluation , Standardization of recipes, Recipe adjustments

and portion control

- Food delivery and service: Centralized and decentralized, factors affecting selection, Styles of service: self , table, tray equipment for delivery and service

### **UNIT III: FOOD CONTAMINATION AND SPOILAGE**

- Growth requirements and nutritional types of microorganisms – Photoautotrophs, photoheterotrophs, chemoautotrophs & chemoheterotrophs
- Factors affecting growth- Temperature, pH, oxygen and water activity
- Sources of food contamination- A general account
- Spoilage of some important foods: Milk, Fruits and Vegetables, Canned food and Meat

### **UNIT IV: IMPORTANCE OF MICROORGANISMS IN FOOD**

- Importance of microbes in food biotechnology: fermented foods,
- Food borne infections and intoxications: Definition, symptoms and prevention (*Salmonella typhi*, *Clostridium botulinum* )

### **UNIT V: FOOD HYGIENE, SANITATION AND SAFETY**

- a) Importance of hygiene and sanitation in food service organization
- b) Sanitation measures for Food, Personal and Unit Hygiene Training food service personnel in Sanitation.
- c) Safety- needs, causes of accidents and types, safety techniques, 3 Es of Safety
- d) Food laws/Food bill- FPO, ISI, AGMARK, PFA, New Food Bill 2006
- e) Quality standards - HACCP, ISO

### **RECOMMENDED READINGS**

- West B Bessie & Wood Levelle (1988) Food Service in Institutions 6<sup>th</sup> Edition Revised By Hargar FV, Shuggart SG, & Palgne Palacio June, Macmillian Publishing Company New York.
- Sethi Mohini (2005) Institution Food Management New Age International Publishers
- Koontz Harold & Weihrich Heinz (2006) Essentials of Management 7<sup>th</sup> edition Tata Mc Graw Hill Book Company.
- Terrell E M ( 1971 ) Professional Food Preparation, Wiley publishers(New York)
- Tripathi P C ( 2000) Personnel management 15<sup>th</sup> ed Sultan Chand, New Delhi
- Dessler Gary (2007). Human Resource Mangement 11<sup>th</sup> edition. Prentice Hall, New Jersey.

## **PRACTICAL**

<b>Paper No.</b>	<b>:</b>	<b>PGDPH115</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>
<b>Teaching Periods</b>	<b>:</b>	<b>2/week</b>

### **OBJECTIVES**

Equip students for

1. Planning and preparation of therapeutic diets for various diseases / disorders
2. Dietary counselling for prevention and treatment of various diseases / disorders
3. Developing special dietetic foods
4. To understand the importance of layout and equipment in food service units
5. Assessment of nutritional status and nutritional needs of patients
6. Planning and preparation of therapeutic diets for various diseases or disorders
7. Dietary counselling for prevention and treatment of various diseases or disorders
8. To plan and prepare low cost nutritious dishes and menus for vulnerable groups
9. Market Survey for special nutritional products and food items (both raw & processed)
10. To impart necessary skills to function as Food service manager.

### **PRACTICAL SESSIONS:**

1. Planning and preparation of diets for disorders covered in theory
2. Field visits to institutions to study layout and sanitary operations
3. Demonstrations of processing techniques/ cuisine
4. Investigating presence and enumeration of bacteria in samples (water and milk) by plate count, MPN and MBRT
5. To learn the techniques of assessment of nutritional status.
6. Diet counselling and preparation of counselling aids
7. Development of low cost recipes for infants, preschoolers, elementary school children, adolescents, pregnant and lactating mothers.
8. Field visit to two food service institutions
9. Planning menus within specified budget for any 2 of the following:
  - Nursery school
  - College hostel
  - College canteen
  - Hospital cafeterias
11. Standardization of a recipe (Any three)
12. Internship of 15 days followed by a presentation.