## Post Graduate Diploma in Dietetics & Public Nutrition (PGDDPN)

| | | | Instructional System | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Code** | **SLM Code** | **Name of Subject** | **PCP** | **AW** | **VGD** | **PDP** | **PEC** | **PPW** | **IIIL** | **Credits** | **Marks** |
| PGDDPN-1 | MFN-001 | Applied Physiology | √ | √ | √ | √ | √ | | | 6 | 100 |
| PGDDPN-2 | MFN-002 | Nutritional Biochemistry | √ | √ | √ | √ | √ | | | 6 | 100 |
| PGDDPN-3 | MFN-003 | Food Microbiology & Safety | √ | √ | | | √ | | | 6 | 100 |
| PGDDPN-4 | MFN-004 | Advance Nutrition | √ | √ | | | √ | | | 6 | 100 |
| PGDDPN-5 | MFN-005 | Clinical and Therapeutic Nutrition | √ | √ | | | √ | | | 6 | 100 |
| PGDDPN-6 | - | Dissertation | | | | | √ | | | 8 | 200 |
| **Total** | | | | | | | | | | **38** | **700** |

**Paper-I**
**Applied Physiology (MFN-001)**

## UNIT 1 INTRODUCTION TO PHYSIOLOGY

1.1 Physiology as a Discipline
1.2 How Cells Join Together
1.3 Physiology of Growth and Development
1.4 Physiology of Ageing
1.5 Nutrition and Physiology

## UNIT 2 CELL AND BLOOD

2.1 Cell: The Basic Unit of Life
2.2 Structure of the Cell
2.3 Cell Cycle
2.4 Tissue and their Functions
2.5 Blood
2.6 Blood Composition
2.7 Erythropoiesis
2.8 Blood Groups
2.9 Anaemia
2.10 Haemostasis

## UNIT 3 THE IMMUNE SYSTEM

3.1 The Immune System
3.2 Non-Specific Defence Mechanism
3.3 Specific Defence Mechanism
3.4 Innate Immunity
3.5 Specific Acquired Immunity
3.6 The Leukocytes: Development and Regulation
3.7 In-vitro Detection of Antigen-Antibody Interaction

## UNIT 4 CARDIOVASCULAR SYSTEM

4.1 Design of Cardiovascular System
4.2 What is the Heart Made up of ?
4.3 The Uniqueness of Our Heart
4.4 Cardiac Output
4.5 The Cardiac Cycle
4.6 Blood Pressure
4.7 Pathophysiology of Hypertension
4.8 Myocardial Ischemia and Infarction
4.9 Aerobics Exercise and Diet: How to Keep Your Heart Healthy
4.10 ECG-What It is and Why do We Need It?

**UNIT 5 RESPIRATION**

5.1 Organs of the Respiratory System
5.2 The Mechanics of Respiration
5.3 Pulmonary Volumes
5.4 Interchange of Gases Within the Lungs
5.5 Regulation of Respiration
5.6 Internal Respiration
5.7 Respiratory Adjustments
5.8 Artificial Respiration

**UNIT 6 PHYSIOLOGY OF GASTROINTESTINAL SYSTEM**

6.1 Description of the Gastrointestinal Tract
6.2 Mouth
6.3 Salivary Glands
6.4 The Pharynx
6.5 The Oesophagus
6.6 The Stomach
6.7 The Pancreas
6.8 The Liver and Biliary System
6.9 The Small Intestine
6.10 The Large Intestine
6.11 Movements of the Gastrointestinal Tract
6.12 Gastrointestinal Hormones
6.13 Absorption and Utilization of Carbohydrates, Proteins and Fats
6.14 Some Common Disorders of the Digestive System

**UNIT 7 PHYSIOLOGY OF RENAL SYSTEM**

7.1 Organs of the Urinary System
7.2 Kidney: Structure and Functions
7.3 Ureters
7.4 The Urinary Bladder
7.5 The Urethra
7.6 Constituents and Examination of Urine
7.7 Renal Function Tests
7.8 Pathophysiology of Kidney
7.9 Dialysis
7.10 Kidney Transplant

**Paper-II**
**Nutritional Biochemistry (MFN-002)**

## UNIT 1 CARBOHYDRATES

1.1 Introduction to Nutritional Biochemistry
1.2 Chemistry of Carbohydrates
1.3 Monosaccharides
1.4 Oligosaccharides
1.5 Polysaccharides

## UNIT 2 LIPIDS AND PROTEINS

2.1 Chemistry of Lipids – Introduction
2.2 Lipids – Structure and Classification
2.3 Chemical Properties of Fatty Acids and Neutral Fats
2.4 Chemistry of Proteins and Nucleic acids
2.5 Amino Acids – Structure, Classification and Properties
2.6 Proteins – Structure, Classification and Properties
2.7 Structure and Classification of Nucleic Acids

## UNIT 3 VITAMINS

3.1 Vitamins – Introduction and Classification
3.2 Structure and Properties of Water Soluble Vitamins
3.3 Structure and Properties of Fat Soluble Vitamins

## UNIT 4 ENZYMES AND COENZYMES

4.1 Introduction to Enzymes and Coenzymes
4.2 Nomenclature and Classification of Enzymes
4.3 Specificity of Enzymes
4.4 Mechanism of Enzyme Action
4.5 Enzyme Kinetics
4.6 Factors Affecting Enzyme Activity
4.7 Enzyme Inhibition
4.8 Role of Enzymes and Coenzymes in Metabolism
4.9 Isozymes
4.10 Enzymes in Clinical Diagnosis

## UNIT 5 DIGESTION, ABSORPTION AND TRANSPORT OF CARBOHYDRATES, PROTEINS AND LIPIDS

5.1 Digestion, Absorption and Transport – Basic Concept
5.2 Digestion
5.3 Digestion of Food Materials

**Paper-III**
**FOOD MICROBIOLOGY AND SAFETY (MFN-003)**

## UNIT 1 MICROBIOLOGY OF FOOD

1.1 Food Microbiology – Basic concept
1.2 History of Food Microbiology
1.3 Role of Microbiology in Biotechnology
1.4 Role Microorganisms in Fermented Foods

## UNIT 2 FOOD SAFETY – BASIC CONCEPTS

2.1 Food Safety and Importance of Safe Food
2.2 Factors Affecting Food Safety
2.3 Microorganisms in Foods
2.4 Recent concerns of Food Safety

## UNIT 3 OCCURRENCE AND GROWTH OF MICROORGANISMS IN FOOD

3.1 Microbiology of Air, Water and Soil
3.2 Sources of Foods Contamination
3.3 Factors Affecting the Growth of Microorganisms
3.4 Control and Destruction of Microorganisms

## UNIT 4 FOOD SPOILAGE

4.1 Factors Responsible for food Spoilage
4.2 Chemical Changes due to Spoilage
4.3 Spoilage of Different Foods

## UNIT 5 FOOD HAZARDS OF MICROBIAL ORIGIN

5.1 Food Borne Diseases
5.2 Food Borne Intoxications
5.3 Food Borne Infections
5.4 Food Borne Toxic Infections
5.5 Mycotoxins
5.6 Food Born Diseases Due to Naturally Occurring Toxicants
5.7 Reporting and Investigations of Food Borne Diseases

**UNIT 6 FOOD CONTAMINANTS**

6.1 Food Contamination
6.2 Naturally Occurring Toxicants
6.3 Environmental Contaminants
6.4 Miscellaneous Contaminants

**UNIT 7 FOOD ADDITIVES**

7.1 What is a Food Additive?
7.2 Classification of Food Additives
7.3 Functional Role of Different Additives
7.4 Safety Issues

**UNIT 8 FOOD ADULTERATION**

8.1 Food Adulteration
8.2 Foods Commonly Adulterated
8.3 Common Adulterants
8.4 Harmful Effects of Adulterants
8.5 Methods for Detection of Some Adulterants

**UNIT 9 FOOD SAFETY IN FOOD SERVICE ESTABLISHMENTS AND OTHER FOOD AREAS**

9.1 Food Safety and Food Service Establishments
9.2 Food Safety Measures in a Food Service Establishment
9.3 Street Foods – Food Safety Measures
9.4 Temporary Food Service
9.5 Food Safety on Wheels, Wings and Waves

**UNIT 10 HYGIENE AND SANITATION IN FOOD SERVICE ESTABLISHMENTS**

10.1 Sanitation in Food Service Establishments
10.2 Hygiene Requirements for Licensing and Sale
10.3 Health Status of Food Handlers
10.4 Personal Hygiene
10.5 Facilities to Employees

**UNIT 11 FOOD PACKAGING**

11.1 Packaging: Concepts, Significance and Functions
11.2 Classification of Packaging Materials
11.3 Packaging Methods

11.4 Moisture Sorption Properties of Foods and Selection of Packaging Materials
11.5 Interactions between Packaging and Food – Toxicity Hazards
11.6 Biodegradable Material and Environmental Issues
11.7 Labeling Requirements and Bar Coding
11.8 Packaging Laws and Regulations

**UNIT 12 RISK ANALYSIS**

12.1 Risk Analysis: The New Paradigm in Food Safety Assurance
12.2 Risk Assessment
12.3 Risk Management
12.4 Risk Communication

**UNIT 13 HACCP – A FOOD SAFETY ASSURANCE SYSTEM**

13.1 HACCP – An Effective Food Safety Assurance System
13.2 Need for HACCP
13.3 Benefits of HACCP
13.4 Principles of HACCP
13.5 Guidelines for Application of HACCP Principles
13.6 The HACCP Status in India
13.7 HACCP Case Studies

**UNIT 14 FOOD REGULATIONS: STANDARDS AND QUALITY CONTROL**

14.1 Food Standards and Regulations in India
14.2 The Prevention of Food Adulteration Act, 1954
14.3 Compulsory National Legislations
14.4 Voluntary Based Product Certification
14.5 Regulations Related to Genetically Modified Foods
14.6 International Organization and Agreements in the Area of Food Standardization and Quality Control

**Paper-IV**
**Advance Nutrition (MFN-004)**

## UNIT 1 UNDERSTANDING NUTRITION

1.1 Nutrition Science: Basic Concepts
1.2 History of Nutrition
1.3 Nutritional Requirements
1.4 Methods for studying the Nutrient Requirements
1.5 National and International Recommendations on Nutrient Requirements
1.6 Goals of National and International Requirement Estimates and RDAs
1.7 Dietary

## UNIT 2 HUMAN ENERGY REQUIREMENTS

2.1 Energy: Some Basic Concepts
2.2 Definition and Components of Energy Requirement
2.3 Factors Affection Energy Expenditure and Requirement
2.4 Methods of Estimation of Energy Expenditure and Requirement
2.5 Energy Requirements and Dietary Energy Recommendations
2.6 Energy Imbalance: An Overview

## UNIT 3 CARBOHYDRATES

3.1 Classification of Carbohydrates
3.2 Functions
3.3 Digestion and Absorption
3.4 Metabolic Utilization of Carbohydrates
3.5 Regulation of Blood Glucose Concentration
3.6 Dietary Fibre
3.7 Resistant Starch
3.8 Fructo Oligosaccharides (FOS)
3.9 Glycemic Index (GI )
3.10 Modification of Carbohydrate Intake for Specific Disorder

## UNIT 4 PROTEINS

4.1 Proteins – An Overview
4.2 Methods of Determination of Proteins and Amino Acid Content in Foods
4.3 Improvement of Quality of Protein in the Diet
4.4 Methods of Estimating and Assessing Protein Requirements at Different Stages of Life Cycle
4.5 Nutritional Requirements and Recommended Allowances for Proteins and Amino Acids
4.6 Protein Deficiency

**UNIT 5 LIPIDS**

5.1 Fats: Some Basic Facts
5.2 Types of Fats and its metabolism
5.3 Functions of Fat and Oils
5.4 Nutritional Requirements of Fat and Oils
5.5 Excessive Fat Intake

**UNIT 6 WATER**

6.1 Water: An Essential but Overlooked Nutrient
6.2 Water Distribution and Compartments of Body Water
6.3 Water Balance
6.4 Requirements for Water
6.5 Disturbances in Fluid Balance

**UNIT 7 FAT-SOLUBLE VITAMINS: VITAMIN A,D, E AND K**

7.1 Fat-Soluble Vitamins – An Overview
7.2 Vitamin A
7.3 Vitamin D
7.4 Vitamin E
7.5 Vitamin K

**UNIT 8 WATER-SOLUBLE VITAMINS: B COMPLEX VITAMINS & VITAMIN C**

8.1 Water-Soluble Vitamins: An Overview
8.2 Thiamin (Vitamin $B_1$ or Aneurin)
8.3 Riboflavin
8.4 Niacin
8.5 Pyridoxine (Vitamin $B_6$)
8.6 Folate
8.7 Cyanocobalamin (Vitamin $B_{12}$)
8.8 Ascorbic acid (Vitamin C)
8.9 Interaction with other Nutrient

**UNIT 9 MINERALS (MACRO MINERALS): CALCIUM, PHOSPHORUS, MAGNESIUM, SODIUM, POTASSIUM, CHLORIDE**

9.1 General Nutritional Functions of Minerals
9.2 Absorption and Metabolism of Minerals
9.3 Calcium
9.4 Phosphorus
9.5 Magnesium
9.6 Sodium, Potassium and Chloride
9.7 Interactions of Macrominerals with other Nutrients

**UNIT 10 MINERALS (MICRO MINERALS): IRON, ZINC, COPPER, SELENIUM, CHROMIUM, MANGANESE, IODINE AND FLUORINE**

10.1 Micro Minerals – An Overview
10.2 Iron
10.3 Zinc
10.4 Copper
10.5 Selenium
10.6 Chromium
10.7 Manganese
10.8 Iodine
10.9 Fluorine

**UNIT 11 FOOD COMPONENTS OTHER THAN ESSENTIAL NUTRIENTS**

11.1 Functional Foods
11.2 Bioactive Substances from Protein Foods
11.3 Non-Glycerides in Edible Oils
11.4 Probiotics and Prebiotics
11.5 Polyphenols
11.6 Phytoestrogens
11.7 Other Dietary Factors with Antinutritional Effects
11.8 Health Benefits of other Dietary Factors with Antinutritional Effects

**UNIT 12 MENU PLANNING**

12.1 Menu Planning
12.2 Factors Affecting Food Choice
12.3 Exchange List vs. Food Composition Tables for Menu Planning
12.4 Planning for Adults
12.5 Nutrition of Women

**UNIT 13 PREGNANT AND LACTATING MOTHERS**

13.1 Pregnancy and Lactation – Critical Stages in the Lifecycle
13.2 Physiological Changes during Pregnancy
13.3 Nutritional Needs during Pregnancy
13.4 Maternal Nutrition and Fooetal Outcome
13.5 Nutritional Assessment and Guidance in Prenatal Care
13.6 Common Concerns during Pregnancy
13.7 Lactation
13.8 Maternal Nutrition during Lactation

**Paper-V**
**Clinical and Therapeutic Nutrition (MFN-005)**

**MFN-005 - Clinical and Therapeutic Nutrition**

**UNIT 1- INTRODUCTION TO MEDICAL NUTRITION THERAPY**

1.1 Definitions and Role of Dietitian in Health Care
1.2 The Nutrition Care Process (NCP)
1.3 Importance of Coordinated Nutritional and Rehabilitation Services
1.4 Patient Care and Counseling

**UNIT 2- ADAPTATION OF THERAPEUTIC DIETS**

2.1 Therapeutic Diets
2.2 Types of Dietary Adaptations for Therapeutic Needs
2.3 Normal Nutrition: A base of Therapeutic Diet
2.4 Diet Prescription
2.5 Construction Therapeutic Diets
2.6 Routine Hospital Diets
2.7 Mode of Feeding

**UNIT 3 - NUTRITIONAL MANAGEMENT OF INFECTIONS AND FEVERS**

3.1 Defense Mechanism in the Body
3.2 Nutrition and Infection
3.3 Metabolic Changes during Infection
3.4 Classification and Etiology of Fever/Infection
3.5 Typhoid
3.6 Chronic Fever/Infection

**UNIT 4 - MEDICAL NUTRITION THERAPY IN CRITICAL CARE**

4.1 Nutritional Management of the Critically Ill
4.2 Special Feeding Methods in Nutritional Support

**UNIT 5 - NUTRITION DURING STRESS**

5.1 The Stress Response
5.2 Surgery
5.3 Burns
5.4 Trauma
5.5 Sepsis

**UNIT 6 - NUTRITIONAL MANAGEMENT OF FOOD ALLERGIES AND FOOD INTOLERANCE**

6.1 Adverse Food Reactions
6.2 Adverse Food Reactions-The Diagnosis Process
6.3 Treatment and Management of Adverse Food Reactions
6.4 Prevention of Adverse Food Reactions

**UNIT 7 - NUTRIENT AND DRUG INTERACTION**

7.1 Nutrient and Drug Interaction: Basic Concept
7.2 Effect of Nutrition on Drugs
7.3 Drug Effects on Nutritional Status
7.4 Drug and Drug Interaction
7.5 Clinical Significance and Risk Factors for Drug-Nutrient Interactions
7.6 Guidelines to Lower Risk and Wise Use of Drugs

**UNIT 8 - NUTRITION, DIET AND CANCER**

8.1 Cancer
8.2 Etiological Risk Factors in Cancer
8.3 Metabolic Alterations and Resultant Nutritional Problems/Clinical Manifestations Associated with Cancer
8.4 Nutritional Requirements of Cancer Patients-General Guidelines
8.5 Dietary Management of Cancer Patients and Feeding Problems Related to Cancer Therapy
8.6 Cancer Prevention

**UNIT 9 - NUTRITIONAL CARE IN WEIGHT MANAGEMENT**

9.1 Weight Imbalance-Prevalence and Classification
9.2 Guidelines for Calculating Ideal Body Weight
9.3 Obesity
9.4 Management of Obesity
9.5 Underweight

**UNIT 10 - NUTRITIONAL MANAGEMENT OF EATING DISORDERS**

10.1 Eating Disorders-A Review
10.2 Anorexia Nervosa
10.3 Bulimia Nervosa
10.4 Eating Disorder not Otherwise Specified (EDNOS)
10.5 Binge Eating Disorder
10.6 Management of Eating Disorders
10.7 Nutritional Management of Eating Disorders

**UNIT 11 - NUTRITIONAL MANAGEMENT OF CORONARY HEART DISEASES**

11.1 Coronary Heart diseases (CHD)
11.2 Common Disorders of Coronary Heart Diseases and their Management
11.3 Prevention of Coronary Heart Diseases

**UNIT 12 - NUTRITIONAL MANAGEMENT OF METABOLIC DISEASES-I: DIABETES MELLITUS**

12.1 Diabetes Mellitus
12.2 Management of Diabetes
12.3 Exercise and Drugs
12.4 Education
12.5 Prevention

**UNIT 13 - NUTRITIONAL MANAGEMENT OF METABOLIC DISEASES-II: GOUT AND INBORN ERRORS OF METABOLIS**

13.1 Gout
13.2 Inborn Errors of Metabolism

**UNIT 14 - NUTRITIONAL MANAGEMENT OF GASTROINTESTINAL DISEASES AND DISORDERS**

14.1 Gastrointestinal Diseases and Disorders

**UNIT 15 - NUTRITIONAL MANAGEMENT IN LIVER, GALL BLADDER AND PANCREATIC DISEASES**

15.1 Liver Diseases
15.2 Nutritional Management of Liver Diseases
15.3 Gall Bladder and Biliary Tract Diseases
15.4 Pancreatic Diseases

## UNIT 16 - NUTRITIONAL MANAGEMENT OF RENAL DISEASES

16.1 Physiology of the Kidney
16.2 Assessment of Kidney Function: Diagnostic Tests
16.3 Common Renal Diseases
16.4 General Principle of Dietary Management in Renal Diseases
16.5 Acute and Chronic Nephritis
16.6 Nephrotic Syndrome
16.7 Acute Renal Failure (ARF)
16.8 Chronic Renal Failure (CRF)
16.9 End Stage Renal Disease (ESRD)
16.10 Renal Calculi
16.11 Commonly Available Commercial Enteral Nutrition Formulas for Renal Patients

## UNIT 17 - NUTRITIONAL MANAGEMENT OF NEUROLOGICAL DISORDERS

17.1 Common Neurological Disorders
17.2 The Central Nervous System (CNS)-Some Relevant Physiological Aspects
17.3 Neurological Diseases: Feeding and Nutritional Issues-General Goals of Nutritional Care
17.4 Dysphagia
17.5 Alzheimer's Disease
17.6 Parkinson's Disease
17.7 Epilepsy
17.8 Neuro Trauma
17.9 Spinal Trauma

## UNIT 18 - PEDIATRIC AND GERIATRIC NUTRITION-SPECIAL CONSIDERATIONS

18.1 Pediatric Problems and Nutritional Management
18.2 Geriatric Nutrition