# Post Graduate Diploma in Dietetics and Public Health Nutrition

## Semester I

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## Semester II

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Note:

1. Pass percentage: The minimum marks required to pass the examination at the end of the academic year shall be 40 percent in the aggregate of written papers, 40 percent in the aggregate of practical papers, 40 percent in the Seminar and 50 percent in the overall aggregate.

2. As per the University directive, 25 percent of the maximum marks in each theory course will be assigned for internal assessment.

3. The practical examination for all courses shall be conducted over a period of 2 days for 6 hours each.

4. The duration of the Course shall be one academic year followed immediately by 3 months Internship in an Institution recognized by the Academic Council in that behalf. No candidate who has passed the examination shall be awarded the Diploma unless she has undergone the Internship in an Institution, as aforesaid to the satisfaction of the Head of the Institution where she has been studying.
DETAILED COURSES - PGDDPHN

SEMESTER I

HUMAN PHYSIOLOGY

Paper No. : 0111
Maximum Marks : 100
Teaching Periods : 4/week
Teaching Load : 48-50/semester

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.

CONTENTS PERIODS

UNIT I 18

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
UNIT II

Exercise Physiology

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

UNIT III

Gastrointestinal physiology

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

UNIT IV

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

RECOMMENDED READINGS

THERAPEUTIC NUTRITION I

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 Stress

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

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

UNIT III: Management of Metabolic disorders

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

- Diabetes Mellitus
- Gout

UNIT IV: 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
- Cerebrovascular disease, Peripheral vascular disease.

RECOMMENDED READINGS

PUBLIC HEALTH NUTRITION

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.

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: Public Health Aspects of Lifestyle Related Disorders
Public health implications and preventive strategies for:
- Obesity
• Hypertension
• Coronary heart disease
• Diabetes
• Cancer
• Dental Caries
• Public health aspects of H.I.V/ AIDS

RECOMMENDED READINGS


FOOD SERVICE MANAGEMENT
THEORY

Paper No. : 0114
Maximum Marks : 100
Teaching Periods : 4/week
Teaching Load : 48-50 periods/semester

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: INTRODUCTION TO FOOD SERVICE 4

• Factors contributing to the growth of food service industry
• Kinds of food service systems

Conventional, commissary, ready prepared, assembly/serve
UNIT II: ORGANIZATION & MANAGEMENT

- Management Theories: Classical, Scientific, Behavioral, Systems approach, Contingency approach, MBO, JIT, TQM

- Functions of management / manager
- Principles of management
- Definition of Organization and steps in organizing

Tools of management

- Tangible Tools: Organization chart, Job description, Job specification, Job analysis: Path way chart, Process chart, Work schedule, Production schedule, Staff and service analysis, Budget
- Intangible tools: Communication, Leadership, Decision making

UNIT III: 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 IV: PERSONNEL MANAGEMENT

- Functions of a personnel manager,
- Factors to consider while planning the kind and number of personnel:

  Menu, type of operations, Type of service, Job description and job specification

Manpower placement:
• Recruitment: Process and Sources-Internal and External
• Selection: Process interview, Tests
• Orientation: Importance, Content of programme, Developing an Orientation programme
• Training: Importance; Types - OJT, Group; continuous training, training for development, Developing a training programme
• Contract negotiation with employee: appointment letter, establishment of wages, components of wages, rules and regulations, duties, and service and benefits, contact with vendors
• Performance appraisal: Importance, Methods, Limitations
• Leadership: Importance; Styles, traits and skills
• Motivation: Role; Motivation theories and their application-Content theories: Maslow, Herzberg, McClelland; Process theories: Vroom, Equity; Reinforcement theory; Motivational plan and incentives
• Trade unions and collective bargaining, Labor Laws and policies

RECOMMENDED READINGS

• Sethi Mohini (2005) Institution Food Management New Age International Publishers
• Terrell E M (1971) Professional Food Preparation, Wiley publishers (New York)
• Tripathi P C (2000) Personnel management 15th ed Sultan Chand, New Delhi

PRACTICAL - Semester I

Paper No. : 0115
Maximum Marks : 100
Teaching Periods : 10/week

Course A: Therapeutic Nutrition I
Practical

Teaching Periods : 3/week (1 practical)
Teaching Load : 12 practicals /semester

OBJECTIVES
Equip students for
1. Assessment of nutritional status and nutritional needs of patients
2. Planning and preparation of therapeutic diets for various diseases or disorders
3. Dietary counselling for prevention and treatment of various diseases or disorders

CONTENTS

PRACTICAL SESSIONS

UNIT I: Market Survey for special nutritional products 1
UNIT II: Assessment of nutritional status for nutrition care 1
UNIT III: Planning and preparation of diets for disorders covered in theory with emphasis on dietary progression, special feeds. 8
UNIT IV: Diet counselling and preparation of counselling aids 2

Course B: Public Health Nutrition

Practical

Teaching Periods : 3/week (1 practical)
Teaching Load : 12 practicals /semester

OBJECTIVES
1. To plan and prepare low cost nutritious dishes and menus for vulnerable groups
2. To learn the techniques of assessment of nutritional status
3. To understand the national health care delivery system

CONTENTS

PRACTICAL SESSIONS

Unit I: Assessment of nutritional status–diet survey, anthropometry, clinical 3
Unit II: Rapid assessment procedures – focus group discussions, in-depth interviews, mapping to study health behaviour, food habits and dietary patterns 2
Course C: Food Service Management

Practical

Teaching Periods: 3/week (1 practical)
Teaching Load: 12 practicals /semester

OBJECTIVES

1. To understand the dynamics of market through survey
2. To comprehend the working of units through observation
3. To plan menus for events within specified budgets
4. To standardize recipes

CONTENTS

PRACTICAL SESSIONS

Unit I: Market survey for food items, both raw and processed

Equipment for production and service

To compare cost

Unit II: Field visit to two food service institutions

Unit III: Planning menus within specified budget for any 3 of the following:
- Nursery school
- College hostel
- College canteen
- Hospital cafeterias

Unit IV: Standardization of a recipe
Course D: Seminar

Teaching Periods : 1/week  
Teaching Load : 12 periods / semester

SEMESTER II

NUTRITIONAL BIOCHEMISTRY

THEORY

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OBJECTIVES:
1. To augment the biochemistry knowledge acquired at the undergraduate level.
2. To understand the mechanism adopted by the human body for regulation of metabolic pathways.
3. To get an insight into interrelationships between various metabolic pathways.
4. To help a student to use the knowledge of biochemistry in nutritional management.

CONTENTS

UNIT I: Classification and physical properties of compounds:

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- Chemical and general properties of Carbohydrates
- Classification of lipids
- Classification of amino acids and proteins

UNIT II:
Carbohydrates

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- 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 β-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 III:**
**Nucleic acids**
- Structure of nucleic acids.
- Genetic code.
- Genetic mutation.
- Protein biosynthesis

**UNIT IV:**
**Minerals**
- Overview of biochemical role of macro and micro minerals.

**RECOMMENDED READINGS**
THERAPEUTIC NUTRITION II

THEORY

Paper No. : 0212
Maximum Marks : 100
Teaching Period : 4 periods/ week
Teaching Load : 48-50 periods/semester

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: Disorders of the G I Tract and accessory organs 14
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, dumping syndrome, IBS, diverticular diseases, malabsorption syndromes, lactose intolerance, celiac disease, IBD: Crohn’s disease and ulcerative colitis.
- Liver, gall bladder and pancreatic disorders
  - Cirrhosis, Hepatic encephalopathy
  - Cholecystitis, Cholecystectomy
  - Pancreatitis

UNIT II: Renal disorders 12
Recent advances in etiopatho-physiology, clinical and metabolic aberrations, diagnosis, complications, treatment and MNT – Prevention and dietary counseling in:
- Nephrotic syndrome
- Glomerulonephritis
- Acute and chronic renal failure
UNIT III: Musculo-skeletal, Rheumatic, Allergic disorders and Cancer

a) Overview of principles of diet management in
   - Muscular skeletal and rheumatic disorders
   - Osteoporosis
   - Dementia
   - Parkinson’ diseases
   - Alzheimer’s disease

b) Food Allergy and Food Intolerance
   Immunological basis, Clinical features, Diagnosis & MNT

c) Recent advances in etiopatho-physiology, clinical and metabolic aberrations, diagnosis, complications, treatment and MNT – Prevention and dietary counseling in :
   - Cancers – general and specific
   - Effect of therapy on MNT

UNIT IV: Pediatric Nutrition Care and Management

- Management of severely acute malnourished (SAM) children – Nutrition Care
- Inborn errors of metabolism : PKU, MSUD, galactosemia, tyrosinemia
- Congenital anomalies and congenital heart disease

RECOMMENDED READINGS


PERSPECTIVES IN FOOD AND NUTRITION SECURITY

THEORY

Paper No. : 0213
Maximum Marks : 100
Teaching Periods : 4/week
Teaching Load : 48-50 periods/semester

OBJECTIVES
1. To understand the concept of Nutrition Security
2. To be familiar with the various approaches and strategies for combating malnutrition
3. To understand the various Government programs and policies aimed at improving the health and nutritional status of the population.
4. To be able to plan, implement, monitor and evaluate nutrition programmes.

CONTENTS PERIODS

UNIT I: Population Dynamics 4
- Demographic transition
- Population structure – implications on quality of life
- Population policy

UNIT II: Food and Nutrition Security 12
- Concepts and definitions of food and nutrition security at the national, regional, household and individual levels
- Impact of food production, losses, distribution, access, availability, consumption on food and nutrition security
- Disaster management
- Economics of Malnutrition

UNIT III: Approaches and Strategies for Improving Nutritional and Health Status 12
- 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 IV: Nutrition Policies and Programs  10
• National policies on health and nutrition
• National Health and Nutrition Programs – their administration and evaluation

UNIT V: Nutritional Surveillance  5
• Definition, objectives, purposes and indicators

UNIT VI: Program Planning  5
• Diagnosis of situation, setting of objectives, suitability, relative costs of various situations, implementation, monitoring and evaluation

RECOMMENDED READINGS
OBJECTIVES
1. To develop a knowledge base about the physical facilities needed for different types of food service units
2. To impart necessary expertise to manage the financial aspects in the units.
3. To get brief knowledge about various groups of microbes.
4. To understand the importance of microorganisms in food i.e. food spoilage, food fermentation and causing food borne infections.
5. To gain knowledge about the techniques used for cultivation and purification of microbes
6. To know about the concept of food safety and quality control.
7. To provide practical experience in maintenance of sanitation and safety in units.

CONTENTS

UNIT I: SPACE AND EQUIPMENT

- Layout planning:
  Preliminary preparation-Information gathering , Prospects
  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: FINANCIAL MANAGEMENT

- Importance of Financial Management in a food based enterprise
- Budgets and Budgeting process
- Records: Menu, Purchase, Store, Production, Sales, Personnel, Utilities
- Reports: Cost analysis: Concept of Trial Balance, Profit and Loss Account, Balance sheet
- Pricing and its methods Costing: concepts and controlling techniques; cost effective procedures, Concept of Break Even Point (BEP)

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)
- General account of Microbial toxins – Exotoxins, endotoxins, mycotoxins

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


PRACTICAL – Semester II

Paper No. : 0215
Maximum Marks : 100
Teaching Periods : 10/week

Course A: Therapeutic Nutrition II

Teaching Periods : 3/week (1 practical)
Teaching Load : 12 practicals / semester

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. Application of computers for nutrition care
4. Developing special dietetic foods

CONTENTS

UNIT I: Planning and preparation of diets for disorders covered in theory 8
UNIT II: Diet counseling and preparation of counseling aids 1
UNIT III: Dietetic food product development for various disorders 2
UNIT IV: Application of computers for nutritional care 1

Course B: Perspectives in Food and Nutrition Security

OBJECTIVES
1. To be familiar with ongoing national nutrition programmes
2. To plan and implement interventions for nutritional improvement of the community

CONTENTS

UNIT I: Planning and preparation of cyclic menu for a school feeding program 3
UNIT II: Planning and preparation of diet for PEM 2
UNIT III: Field visits to ongoing National Nutrition Programs 1
UNIT IV: Development of a plan for nutrition education program in community. Preparation of communication aids for different groups. Implementation of program in community 6

Course C: FOOD SERVICE MANAGEMENT & FOOD MICROBIOLOGY
Practical

Teaching Periods : 3/week (1 practical)
Teaching Load : 12 practicals / semester

OBJECTIVES

1. To understand the importance of layout and equipment in food service units
2. To impart necessary skills to function as food service manager
3. To assess the safety and sanitation of food service units
4. To manage a canteen or other enterprise

CONTENTS

Unit I: Field visits to institutions to study layout and sanitary operations 2

Unit II: Demonstrations of processing techniques/ cuisine 1

Unit III: Recipe development for (any one)
   Healthy options, party foods, packed meals 2

Unit IV: Catering management (any two) 3
   - Canteen
   - Food Stall
   - College event catering

Unit V: Food Microbiology 4
   - Use of different sterilization and disinfection techniques in microbiology- Heat (moist and dry), radiations (laminar flow), filtration (membrane filters), and alcohols
   - Investigating presence and enumeration of bacteria in samples (water and milk) by plate count, MPN and MBRT
   - Assessment of Sanitation and Hygiene of the Hostel Mess and College Canteen by using Swab and Rinse technique
Course D: Seminar

Teaching Periods : 1/week
Teaching Load    : 12 periods / semester